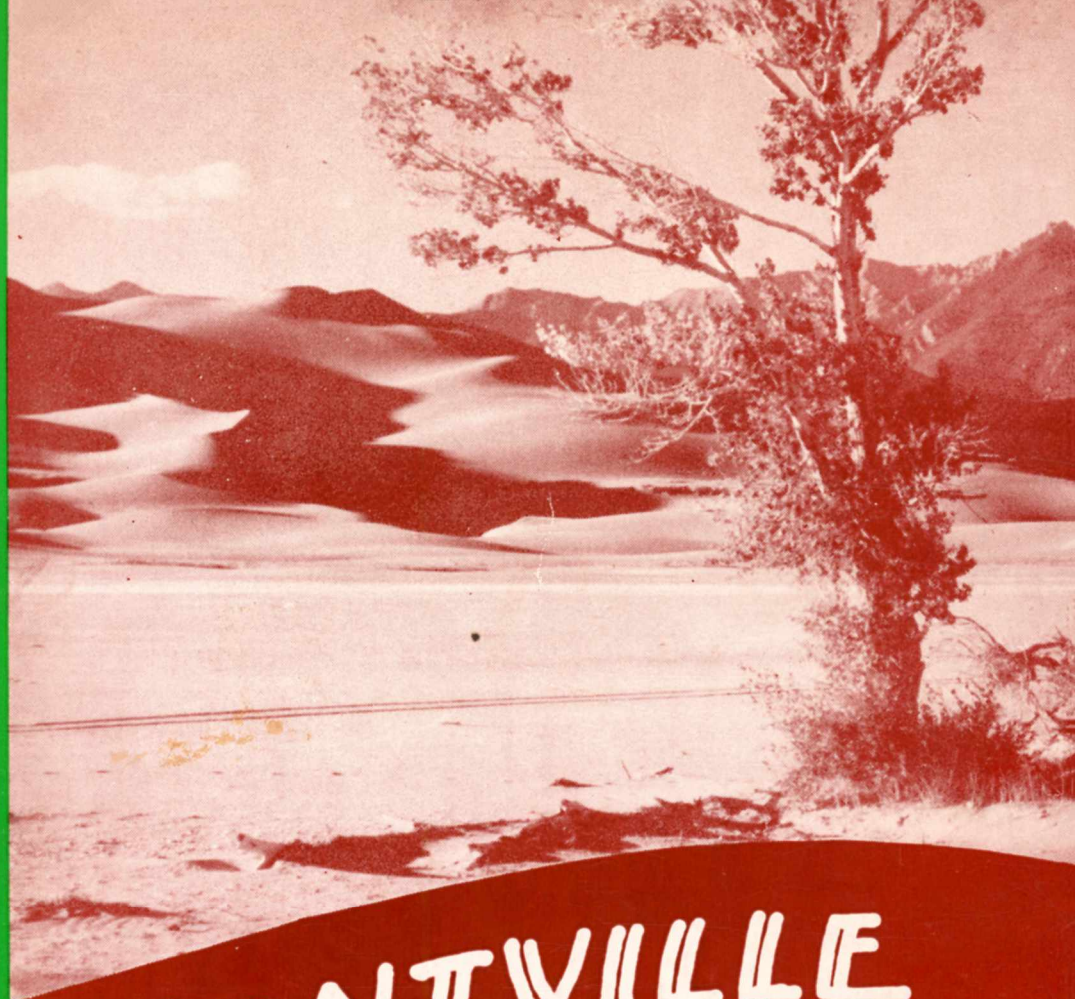




MONTVILLE TRAIL

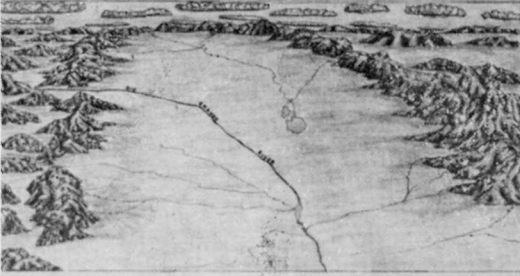
PRICE 10¢ IF YOU TAKE
THIS BOOKLET HOME



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FREE OF CHARGE RETURNING IT TO THE
REGISTER STAND WHEN YOU GO

GREAT SAND DUNES
NATIONAL MONUMENT
COLORADO

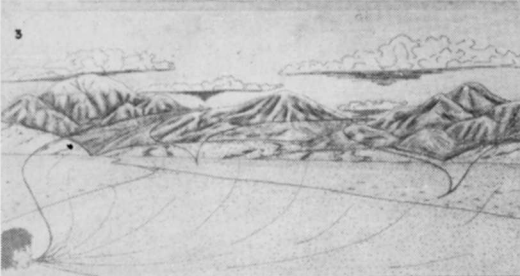
HOW THE GREAT SAND DUNES WERE FORMED



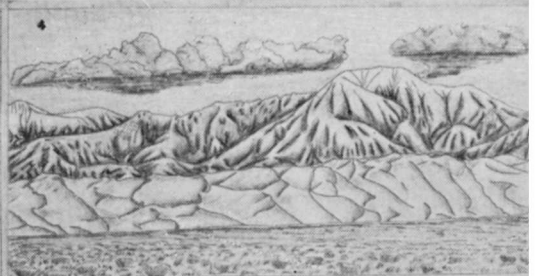
1 Millions of years ago the San Juan and Sangre de Cristo Mountains were uplifted. Streams, draining these mountains, have dropped their sediments in the Valley.



2 A great bed of sandy soil and silt has been deposited in the San Luis Valley. For ages this soil has been blown toward the mountains by the southwest wind.



3 When the silt laden wind reaches the mountains it rises and funnels through Mosca, Medano and Music Passes. In doing this it loses its velocity and drops its load of sand at the base of the mountains.



4 For thousands of years the wind has been dropping its load of sand and now a large part of the San Luis Valley is piled at the base of the Sangre de Cristos in the form of the Great Sand Dunes.

NATIONAL PARKS AND MONUMENTS

Great Sand Dunes National Monument is one of more than 175 areas administered by the National Park Service, U. S. Department of the Interior. They include such magnificent scenic areas as Rocky Mountain and Grand Canyon National Parks, and many National Monuments set aside for their scientific, historical and archeological values. The units making up the National Park System belong to you and are a part of your heritage as an American citizen.

