

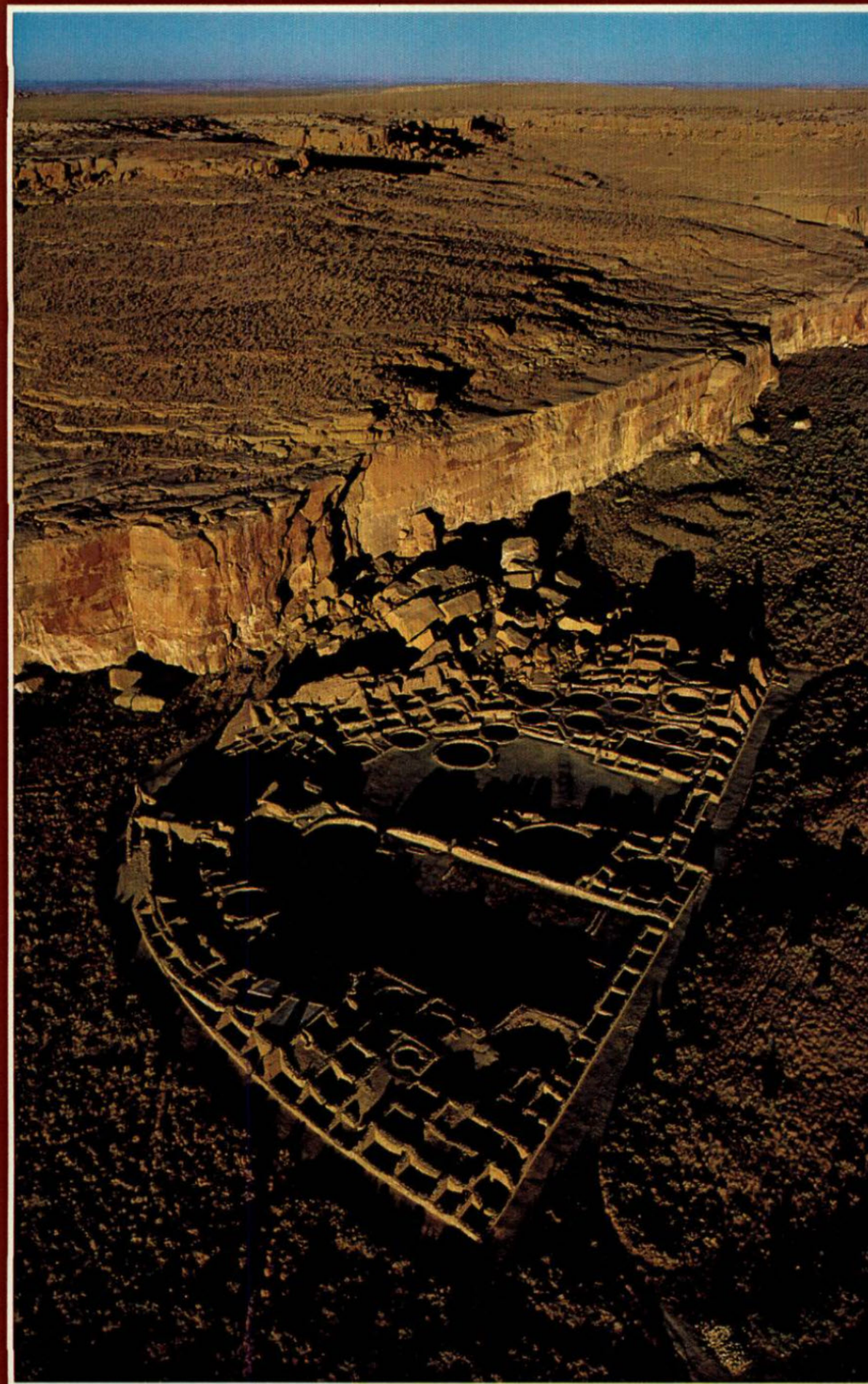
Magnificent ruins of 1,000-year-old Pueblo Bonito perch in the New Mexico sun as a painted maiden dances to bring rain. Coping with a harsh environment was a

