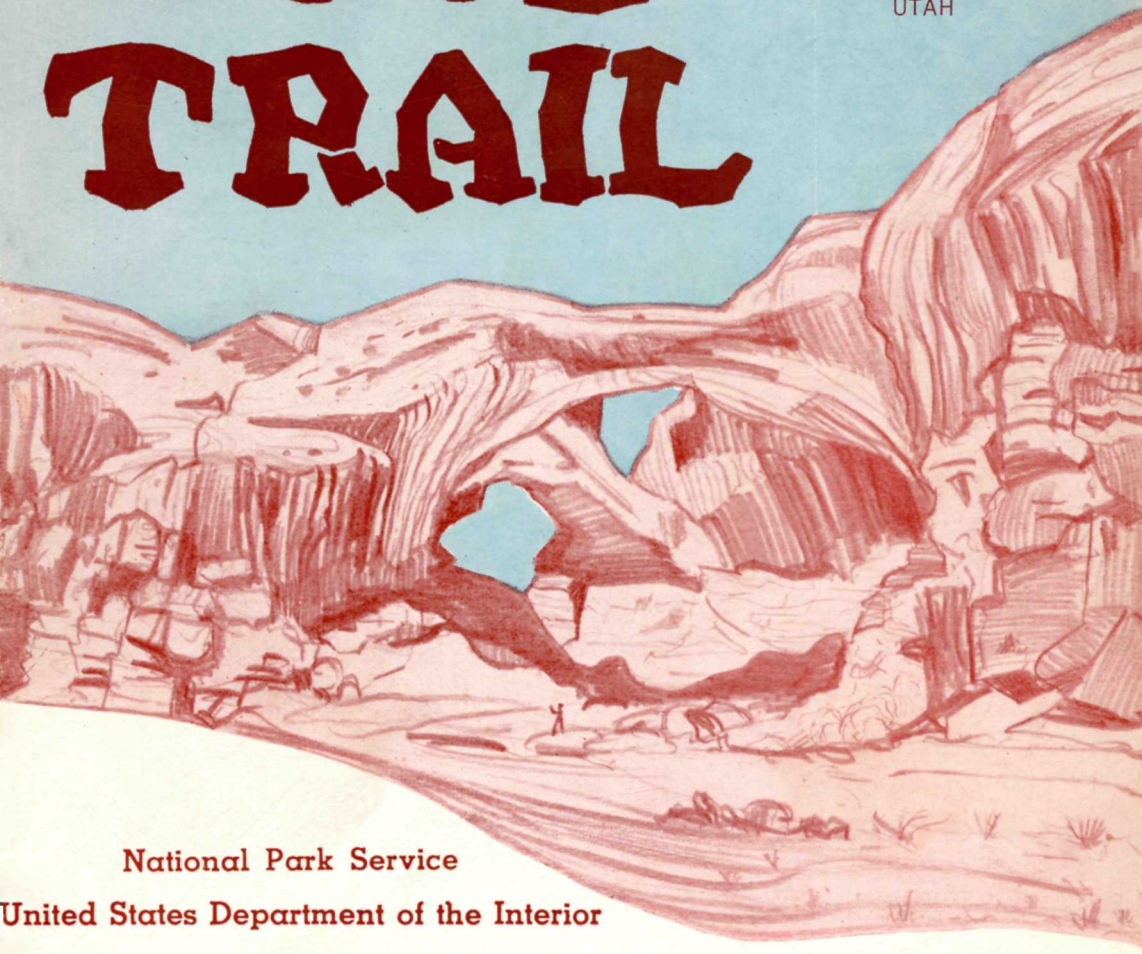
COVE TRAIL

ARCHES
NATIONAL MONUMENT
UTAH



National Park Service
United States Department of the Interior

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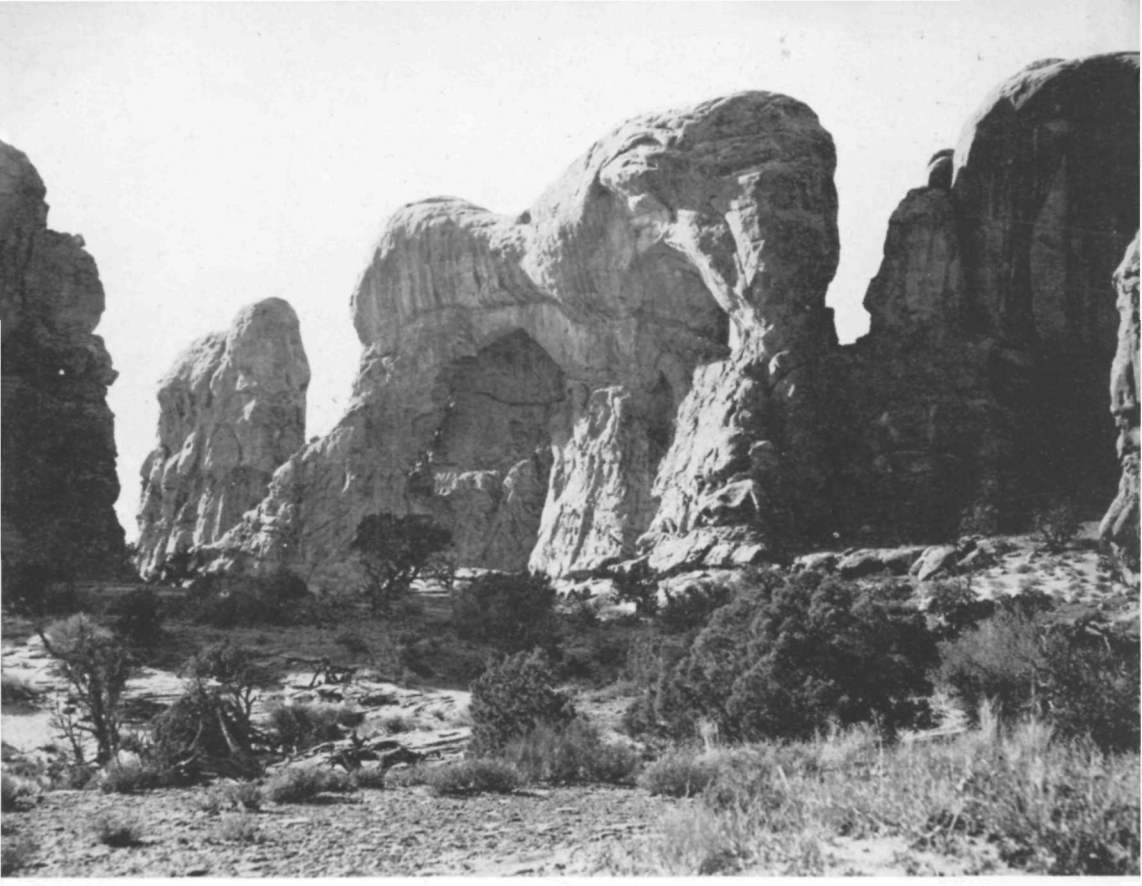


Parade of the Elephants

NATIONAL PARKS AND MONUMENTS

Arches National Monument is one of more than 180 areas administered by the National Park Service, United States Department of the Interior. These include such magnificent scenic areas as Rocky Mountain and Zion National Parks and other Parks and Monuments set aside for their scenic, scientific, historical and archeological values. These superb areas belong to you and are a part of your heritage as American citizens.

The National Park Service has the responsibility of preserving the Parks and Monuments in their natural, unspoiled condition and of making them available for your enjoyment in such a manner as to leave them unimpaired for the enjoyment and inspiration of future generations. In order to achieve this high purpose, such destructive activities as woodcutting, hunting, grazing, mining and even flower-picking are prohibited. We hope you will join with us in protecting Arches National Monument by "taking only pictures and inspiration and leaving only footprints and goodwill."

The men in the uniform of the National Park Service are here to serve you and will welcome the opportunity to make your stay at Arches more enjoyable.

INTRODUCTION

The Cove Trail, starting from this point, is an easy ¼-mile walk leading to Double Arch and Parade of the Elephants. If you wish, you may continue on to the North and South Windows and Turret Arch.

The numbered stakes along the trail correspond to the numbered paragraphs in this booklet which give information on the features of interest along the way.

The first part of the trail is steep in a few places so it is advisable to wear rubber soled shoes with low heels.