It is the responsibility of your National Park Service to preserve the Parks and Monuments in their natural unspoiled condition and to make them available for the enjoyment of the people in such a manner as to leave them unimpaired for the inspiration of future generations. In order to preserve these superb examples of original America, activities such as woodcutting, hunting, grazing, mining and even flower-picking are prohibited.

It is hoped that you will develop a pride of ownership in the Parks and Monuments and will help the National Park Service in preserving Great Sand Dunes National Monument for the pleasure of future visitors. You can help us by "taking nothing but pictures and inspiration, and leaving nothing but footprints and goodwill."

CONSERVATION — CAN A LAYMAN HELP?

If you are interested in the work the National Park Service is doing, and the cause of conservation in general, you can give active expression of this interest and lend support by your membership in the Wilderness Society, 1840 Mintwood Place, Washington 9, D. C.; The National Parks Association, same address; the American Planning and Civic Association, 901 Union Trust Bldg., Washington 5, D. C., or many other conservation organizations which will keep you informed, and suggest what you can do to help.

HOW TO USE THIS BOOKLET

This booklet is your guide to the Montville Nature Trail, which begins at the registration desk. The trail provides easy walking all the way and about 30 minutes are required to make the round trip.

Various features of interest along the trail are indicated by numbered stakes which correspond to the numbered paragraphs in this guide booklet. Many of the questions you may have about Great Sand Dunes National Monument will be answered by reading this booklet as you walk along the trail.

