ISLAND TRAIL

WALNUT CANYON NATIONAL MONUMENT
ARIZONA

Price: 50¢ if you take this booklet home.

There are few records of poisonous snakes at Walnut Canyon. In summer the Arizona mountain kingsnake with colorful black, white and orange bands may be seen. It is harmless, and should not be disturbed. Here, all animals are protected and are to be left in their natural state.

Please join us in protecting your safety and Walnut Canyon's irreplaceable resources. Your cooperation in following a few basic rules will insure your safety and future preservation of the area's Indian ruins and their beautiful natural setting:

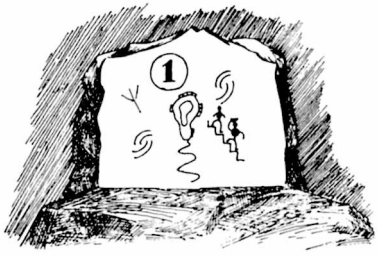
* Please leave all park resources as you find them. Picking flowers, collecting anything, throwing rocks or disturbing wildlife, prevents future visitors from enjoying the same experiences you enjoyed.
* For your safety, hike only on surfaced trails.
* If you smoke, please be careful. A carelessly dropped cigarette or match may start a very destructive fire.
* Pets are not permitted on trails. Please keep them in your vehicle or tied to it.

CAUTION

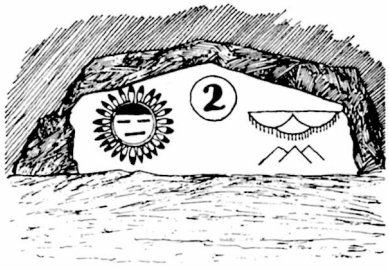
While visiting this park you'll encounter hazards not normal to your home surroundings. Please be alert, and insure your family's safety.

THE ISLAND TRAIL

There is nothing in this booklet which you MUST read. The numbers along the trail and in the booklet do not require reading of specific places. If you are in a hurry, or want just the highlights of the story, read only the **BOLDFACE** print. If you have more time and would like a more complete story, read the smaller print in addition to the boldface.



1 To help you enjoy a safe visit, please review the information on the inside front cover, before starting down the trail. The trail descends nearly 200 feet by several flights of steps to stop number 2. Go down carefully and take your time.



2 You may see birds catching updrafts to soar around you. They are free to view all movement: yours, the fox with her litter, the rabbit. Before you came birds viewed other persons — people called Pueblo Indians.

Pueblo Indians are identified by a combination of three culture traits: the construction of communal houses, the practice of agriculture, and making pottery. The three practices were part of the life of the people at Walnut Canyon. Archeologists call the Indians who lived here the Sinagua (see-NAH-wah) and place their occupation dur-