THE COVE TRAIL

Stake No. 1. WAVYLEAF OAK—*(Quercus undulata)*

This small Oak is commonly found growing in sandy soils of the Southwest. Due to its widespread branching habit it is a most efficient binder of sandy soil. Ordinarily this shrub is from 5 to 6 feet high, but in moist protected locations it may reach a height of 13 feet. The Indians of Utah are reported to have used the acorns of this Oak for food.

Stake No. 2. SKUNKBUSH SUMAC—*(Rhus trilobata)*

Just take a sniff of the leaves of this plant and the reason for the name Skunkbush will be readily apparent. This plant is sometimes called Squawbush and it is a close relative of Poison Ivy but it is not poisonous. The pliable stems have been used in basketry by Indians and the reddish berries were eaten and used as a mordant in dyes. Birds and wild animals also relish the berries.

The clusters of small yellow flowers may be seen between March and June—usually before the leaves appear.

Stake No. 3. PINYON PINE—*(Pinus edulis)*

Common throughout the Southwest, this tree sometimes forms extensive stands, usually in company with various species of Juniper. Such forests are often called pygmy forests, as the trees are usually small and gnarled. The exceptionally large seeds have long been an important food of Southwestern Indians and are now widely sold commercially. Indians use the resin of Pinyon Pines (Apache) to waterproof baskets and to cement turquoise stones in their jewelry (Navajo).

The Pinyon Pine is one of the main indicator plants of the Upper Sonoran Life Zone, so named because of its climatic resemblance to the highlands of Sonora, Mexico. A person familiar with Southwestern vegetation can usually guess within

1,000 feet the elevation of any given area just by looking at the plants. If he sees the Pinyon Pine he knows that the elevation must be somewhere between 4,500 and 6,500 feet for it is only at this elevation that conditions are favorable for the growth of this tree. Other trees and shrubs also indicate the elevation, such as the Creosote Bush which is usually common at an elevation of about 2,000-3,000 feet where the climate is hot and dry. At about 7,000 feet you usually find Ponderosa Pine and still higher are the Firs and Spruces, so you see that plants are a natural altimeter and with a little practice you should be able to read this instrument of nature.

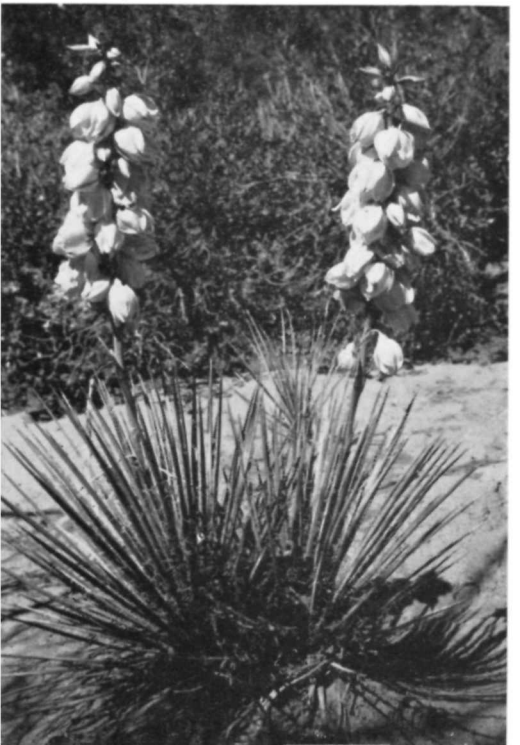
Stake No. 4. HARRIMAN YUCCA—*(Yucca harrimanae)*

This plant is a member of the Lily Family as may be seen from its white, waxy flowers which appear in May and June. The various kinds of Yuccas have long been important to the Indians who used the fleshy fruits and buds for food, the fiber from the leaves for making ropes, mats, baskets and sandals. From the roots they made soap.

Stake No. 5. SINGLELEAF ASH—*(Fraxinus anomala)*

An unusual Ash in that its leaves are usually single while those of other Ashes are composed of several leaflets. Most Ashes are large trees often planted for shade along city streets and in parks; however, the Singleleaf Ash would be of little use in this respect for it rarely reaches a height of 20 feet. It is a member of the Olive Family and is related to the garden Lilacs and Privet.