Please replace this booklet in the desk when you return, or you may purchase it by dropping 10¢ in the slot in the registration desk.

Tips for Photographers—The dunes are a fine subject for pictures. The best pictures are taken in the morning or late afternoon when there are shadows on the dunes. Without shadows the dunes appear flat. Use an exposure meter if you have one, as the light can be deceiving.

THE MONTVILLE TRAIL

Stake No. 1.—OLD TOLL GATE AND POSTOFFICE

On this location the old toll house and stage station was maintained while the Mosca Pass Toll Road was still in operation. Even after the charter was bought by the state of Colorado and tolls were no longer collected, a postoffice was still maintained at this point under the name of Montville. The postoffice was closed about 1898.

Mr. Coley King, the last postmaster of Montville, has identified the short cedar stub marked by the white stake as the remains of one of the posts of the toll gate.

During the later years of the postoffice, Mr. King and his brother and deputy postmaster, Will King, kept a small grocery store and a team of horses to help pull wagons over the Pass. At that time a fruit orchard thrived just to the east of the present road and south of the Upper Picnic Ground.

Stake No. 2.—ROCKY MOUNTAIN MAPLE—(*Acer glabrum*)

Maples of this species are usually shrub-like, but under favorable conditions may reach tree size. In the fall the leaves turn various shades of yellow and red, providing a beautiful sight. The familiar Boxelder, which is extensively planted as a shade tree in the West, is also a member of the Maple Family.

The various kinds of Maples may usually be recognized by their lobed, opposite leaves and typical winged seeds. These seeds, as well as buds and flowers, provide food for many kinds of birds and mammals.

Stake No. 3.—THINLEAF ALDER—(*Alnus tenuifolia*)

This large shrub with the reddish-brown bark belongs to the Birch Family and is sometimes confused with the Mountain Birch. Larger and more tree-like specimens may be found a short distance up this creek. Alders are browsed to some extent by livestock and help to check soil erosion along the mountain streams.

Stake No. 4.—WHITE FIR—(*Abies concolor*)

Between elevations of 8,000 to 11,000 feet, Firs are usually quite common and form dense forests associated with Spruce. You can always tell the Firs from the other evergreen trees if you will remember that the needles of Firs are flat and flexible. Instead of hanging down, as most cones do, fir cones stand erect on the upper branches like candles on a Christmas tree. Cones are almost never found on the ground, as they break apart while on the tree, and fall, scale by scale, leaving only the central spike of the cone projecting from the branch.

Pinyon Pine at Station No. 7



Stake No. 5.—SKUNKBUSH SUMAC—(*Rhus trilobata*)

The aromatic foliage furnishes the common name of this member of the Sumac Family. Although it is a close relative of Poison Ivy, this plant is not poisonous, and Indians ate the bright red berries, used them as a mordant in dyes, and employed the pliable stems in basketry. Early pioneers made a lemonade-like drink using the berries of the Skunkbush.

Stake No. 6.—MOUNTAIN MAHOGANY—(*Cercocarpus montanus*)

Sometimes known as Deer-browse, these plants are useful in protecting the soil from erosion and are an important source of food for deer and other wildlife. The foliage is also relished by cattle and sheep and if you look at the shrubs closely you can see the old browse line caused by heavy grazing before this area was set aside as a Monument.

The wood of Mountain Mahogany is very hard and was sometimes used by Indians in making digging sticks and tool handles. When in fruit, the plant is quite attractive, as the seeds have feathery, corkscrew-like tails which aid them in penetrating the ground.

Stake No. 7.—PIÑON PINE—(*Pinus edulis*)

This small pine, associated with various kinds of juniper, covers most of the plateau areas in the Southwest. A Piñon and Juniper woodland is often called a "pygmy forest." The trees are usually straggling and rarely exceed 30-35 feet in height. Large trees may reach an age of 250-350 years.