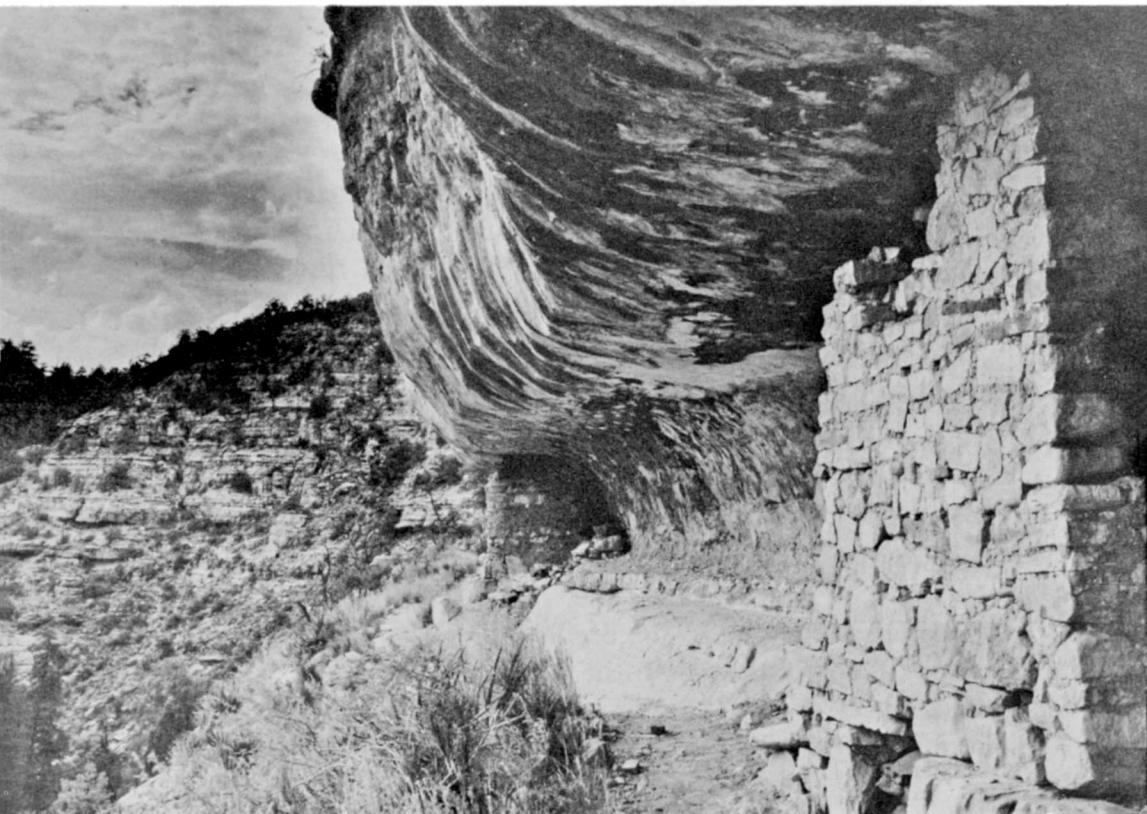
ing the period of A.D. 1120 to 1250. Probably all the rooms found in Walnut Canyon were not occupied at once, so the number of people living here is difficult to estimate. A maximum population in prehistoric time was probably 400 to 500 people.

3 When Flagstaff needed water for its growing population, town officials found a good supply in Walnut Creek and built a dam upstream in the early 1900's. The Sinagua would have understood the need.

Consider why your town is located where it is, and what things all people need to live. Many things brought Indians to this canyon: water, animals, sheltered ledges where a home could be built and fields where crops could grow.

A stream, probably 1.2 or 1.5 m (4 or 5 feet) deep, flowed in Walnut Canyon when the Indians came here - presumably

Sheltered ledges were ideal housing sites



year around. The canyon is about 122 m (400 feet) deep and the Indians lived both in the canyon as well as on the rim. It appears that the choice of homesites was guided mainly by availability of natural overhangs. The main canyon could be entered from side canyons which emerge nearly on the level where most of the cliffdwellings are found, so trails could be built to gain access to water, firewood, and farming fields. Earthquake fault lines also provided ways to get to and from the rim or canyon bottom.

4 More years ago than most minds can comprehend — 200 million years — this was an area of extensive sand dunes on the edge of a vast plain. The weight of a shallow sea which later covered the dunes, compressed them into sandstone, and at the bottom of the canyon (looking like gray pulled taffy candy) you see the fossil sand dunes in the Toroweap formation. The bottom of that shallow sea was fine silt and sea shells, which over the centuries became thicker and thicker deposits. As the sea drained away it left this floor, compressed into what you see as stair-like ledges of Kaibab Limestone.

5 As time passed, mountains rose, streams drained and cut the land, and canyons began to form. Walnut Creek cut into the soft limestone layers; then the sandstone was reached and exposed. Here the creek met

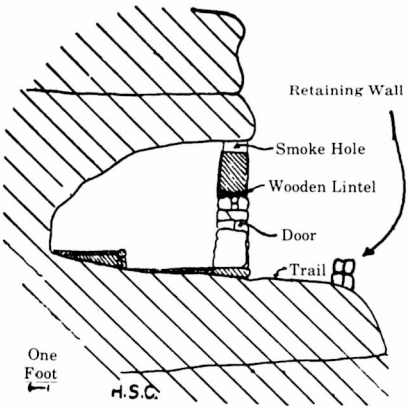
harder stone, and the canyon narrowed. Ledges were formed in the softer limestone by erosion forces of wind, water and rock splitting from ice freezing and thawing.