Harriman Yucca in bloom



Stake No. 6. WHIPPLE FISH HOOK CACTUS — *(Sclerocactus whipplei)*

Cactuses such as this are well adapted for life in the dry Great Basin Desert in which Arches is located. Water is stored in the succulent tissue within the plant, thus enabling it to survive periods of dryness, while the thin outer skin on the plant prevents the loss of moisture through evaporation.

This Cactus is found from southern Utah to western Colorado and south to northeastern Arizona at elevations from 5,000-

Prickly Pear in bloom

7,000 feet. Its greenish-yellow to purplish flowers may usually be seen during June.

Stake No. 7. BLACKBRUSH—*(Coleogyne ramosissima)*

During May this scrubby little bush, a member of the Rose Family, is covered with small, yellow flowers. It may form extensive, nearly pure stands on well-drained, gravelly soils. The plants are browsed by sheep and goats, to a lesser extent by cattle, and they withstand heavy browsing successfully.

Stake No. 8. PRICKLY PEAR CACTUS—*(Opuntia hystricina)*

Various kinds of Prickly Pears are found in abundance throughout the warm, dry portions of the Southwest. They have long been utilized by Indians who eat the fleshy fruits. These plants may spread tremendously and become pests on overgrazed land. However, at times they may serve as an emergency feed for cattle after the spines are burned off.

The fruits, seeds, and stems of these thorny succulents are eaten by at least 44 kinds of wild animals ranging from Deer to Ground Squirrels. Apparently these animals have mastered the art of eating a Prickly Pear dinner without injury from the thorns. Not only is this cactus valuable as food, but its succulent stems are also an important source of water for desert dwelling rodents.

Stake No. 9. GREEN EPHEDRA—*(Ephedra viridis)*

Sometimes known as Mormon-Tea or Brigham-Tea, this

apparently leafless plant with cone-like flowers is rather closely akin to the Pine Family. Early settlers in the Southwest made a beverage from the dried stems and flowers which was highly esteemed medicinally. The drug ephedrine, commonly used as an astringent and as a mild substitute for adrenalin, is obtained from another species of *Ephedra* found in China.

During winter, when better forage is lacking, these plants are valuable browse for livestock. Bighorn Sheep make up a substantial part of their diet from the twigs and sparse foliage of Mormon-Tea.

This odd-looking plant illustrates another adaptation of plants to desert conditions. Due to its lack of leaves very little water is lost through evaporation, and moisture can be stored up within the plant tissues.

Stake No. 10. SAND SAGEBRUSH—*(Artemisia filifolia)*

This small, branched shrub is often common on loose, sandy soil between elevations of 4,000 to 6,000 feet. Many species of Sagebrush are found throughout the west, but perhaps the best-known is Big Sagebrush *(Artemisia tridentata)*, the so-called Purple Sage mentioned so prominently in the novels written by Zane Gray.

Sand Sagebrush and other species furnish cover for many of the smaller animals and the foliage, flower clusters and twigs make up an important part of the diet of Antelope, Mule Deer and Bighorn Sheep. This species was also used medicinally by Indians and early white settlers.

Stake No. 11. GALLETA GRASS—*(Hilaria jamesi)*

The great abundance of this grass throughout the Southwest and its high palatability make it one of our most important forage grasses. It is common on sandy plains where its fibrous root system helps to bind the loose soil and prevent erosion. The Hopi (HOH-pee) Indians of northern Arizona use Galleta Grass as a fill in basketry coils and in making ceremonial articles.

Stake No. 12. NEEDLE-AND-THREAD GRASS—*(Stipa comata)*

This grass gets its common name from the sharp-pointed grain and long, thread-like bristle which arises from its summit, resembling a threaded needle. Because of this arrangement the grass is able to plant its own seeds. The lower part of the bristle is strongly twisted and when wet it untwists and when dry it winds up again. This action drills the seed into the ground and the stiff hairs on the seed tend to hold the grain in the soil.

Stake No. 13. RABBITBRUSH—*(Chrysothamnus nauseosus)*

As its name indicates, this plant is valuable to wildlife, particularly rabbits. The White-tailed Jackrabbit is reported to make up about 25% of its diet from the foliage and twigs of the Rabbitbrush. It is also valuable to man, as the Hopi use the plant for making wind breaks, arrows, and wicker work. A yellow dye may be extracted from the flowers, and a green dye from the inner bark. The sap of some species yields a fair grade of rubber, but not in commercial quantities. In the late summer the Rabbitbrush is covered with a mass of bright yellow blossoms.