All of the pines produce seeds which are an important source of food for squirrels and birds. Seeds of the Piñon Pine are nutlike and are quite delicious. They have long been eaten by Indians, and Piñon Nuts may now be purchased in many grocery stores. The nuts are produced in pairs at the base of each cone scale. Piñon Pine resin is used by Indians to waterproof baskets and to cement turquoise stones in their jewelry.

**Stake No. 8.—PLAINS PRICKLYPEAR—(*Opuntia polyacantha*) and
MOUNTAIN CACTUS—(*Pediocactus simpsoni*)**

Better examples of Pricklypear will be seen farther along the trail. This one was selected so you could compare its flat-jointed type of growth with that of the small, round Mountain Cactus. Because of its small size and many spines, the Mountain Cactus is sometimes referred to as a Pincushion Cactus. Its delicate pink blossoms open only when the sun is shining, and they appear in late May or early June. The "pads" of the Pricklypear are stems, not leaves.

You may be surprised to find cactus growing up here so far from the hot dry deserts. Actually Great Sand Dunes is located in a semi-desert area if we define a desert as "a region of uncertain and deficient rainfall." At this point you are at an elevation of more than 8,000 feet,



The Dunes as seen from Station No. 9. Note long windward slopes of dunes showing that the prevailing wind is from the southwest.

and under normal conditions you would expect to find a heavy growth of Ponderosa Pine and Douglas Fir. However, the prevailing southwest winds lose much of their moisture in rising over the high mountains to the west, thus leaving only a small amount of rainfall (about 8 inches per year) for Great Sand Dunes and the surrounding area. Because of this situation many plants typical of the desert and semi-desert grow here.

Stake No. 9.—DUNES OVERLOOK

From this point an excellent view may be had of the Great Sand Dunes. These dunes, rising more than 600 feet from the valley floor, are the highest-piled inland sand dunes in the United States.

Most people wonder how the dunes have been formed, and to answer this question it is necessary to go back into geologic time to the building of the Rocky Mountains. During that period, huge sections of the earth's surface were pushed up to form the Sangre de Cristo Mountains on the eastern border of the San Luis Valley and the San Juan Mountains on the west, which you can see far across the valley. The Rio Grande and other streams draining these mountains have dropped their loads of sediment in the San Luis Valley and, through the ages, have built up a huge bed of light, sandy, soil. The prevailing southwest winds pick up this sandy soil and carry it toward the Sangre de Cristo Mountains. As the winds push up over the mountains they lose their velocity, and the sand is dropped, thus gradually building up the gigantic dunes that are spread below you.

This process continues even today, adding slowly to the size of the

dunes and gradually pushing them higher up the mountain. Places can be seen where the dunes have gradually engulfed stands of Ponderosa Pine and Douglas Fir, leaving only the tops of these trees as gaunt skeletons projecting from the sand.

From this vantage point you can see the San Luis Lakes to the southwest. The line of Cottonwood trees just this side of the dunes marks the stream bed of Medano (MAY-dah-no—dune) Creek. Water flows here only during the spring season of wet years.

Stake No. 10.—ROCKY MOUNTAIN JUNIPER

(*Juniperus scopulorum*)

This and other species of Juniper are indicator plants of the Upper Conoran Life Zone, so named because of the climatic similarity to the highlands of northern Mexico. The Rocky Mountain Juniper seldom exceeds 30 feet in height and is characterized by more or less drooping branches. It grows as far north as Alberta and British Columbia, but does not extend into Mexico.

Stake No. 11.—WATERLOGGED PIÑON PINES

Piñon Pines don't like wet feet which, in this case, have proved fatal. The seep from the ditch above has killed these Piñons which thrive on rather dry, well-drained slopes.