6 **The many plant varieties of this canyon were quite interesting and important to early Indians, as they are to us today. Oak, Ponderosa pine and Douglas-fir growth under which you have walked began years ago. Ponderosa has needles in bunches of three, 13 to 28 cm (5 to 11 inches) long. Douglas-fir grows where it is moist and cool, usually above 2134 m (7,000 feet) elevation; here you see them on north facing slopes, where snow and other moisture last longer. They have harder and stronger wood than pine, with different needles and cones. These tall trees are sacred to Pueblo Indians, who believe the needle colors foretell growing conditions.**

7 **Not all ledges were used for homesites. No doubt Indian children played here while mothers, aunts and grandmothers ground corn and wove blankets. Many activities took place outdoors, so there were always adults around to watch the toddlers.**

Looking across the canyon, large rock falls can be seen in different places. When roots of a tree go down into soil and rocks, cracks are followed in a search for water. Rain and snow seep into these cracks; water freezing then melting, and growing tree roots, widen them. Someday a piece of rock in the canyon wall will fall with a loud crash. How many houses must have been crushed during the 800 years since they were built! Still these homes will no doubt be standing long after our subdivisions have gone into ruin.

Once the family had selected a cave, very little was done to enlarge it. Most of the ledges are shallow and extend back into the rock no more than 3 to 3.7 m (10 to 12 feet). The Indians closed off the front and partitioned rooms with masonry walls. Chunks of limestone were laid up to form a double wall with the straight faces turned to the outside and the gaps filled with rubble. Clay and mud were used



Section of cliffdwelling

for both mortar and plaster. A layer of clay is found about 30 m (100 feet) above the stream bed; when pulverized and mixed with water the clay produces a satisfactory mortar.

The rooms vary in size with an *average* of 7.2 sq. m (80 square feet) of floor space for each. The outer wall was set back far enough under the ledge so that rain water running down the cliff would drip outside the wall. Floors were layers of hardpacked clay, which produced a fairly level surface; some rooms had floors with as many as 10 thin layers, none exceeding 9.53 mm (three-eighths of an inch) in thickness. Floors were often on two levels, with a slightly raised platform or bench in the rear of the room.

Nearly every room group also has evidence of a canyon-edge retaining wall. This would have provided necessary sheltered work space, as well as a protected play area for young children.

Little wood was used in construction. There were poles to support the top of the doors, and apparently a few pegs set into the walls for hanging clothing or utensils.

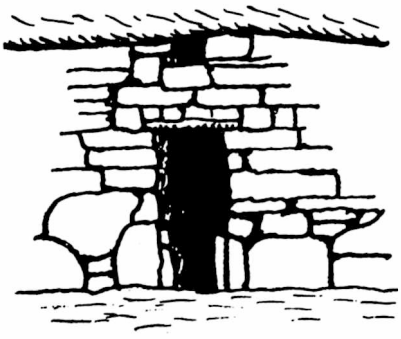
Construction tools included stone axes, hammers, and picks. In those tools which had a handle, a groove was made three-fourths of the way around the stone to hold a stick bent in the shape of a 'J' and lashed to form the handle.

8 **As you walk the trail, you move from one plant community into a different one. The ferns, firs, and oak in the shady area need coolness and more moisture than do the juniper, pinyon pine and other sun-loving plants that are found as you move into the warmer parts of the Trail. Perhaps you'll be interested in making a few comparisons. How might you use the wide variety of plants if you lived in these homes?**

Wild fruits in the park include grapes, blueberry, elder and currant. Also wild potato is sometimes found in the canyon bottom; the tubers are small, seldom as large as small cherries. Tea may be made from Mormon tea plants, and several annual plants can be boiled and eaten as greens; these include spider flower or beeplant, lambsquarter, and several types of mustard.

9 **You are coming to ruins with fairly complete walls and doors. If you look for dark mud, particularly around door openings, you will see where the National Park Service has stabilized the most fragile walls. Soot on the walls and ceilings, often so caked it does not seem real, built up over the years from pitchy pine torches or fire; the light must have been bright in the small, dark rooms. A woman worked many hours to gather the clay and plaster the walls of her home. Some hand prints can still be seen, having survived since before the time of Columbus. (Please do not touch them, as the dry plaster crumbles easily.)**