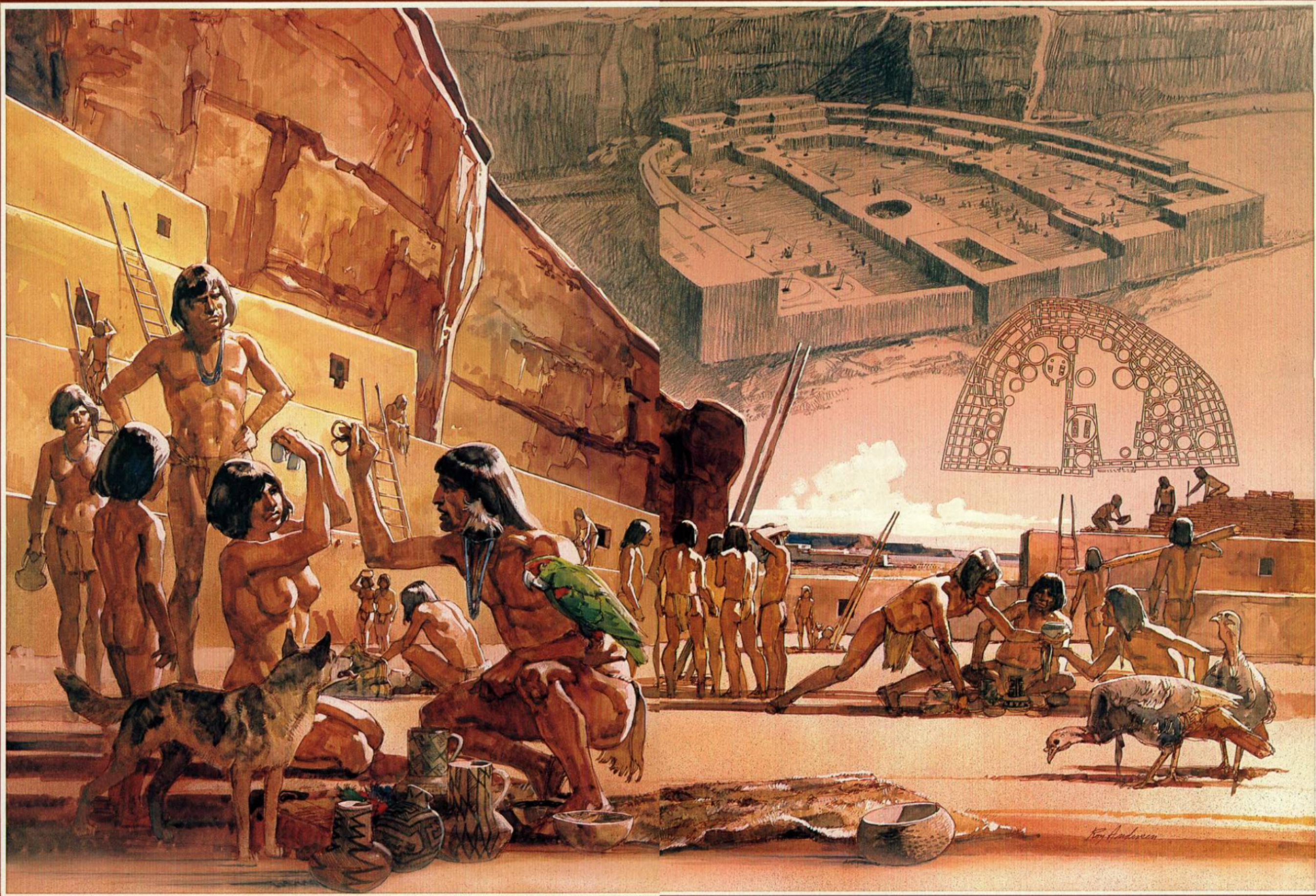
The Anasazi



KIVA MURAL, CA 1400, AT POTTERY MOUND, NEW MEXICO