Stake No. 12.—NARROWLEAF COTTONWOOD—

(*Populus angustifolia*)

This small tree is usually quite abundant along streams in the Rocky Mountain region. Because of the long narrow leaves it is sometimes mistaken for a willow to which it is closely related. In the autumn the leaves turn a bright yellow-orange and the tree is rather striking in appearance.

Stake No. 13.—SMALL SOAPWEED—(*Yucca glauca*)

Most of the Yuccas are found in the hot, dry deserts to the south, but this species is common in the cold, dry areas of the north. The name "Soapweed" comes from the large quantity of soap-like material in the roots and stems which has long been used as soap by the Indians. To make soap, the roots and central portion of the stalk are mashed and pulverized and then placed in water where they are rubbed until suds are developed. The soap, thus produced, is said to be especially effective when used as shampoo.

The fiber from yucca leaves has been used for making rope, mats, sandals, and cloth. During June and early July beautiful, waxy-white flowers are borne on a central stalk.

Stake No. 14.—MOUNTAIN SNOWBERRY—

(*Symphoricarpos oreophilus*)

During the summer months the Snowberry usually has an abundance of small, bell-shaped, pinkish flowers. The waxy, white berries which



Douglas Fir cones and foliage on background of 2-inch squares.
Note three-pointed bracts on the cones.

develop in the fall are ornamental, and Snowberries are an important wildlife food in the western states. Birds are especially fond of the berries which may remain available on the bushes until late in the winter when other food is scarce. The twigs and foliage form a large part of the diet of the Rocky Mountain Mule Deer, which is common in and near Great Sand Dunes. In addition to providing food, the bushes are available as nesting and protective shelter for birds and the smaller animals such as Rabbits, Chipmunks, and Ground Squirrels.

Stake No. 15.—DOUGLAS FIR—(*Pseudotsuga taxifolia*)

When you go to the lumber yard and buy "Oregon Pine" you really are buying Douglas Fir. In the Pacific Northwest this becomes a gigantic tree, often as much as 300 feet in height, and one of the most important timber trees of that region. It is of much less importance in the Rocky Mountain area, however.

The small winged seeds are an important food for Squirrels and other rodents, and in the winter the needles provide food for the Blue Grouse. Look at one of the small cones and notice the papery, three-pointed bracts which provide the best means for identifying the Douglas Fir.

Stake No. 16.—QUAKING ASPEN—(*Populus tremuloides*)

This beautiful tree, a member of the Willow Family and a relative of the Narrowleaf Cottonwood, which you have previously seen, is one of the most widespread trees in North America. Throughout the Southwest

it is most common at elevations of 7,500 to 9,500 feet in what is called the Canadian Life Zone where the climatic conditions and vegetation are similar to those of southern Canada.

The Quaking Aspen is one of nature's pioneers, for it is one of the first trees to grow on areas that have been burned over or otherwise denuded of vegetation. Eventually the sun-loving Aspens are crowded out by Pines and Firs which grow higher than the Aspens and cut off their sunlight. Thus, most of the Aspen groves are temporary and, in time, will be replaced by various kinds of cone-bearing trees.

In the fall the leaves turn a brilliant yellow and it is not uncommon to see whole mountain sides covered with their golden color.

Stake No. 17.—WILLOW—(*Salix sp.*)

You might not realize it, but this Willow is a first cousin to the Quaking Aspen. Both of these trees are of special importance to Beavers which eat the bark and use the trees and branches in constructing dams. Several Beaver colonies are located on the upper part of Medano Creek in the Monument.

Stake No. 18.—HISTORY OF MOSCA PASS

Mosca Pass Trail crosses Mosca Creek just above this station and then follows the sunny, south-facing side of the canyon to the Pass, about 4 miles from this point. At this station the trail follows the route of the old toll road built over Mosca Pass by Frank Hastings in 1871. T. B. Seeley and D. Holly, later owners, sold the charter to the State in the late 1800's and the road finally fell into disuse. A severe thunderstorm washed the road out completely in 1905 or 1906, and only traces of the old road can be seen higher in the canyon. The present trail, constructed by the Forest Service, was built on the hillside above the road out of the reach of storms.