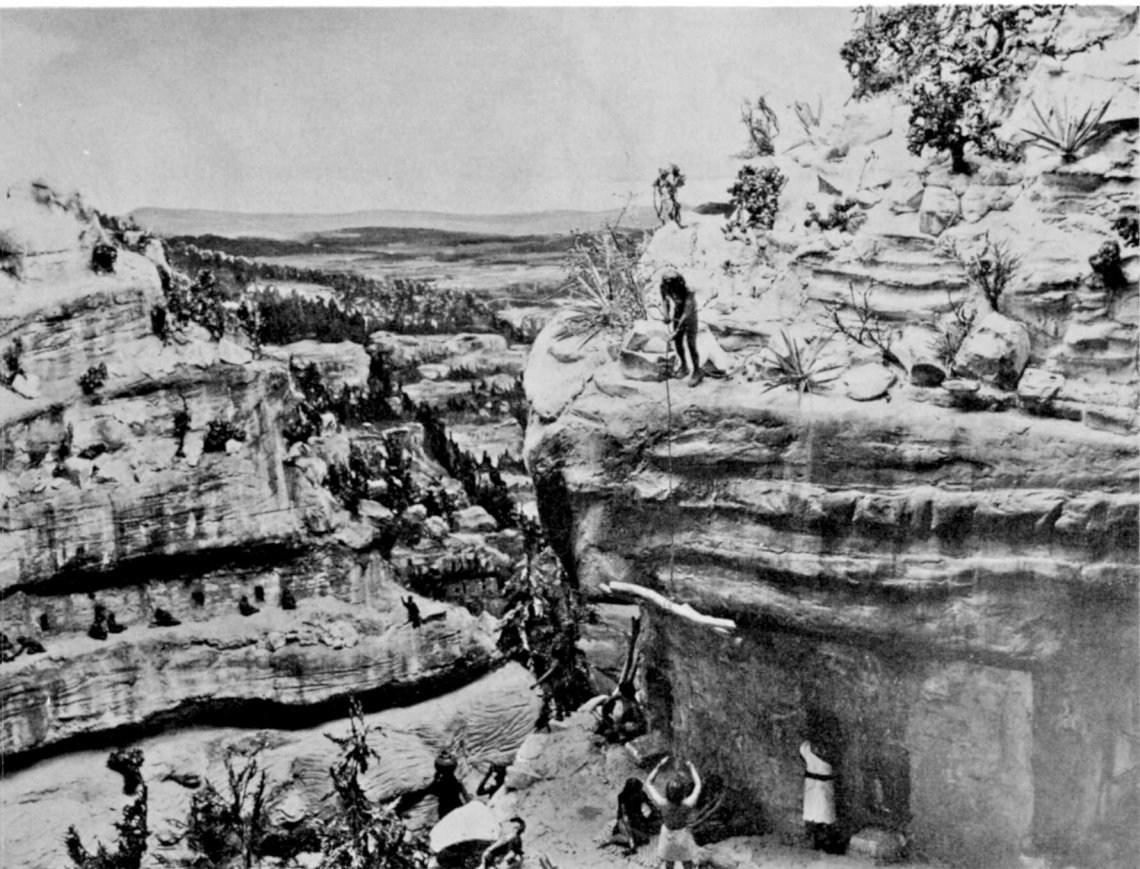
Door of a cliffdwelling showing smoke hole