Stake No. 14. INDIAN RICEGRASS—*(Oryzopsis hymenoides)*

Named for its large, meaty seeds, this grass was an important food item of some Indians, who ground the seeds into flour for bread. In this area it is one of the most abundant of the desert grasses.

Stake No. 15. CLIFFROSE—*(Cowania stansburiana)*

A member of the Rose Family, this shrub has very showy, creamy white blossoms in the spring which are exceedingly fragrant. Indians of Utah and Nevada used braided strips of the inner bark for clothing, sandals, rope and mats. Although bitter to the taste, Cliffrose is one of the most important winter browse for deer.

Stake No. 16. GEOLOGY

From this point you can clearly see the three major layers of rocks exposed in this part of the Monument. The light buff-colored layer of rock which is relatively thick and extends

Rock layers as seen from Cove Trail: N—Navajo Sandstone, C—Carmel Formation, E—Entrada Sandstone

from the desert floor to the layer of red rock is called the Navajo Sandstone. It consists of grains of windblown sand and was once a great sandy desert somewhat similar to the present-day Sahara. Look closely and you can see the wavy swirls in the rock showing how the sand was deposited on the ancient dunes.

The muddy, red layer above the Navajo is called the Carmel formation. The wavy, twisted bedding and the type of rock suggest that the material making up the Carmel Formation was deposited beneath the surface of an ancient body of water. This layer extends to about the middle of the formed and forming arches.

The last and thickest of the three rock layers is the orange to reddish-buff Entrada Sandstone which forms the upper part of the sheer cliff you see from this point. Most of the arches, windows, pinnacles, spires and fins occur in this layer.

Stake No. 17. SNAKEWEED—*(Gutierrezia sarothrae)*

On land that has been subjected to fire, over-grazing, and erosion you can expect to find Snakeweed in abundance. The plants are useless and are not even of much value in retarding soil erosion. Much of the range land in the Southwest has been impaired by over-grazing and the resultant invasion of Snakeweed. In the Monument, where grazing is prohibited, the plant retains a normal relationship with other native species and does not become a pest.

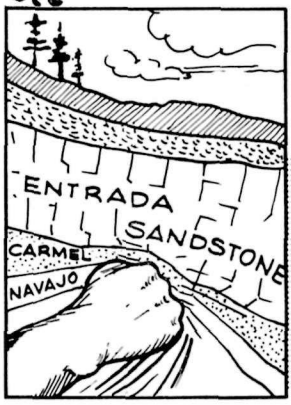
Stake No. 18. UTAH SERVICE BERRY—*(Amelanchier utahensis)*

In May the Serviceberry bears clusters of white, five-petaled flowers making the shrub quite attractive. The apple-like fruits ripen dry and yellow. They are inspid to taste; however, in earlier days, the Indians ate them fresh or dried. Birds and other animals are particularly fond of the fruits and the twigs and foliage are an important food for Mule Deer.

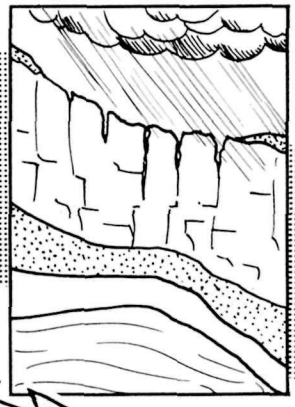
Stake No. 19. UTAH JUNIPER—*(Juniperus utahensis)*

This is one of the most common trees on the dry plateau areas of Utah. Its fleshy, cone-like berries are eaten by birds and some mammals, and, because of its resistance to decay, the wood is much used for fenceposts. The trees are commonly called Cedars, but no true Cedars are native to North America. The bluish berries are eaten greedily by birds and other wild animals and they were formerly used as food by Indians in Arizona.