Many early explorers and settlers used Mosca Pass, including Fremont on the ill-fated journey of 1848 which ended in La Garita Canyon. At that time the pass was known as Roubideau's Pass, as Antoine Robideau was supposed to have driven two-wheeled carts over it to his fur trading post on the Gunnison in 1837. Ruxton, the traveling English army officer, wrote of crossing it in 1846.

Stake No. 19.—COMMON CHOKECHERRY—(*Prunus virginiana*)

The black "puckery" cherry of this shrub is highly prized for use in jams and jellies. This particular plant is not typical, as Chokecherries in this region usually grow in thickets at a slightly higher altitude. The white flower clusters appear in June.

Stake No. 20.—WOOD'S ROSE—(*Rosa woodsii*)

You will easily recognize this thorny plant, for wild Roses are much the same the country over. The red fruits, called hips, are an important

source of food for birds and animals, and Rose bush thickets provide nesting and protective cover.

Stake No. 21.—TRUMPET GOOSEBERRY—(*Ribes leptanthum*)

Gooseberries and Currants harbor one stage of the White Pine blister rust, which is quite destructive to the five-needled Pines. Because of this, the shrubs are being eradicated wherever important stands of White Pine occur. Fortunately, this has not been necessary in southern Colorado. Note the long, sharp thorns on this plant.

Stake No. 22.—BUSH ROCKSPIREA—(*Holodiscus dumosus*)

Because of the creamy blooms and seed clusters which sometimes stay throughout the summer, this shrub of the cliffs is often called, "Cream-bush," "Foam-bush," "Mountain-spray," or "Ocean-spray." Strange as it may seem, this plant is a member of the Rose Family along with the Chokecherry and Mountain Mahogany you saw earlier.

Stake No. 23.—WAX CURRANT—(*Ribes cereum*)

Generally speaking, Currants may be distinguished from Gooseberries by their lack of spines. Berries of both plants are valuable food for wildlife, and the plants are browsed by both domestic animals and Deer.

Station No. 24.—OLD STORE LOCATION

A store or commissary was located at this point during the early days of the toll road. The probable length and width of the building can be seen by noting the size of the leveled area.

Stake No. 25.—CLEMATIS—(*Clematis ligusticifolia*)

Several species of Clematis are grown as ornamentals and are very handsome climbing plants. The clusters of plumed seeds are even more attractive than the flowers. Indians formerly used this plant as a remedy for sore throats and colds, and it is said that the crushed roots were placed in the nostrils of tired horses to revive them.

Stake No. 26.—RUBBER RABBIT BRUSH—

(*Chrysothamnus nauseosus*)

Rabbit Brush is a very common and widespread member of the Sunflower Family found throughout most of the Southwest. The bushes are particularly attractive late in the summer when they are literally covered with small, bright yellow flowers. Rabbit Brush is considered a pest by stockmen, as it is not palatable to cattle, and it tends to increase on overgrazed land at the expense of more desirable plants.

The latex of this and some other species contains a fair grade of rubber, but not in commercially important quantities.

Stake No. 27.—END OF THE TRAIL

This is the end of the trail and we hope you have enjoyed the walk. Please return this leaflet to the register stand or, if you desire, you may purchase it by dropping 10¢ in the slot in the registration desk.

Great Sand Dunes National Monument, a unit of the National Park System, is one of more than 175 areas administered by the National Park Service. U. S. Department of the Interior.

The traveling public is becoming increasingly aware of the National Monuments, which have received less publicity than the great, well-known National Parks, yet which possess extremely interesting features.

Many of these are in the Southwest; we hope you will take the opportunity to visit one or more of them on your trip.