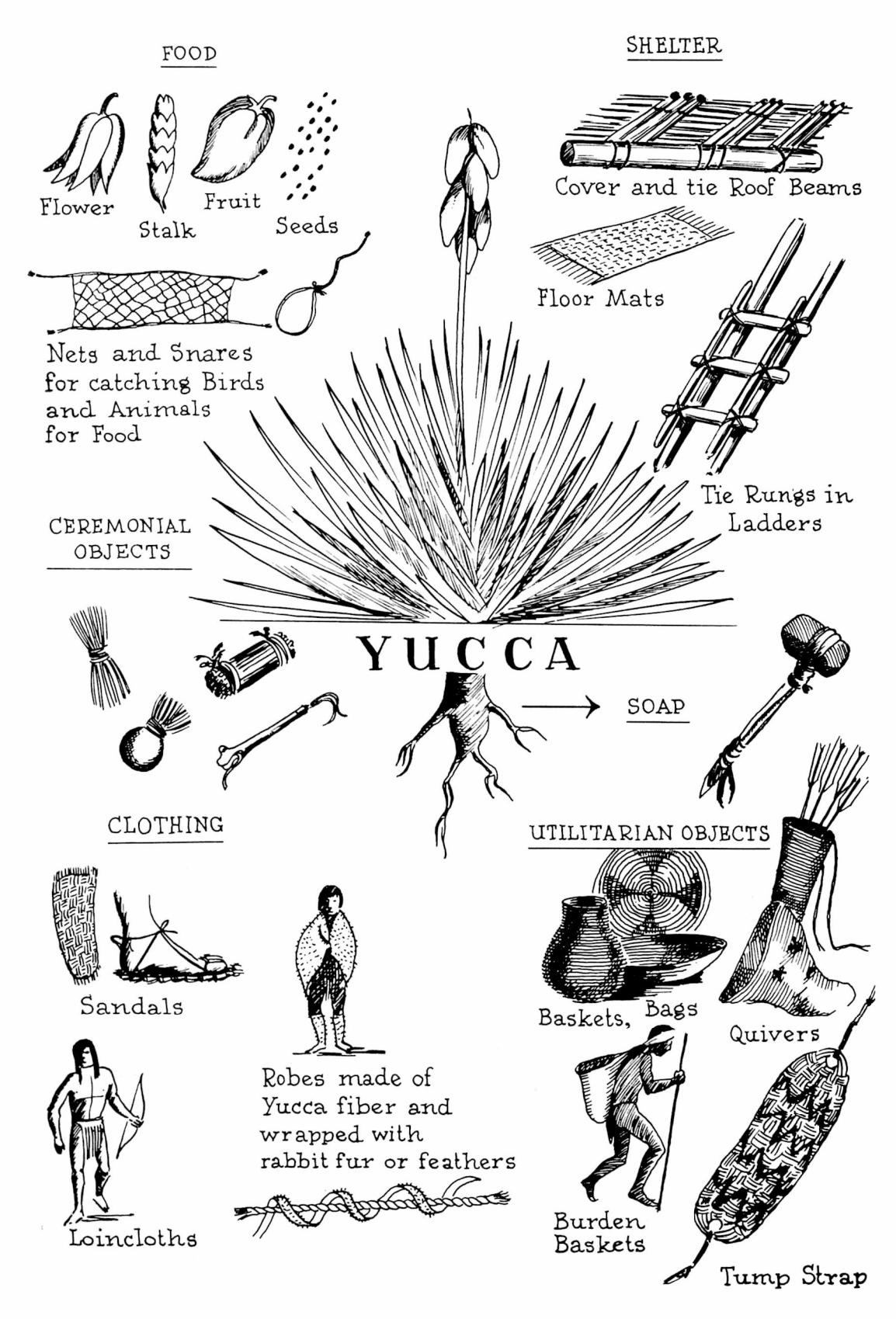


Are you too tall to enter these doors? In A.D. 1150 the average man living here was 1 65 m (5 feet 6 inches) tall, making it necessary even for him to bend over as

he came inside. But the small doors were much easier to cover with skins and fur blankets; air could enter from the bottom of the doorway, circle past the cooking fire, and bring the smoke out the small hole above the door.

10 Have you already touched the sharp spikes on the blue yucca? Then you realize what an efficient needle it would make, and what strong fibers the leaf has. Many of the Indians' daily needs were filled by this hardy plant. There is also a delicate moth which depends on the yucca for its life. In the "web of life" this moth keeps the yucca alive by pollinating its seeds; the plant in turn provides food for the moth's young. Perhaps more things than we realize are as close in harmony. (See next full page of uses of yucca.)




FOOD
SHELTER
Flower
Stalk
Fruit
Seeds
Cover and tie Roof Beams
Floor Mats
Nets and Snares for catching Birds and Animals for Food
Tie Rungs in Ladders
CEREMONIAL OBJECTS
YUCCA
SOAP
CLOTHING
UTILITARIAN OBJECTS
Sandals
Baskets, Bags
Quivers
Robes made of Yucca fiber and wrapped with rabbit fur or feathers
Loincloths
Burden Baskets
Tump Strap

11 **No doubt the simple tools used for farming and grinding corn made work hard and backbreaking. But in return for their efforts the land gave the people life. When the rains didn't come, and crops failed, or variety in meals was needed, rabbit, deer, pronghorn[1], squirrel, and wild plants were available, and often meant survival through a time of need.**

The cliffdwellers were farmers, as shown by the remains of beans, squash, and the corn cobs found in their homes. Sunflower seeds were also found, but whether they were cultivated or gathered from wild plants is not known. The Indians depended on rainfall to water their crops, and did not build irrigation ditches as did their neighbors in the Verde Valley. The average annual rainfall here is about 50 cm (20 inches); to help the crops, rain had to come mostly in summer.