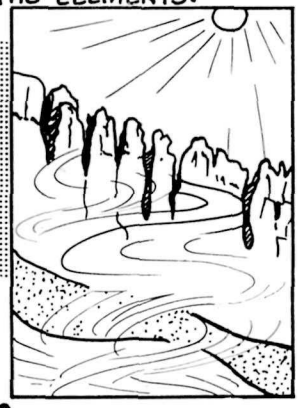
HOW the FINS, PINNACLES and BALANCED ROCKS are FORMED

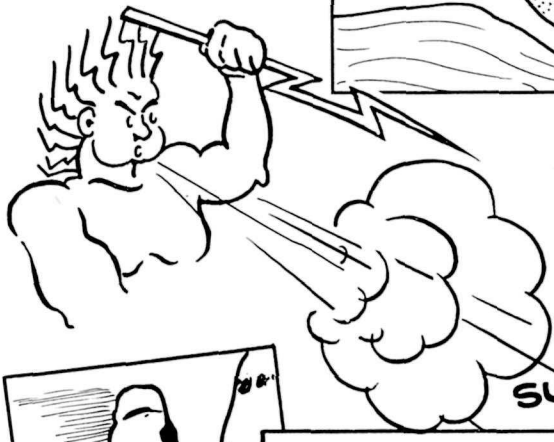


1. STRESSES, AS FROM THE BLOW OF A GIANT HAND, CAUSE CRACKS IN THE UNDERLYING LAYERS of ROCK.



2. THE ROCKS ON TOP ARE REMOVED BY EROSION, EXPOSING THE CRACKED SANDSTONE TO THE ELEMENTS.





3. CONTINUED WEATHERING ALONG THE CRACKS WEARS AWAY THE ROCK TO PRODUCE THINNING FINS & OTHER FORMATIONS

SUCH AS:

Stake No. 20. HOW DO PLANTS GROW ON SOLID ROCK?

You may have asked yourself this question as you noticed different plants growing on rock surfaces along the trail. This clump of plants on the slickrock of the Navajo Sandstone provides an answer to the question. The small black and yellow splotches on the rock are actually primitive plants called Lichens which are able to survive on bare rock. These tiny plants which actually consist of two plants, an alga and a fungus living together, produce a weak acid which slowly breaks down the rock and aids in the accumulation of soil. When sufficient soil is present, mosses, ferns and grasses start to grow and eventually shrubs such as the Mountain Mahogany that you see here are able to exist. Finally trees such as the Pinyon Pine will become established and the breaking down of the rock will continue until it is reduced to soil.

Stake No. 21. ARCH IN THE MAKING

Just above you, in the red cliff of Entrada Sandstone, you will see a small hole which has completely pierced the rock and represents one of the stages in the formation of an arch. There are many vertical cracks in the Entrada layer which are enlarged by wind, running water, and freezing and thawing until small canyons are formed. This eventually results in the formation of high vertical rock slabs, called fins, varying in thickness from a few feet to several hundred feet. The sides of these fins continue to be worn away until the rock is worn completely through and a small hole is formed. This hole continues to enlarge until, at long last, we have a full-sized arch. Look closely and you will see a small rock on the left hand side of the hole that is just about ready to fall out.

If you find this hard to believe, just drop back for a visit perhaps a thousand years or more from now, and in place of the small hole you see today, there will be a fully-formed and impressive arch.

Stake No. 22. This stake marks the end of the Cove Trail. Continue on for another 500 feet or so and you will see Double Arch and Parade of the Elephants. An additional 5-minute walk will take you to the North and South Windows and Turret Arch.

Please return this booklet before you leave or you may purchase it by dropping ten cents in the box at the start of the trail.

1st. Ed. 7-52—5M

Arches National Monument, a unit of the National Park System, is one of the 25 National Monuments administered by the General Superintendent, Southwestern National Monuments, National Park Service, Department of the Interior, Santa Fe, New Mexico.