FRANK C. HIBBEN (ABOVE); DAVID BRILL

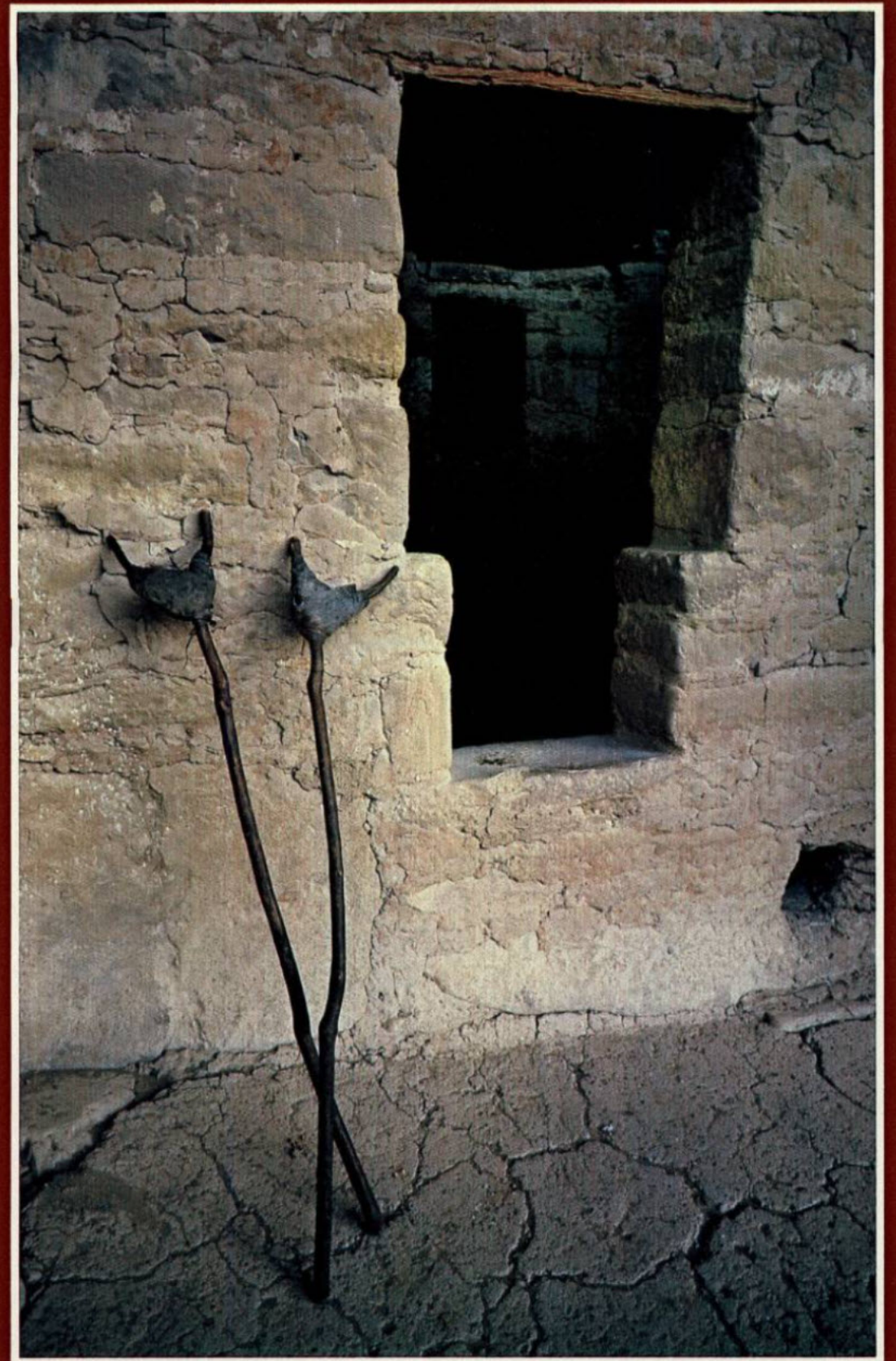
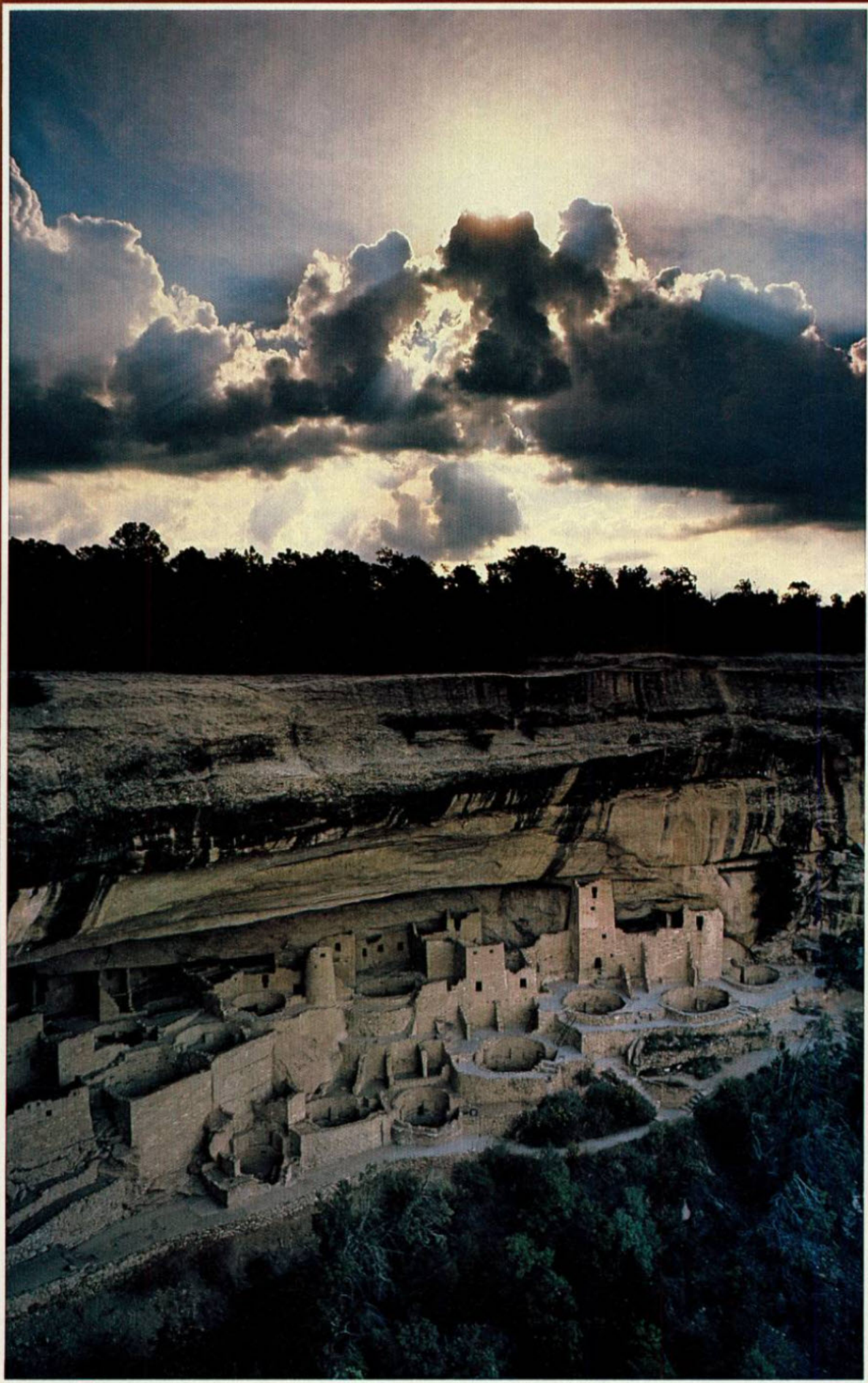