Soil near the canyon rim is generally too shallow and rocky to produce good crops, but some soil deep enough to hold moisture can be found. The Indians also built small dams across arroyos near the canyon, causing soil to build up in terraces behind the dams; there seeds could be planted with a sharp stick and tended with a stone hoe. The Sinagua had summer camps where watchers maintained vigil to keep animals away from the precious plants. What a struggle it must have been to raise crops without benefit of steel tools, fences, insecticides and other "advantages" we now take for granted.

The Sinagua were farming at elevations where corn, beans and squash may be expected to mature in a growing season of 115 days. Since they had no weather bureau, they probably timed their plantings according to development seen in native plants.

Firepits are found in most dwellings, usually directly in front of the door, and 1.2 to 1.5 m (4 or 5 feet) inside the rooms. Fires were kindled with a wooden spindle rotated on a hearthstick until friction ignited tinder. The spindle might have been made from barberry, the hearthstick from yucca, and the tinder from shredded juniper bark.

1 Commonly known in Arizona as pronghorn antelope, although belonging to a different family of mammals.

Walnut Canyon's early inhabitants used clay pots for cooking. These were placed directly over the fire and could withstand considerable heat. Some cooking may have been done on a flat rock used as a griddle, and other foods could have been baked or broiled over coals. There was very little seasoning available, although salt could be obtained from the Verde Valley, 105 km (65 miles) to the south. Salt was no doubt eagerly sought, and thus likely an item of barter; it would be used sparingly, not as a part of the daily diet. For sweetening they may have used agave (century plant), cactus fruits or dried squash.

12 **Many animals live here; birds can often be seen and heard, especially when it is quiet in the canyon. A canyon wren nests in the cliff wall and turkey vultures often soar on the winds. Lizards, squirrels, rabbits, even foxes are found among the rocks. Some are here all year; others are seasonal residents. Which animals would you think are permanent residents?**

Among the trash heaps left by the Sinagua, archeologists find bones of deer, pronghorn, turkey, rabbit, and various birds. The bow and arrow was the principal hunting weapon, although other wooden weapons may have been used.

Your visit to Walnut Canyon can give you only a hint of the great variety of wildlife in this area. Animals found here and considered good food by living Indians include coyote, wolf, fox, dog, bobcat, porcupine, badger, squirrel, gopher, woodrat, deer, and chipmunks. Occasionally elk, bear and mountain lion are also seen. The birds you may see, especially during spring and summer, include turkey vulture, violetgreen swallow, raven, jays, juncos, nuthatches, goldfinches, crossbills, sparrows, and swifts.

13 Vandals have always been a problem where historic buildings are found, and these rooms are no exception. We ask you to stay on the trail, and not disturb the ruins, so that you won't be hurt and so the ruins will survive. As you can see, the houses across the canyon are in good condition.

14 All around you are the homes of people long since departed from Walnut Canyon. At the most populous time this canyon must have resounded to the voices of several hundred people. It was a good life here, with nearly everything available that they needed. Why would they leave?

Drought and disease may have worked to displace the cliffdwellers. One likely cause of abandonment was drought. With only a slight decline in annual rainfall, or not enough rain in the growing season, the stream would have failed and food supplies would have been small, disrupting the entire

community. Constant planting may also have depleted the soil fertility — reducing food supplies further.

Tree-rings reveal 23 years of drought in the Southwest from A.D. 1276 to 1299; Walnut Canyon dwellers were gone by that time, perhaps forced out by earlier droughts of less duration.

Living in close quarters with poor sanitation also made disease a serious problem. The Sinagua suffered from teeth problems, arthritis, and other bone deforming diseases.

The cliffdwellers are not a vanished race, as their blood flows in the veins of living Pueblo Indians. Hopi legends indicate their ancestors lived in cliff homes and certainly the daily life was similar. Studies made of skeletons reveal that the Sinagua were short, stocky people, much like the Hopi; and the Hopi villages were begun at the time other parts of the Southwest were being deserted.