*Administered as a group by the General Superintendent,
Southwestern National Monuments, Box 1562, Gila Pueblo, Globe, Arizona*

- IN UTAH:** Arches National Monument, Moab
Natural Bridges National Monument (care of Arches)
Rainbow Bridge National Monument (care of Navajo)
- IN NEW MEXICO:** Aztec Ruins National Monument, Aztec
Capulin Mountain National Monument, Capulin
Chaco Canyon National Monument, Bloomfield
El Morro National Monument, El Morro
Gila Cliff Dwellings National Monument (care of General Supt.)
Gran Quivira National Monument, Gran Quivira
- IN ARIZONA:** Canyon de Chelly National Monument, Chinle
Casa Grande National Monument, Coolidge
Chiricahua National Monument, Dos Cabezas
Coronado National Memorial (care of Tumacacori)
Montezuma Castle National Monument, Camp Verde
Navajo National Monument, Tonalca
Sunset Crater National Monument (care of Wupatki)
Tonto National Monument, Roosevelt
Tumacacori National Monument, Tumacacori
Tuzigoot National Monument, Clarkdale
Walnut Canyon National Monument, Rt. 1, Box 790, Flagstaff
Wupatki National Monument, Tuba Star Route, Flagstaff.

Other areas administered by the National Park Service in the Southwest follow:

- IN ARIZONA:** Grand Canyon National Park, Grand Canyon
Grand Canyon National Monument, Grand Canyon
Organ Pipe Cactus National Monument, Ajo
Petrified Forest National Monument, Holbrook
Pipe Spring National Monument, Moccasin
Saguaro National Monument, Rt. 8, Box 350, Tucson
- IN COLORADO:** Black Canyon of the Gunnison National Monument (care of Colorado National Monument)
Colorado National Monument, Fruita
Great Sand Dunes National Monument, Box 60, Alamosa
Mesa Verde National Park
- IN NEVADA:** Lake Mead National Recreation Area, Boulder City
Lehman Caves National Monument, Baker
- IN NEW MEXICO:** Bandelier National Monument, Santa Fe
Carlsbad Caverns National Park, Carlsbad
White Sands National Monument, Box 231, Alamogordo
- IN OKLAHOMA:** Platt National Park, Sulphur
- IN TEXAS:** Big Bend National Park
- IN UTAH:** Bryce Canyon National Park, Springdale
Capitol Reef National Monument, Torrey
Cedar Breaks National Monument (care of Zion)
Timpanogos Cave National Monument, Pleasant Grove
Zion National Monument (care of Zion)
Zion National Park, Springdale

This booklet is published by the
SOUTHWESTERN MONUMENTS ASSOCIATION

Box 1562 AE, Gila Pueblo, Globe, Arizona

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The Association lists for sale interesting and excellent publications for adults and children and very many color slides on Southwestern subjects. These make fine gifts for birthdays, parties, and special occasions, and many prove to be of value to children in their school work and hobbies.

May we recommend, for instance, the following items which give additional information on Great Sand Dunes National Monument and the Southwest?

DUPLICATE COLOR SLIDES—Kodachrome duplicates in individual cardboard redimounts—**50 cents** a slide, any 6 for **\$2.50**, any 12 for **\$5.00**, etc. Please order by number.

GREAT SAND DUNES NATIONAL MONUMENT, COLORADO

SWMA SLIDES

- A-41 The Dunes with snow-capped Sangre de Cristos in the background.
- A-42 Close-up view of the Dunes.
- A-43 High dunes with Medano Creek in the foreground.
- A-44 Medano Creek, known as the Disappearing River, and the sand dunes.
- S-68 Smothered conifer forest in wake of dunes.
- S-69 Residence and administration building.

PAUL THOMAS SLIDES

- K-7A Sangre de Cristo Mountains
- K-7B Approaching the dunes
- K-7C Dunes and Mt. Cleveland
- K-7D Dunes—600, plus, feet high
- K-7E Shadows on the dunes
- K-7F Encroaching sands

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