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, Santa Fe, New Mexico

IN COLORADO:	Great Sand Dunes National Monument, Box 60, Alamosa
IN UTAH:	Arches National Monument, Moab
	Natural Bridges National Monument (c/o Arches)
	Rainbow Bridge National Monument (c/o Navajo)
IN NEW MEXICO:	Aztec Ruins National Monument, Aztec
	Bandelier National Monument, Santa Fe
	Capulin Mountain National Monument, Capulin
	Chaco Canyon National Monument, Bloomfield
	El Morro National Monument, El Morro
	Gila Cliff Dwellings National Monument (c/o Gen'l Supt.)
	Gran Quivira National Monument, Gran Quivira
	White Sands National Monument, Box 231, Alamogordo
IN ARIZONA:	Canyon de Chelly National Monument, Chinle
	Casa Grande National Monument, Coolidge
	Chiricahua National Monument, Dos Cabezas
	Montezuma Castle National Monument, Camp Verde
	Navajo National Monument, Tonalea
	Organ Pipe Cactus National Monument, Ajo
	Saguaro National Monument, Rt. 8, Box 520, Tucson
	Sunset Crater National Monument (c/o 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
	Petrified Forest National Monument, Holbrook
	Pipe Spring National Monument, Moccasin
IN ARKANSAS:	Hot Springs National Park, Hot Springs
IN COLORADO:	Black Canyon of the Gunnison National Monument (c/o Mesa Verde)
	Colorado National Monument, Fruita
	Mesa Verde National Park
IN NEVADA:	Lake Mead National Recreation Area, Boulder City
	Lehman Caves National Monument, Baker
IN NEW MEXICO:	Carlsbad Caverns National Park, Carlsbad
IN OKLAHOMA:	Platt National Park, Sulphur
IN TEXAS:	Big Bend National Park
IN UTAH:	Bryce Canyon National Park, Springdale
	Capitol Reef National Monument (c/o Zion)
	Cedar Breaks National Monument (c/o Zion)
	Timpanogos Cave National Monument, Pleasant Grove
	Zion National Monument (c/o Zion)
	Zion National Park, Springdale

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Box 2011 V, Santa Fe, New Mexico

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The Association lists for sale hundreds of 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 Arches 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.

ARCHES NATIONAL MONUMENT, UTAH

SWMA SLIDES

A-35 The Balanced Rock with the snow-capped La Sal Mountains in background
A-36 Double Arch
A-37 Parade of the Elephants
A-38 Skyline Arch
A-39 Delicate Arch framing South Window in the background
A-40 Delicate Arch framing snow-capped La Sal Mountains
N-1 Adam and Eve in sandstone, Windows Section
N-2 Balanced Rock, Windows Section
N-3 Parade of the Elephants, Windows Section
N-4 Cove of Caves, Windows Section
N-6 Water markings on Double Arch, Windows Section
N-7 Turret Arch, Windows Section
N-8 Devil's Golf Ball, Devil's Garden
N-9 Landscape Arch, span 290 feet, 190 feet high, Devil's Garden
N-10 Double-O Arch, Devil's Garden
N-11 Fins and Pinnacles, Devil's Garden
N-12 Delicate Arch Setting—on edge of Wintercamp Canyon
N-14 Delicate Arch and blowout basin
N-15 Delicate Arch framed by sandstone window
N-16 Closeup, Delicate Arch, giving scale and character
N-17 Delicate Arch, with La Sal mountain background
N-18 Courthouse Towers Area, avenue of stone towers
N-19 Courthouse Towers, Entrada sandstone fin
N-20 Wind and water erosion produce strange sandstone shapes
N-21 Skyline view of Balanced Rocks
N-22 Organ Rock viewed down Park Avenue, Courthouse Towers
N-23 Organ Rock, Courthouse Towers
N-32 Alpine meadows amidst fir and spruce,

SOUTHEASTERN UTAH — SWMA SLIDES

N-24 Mexican Hat, a petrified sombrero
N-25 Goose necks of the San Juan River
N-26 Ruby Geyser, near Green River, Utah
N-27 Colorful mineral deposit at base of Ruby Geyser, Green River, Utah
N-28 Fisher Towers, their geologic setting, near Moab, Utah
N-29—Giant Towers, Fisher Towers, near Moab, Utah
N-30 A castle of sandstone, Fisher Towers, near Moab, Utah
N-31 Overlooking Moab, Utah, valley 4,000 ft. elevation backed by La Sal Mountains, 13,000 ft. elevation
N-32 Alpine meadow amidst fir and spruce, La Sal Mountains, near Moab, Utah
N-33 Alpine scene through Engelmann Spruce, La Sal Mountains, near Moab, Utah
N-35 Dead Horse Point, sheer cliffs on the Colorado River, near Moab, Utah
N-35 Colorful Colorado River Canyon as seen from Dead Horse Point, near Moab, Utah

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