Barberry

15 **You may have noticed a bush which looks like holly, called barberry; other common names are "mahonia" and "algerita." It is used extensively by modern Indians, and presumably was widely used by prehistoric Indians as well. The wood is strong, making excellent arrowshafts and weaving tools; a bright yellow dye is made from the roots. Deer also find barberry a good winter food.**

16 **Have you felt that we could learn something from the people who once lived in this community? We build our cities on level land, where ordinarily crops would be planted. When we've paved all the fields, where will we grow our food? Are we as dependent as the Indians upon the basic elements of nature: air,**

Arizona walnut

Birchleaf cercocarpus

soil, water, and sunlight? If so, how will we replenish the sources of our needs?

17 A very hot fire with little smoke can be made from this plant. Birchleaf mountain-mahogany has many uses, including making combs from the wood, and the roots into a red dye for leather.

The Arizona black Walnut tree grows in isolated parts of this canyon. It normally does not grow above 1524 m (5,000 feet) — so it is most treasured here.

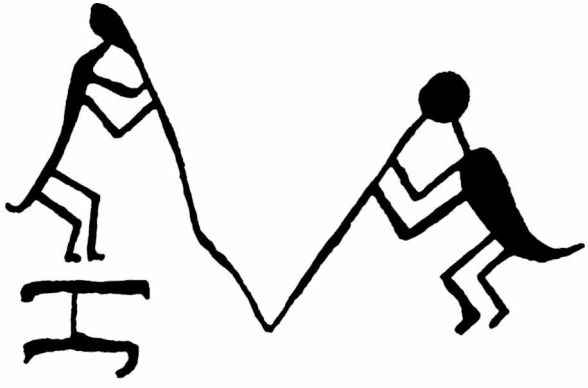
Painting by Jay Datus in the Walnut Canyon Visitor Center

In addition to pottery-making, these Indians did some weaving and basketmaking. They were acquainted with cotton textiles. Since cotton would not mature at this elevation, they had to trade for raw cotton or for the finished products. We do not know the full details of what style clothes were worn, but we are sure they adorned themselves with shell beads, pendants, armlets, paint of several colors, and jet buttons. Turquoise ornaments are found here, though the nearest sources known are many miles away. Shells were imported from points as distant as the Gulf of Lower California. The museum in the Visitor Center exhibits other prehistoric items obtained by trading.

Petroglyphs are relatively rare here, because of the absence of smooth stone into which the designs can be chipped. Local petroglyphs are mostly simple designs, except for one showing hump-backed flute players.

18 We come to the beginning of the end. The hardest part is yet ahead — a climb of nearly 61 m (200 feet) out of this slice of history and eternity. Won't you rest along the way as you climb? Pause, and enjoy the chance to reflect, to view, to be cooled by the breeze.

Petroglyph cut on the walls of Walnut Canyon, below the "Island." These cannot be seen from the trail



Although several centuries, some wars and a thousand inventions separate us from the world of prehistoric Sinagua Indians, not all that much has changed. Fewer of us till the soil, but we still build our homes and love our families. Amidst the concrete and noise we search for our roots—and our birthright: the wind in the trees and the bird's song.

* * * * * *

Walnut Canyon National Monument was established by presidential proclamation November 30, 1915 to protect the cliffdwellings. The ruins are of educational, ethnolog-

Looking up canyon from the "Island"

ical and archeological value, and the National Park Service preserves them as nearly as possible in their original state.

The cliffdwellings were known to early pioneers in this area, and in 1883 were visited by James Stevenson of the Smithsonian Institution. For many years the main road from Flagstaff to Winslow ran within a few yards of the canyon and thus brought many visitors, even in horse and buggy days. Careless digging, "pot hunting", became a popular pastime, and the Walnut Canyon ruins were almost destroyed by thoughtless people seeking relics. In the 1930s Dr. Harold S. Colton, founder of the Museum of Northern Arizona, made a survey of the cliffdwellings and located 120 sites with more than 400 rooms in Walnut Canyon.

If you are interested in the cause of conservation you can aline yourself with any of the numerous organizations concerned with current problems in conservation and pollution. Names and addresses of some of these organizations may be obtained at the information desk.

"Eat it up

Wear it out

Make it do

Do without."

An Old New England saying.

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