PAINTING BY ROY ANDERSEN

Turquoise pendants, shell bracelets, and pottery are the grist for trading in the vast marketplace of Pueblo

Bonito — beautiful village — centerpiece of the great Anasazi pueblos scattered through Chaco Canyon.



BOTH BY DEWITT JONES

The Anasazi legacy leaves questions: Why did the Mesa Verdeans of Colorado tuck their pueblos in lofty cliffs? Why the T-shaped doorways? Yet for a people plagued with arthritis, crutches provide their own answer.



DEWITT JONES

Epilogue of destruction in the book of the Anasazi, Homolovi II and companion sites near Winslow, Arizona,

abandoned 500 years ago, have been ravaged by pothunters with shovels, backhoes, and even bulldozers.

THE ANASAZI Riddles in the Ruins

RIDING into Chaco Canyon in 1877, photographer William Henry Jackson reined his mule and gazed ahead. From the parched canyon floor rose ruins of once magnificent buildings—desiccated husks of a long-vanished culture. Yet this northwest corner of New

Mexico Territory was bleak desert, home only to a handful of impoverished Navajo herdsmen.

Jackson carefully examined the time-gnawed masonry walls, perhaps the finest north of Mexico. Pacing off one of the largest structures, he did some mental arithmetic. This single building, he calculated, required hauling, shaping, and placing 30 million stones. With ten of these colossal structures visible, that would be . . .

By
THOMAS Y. CANBY
NATIONAL GEOGRAPHIC SENIOR WRITER

Photographs by
DEWITT JONES and
DAVID BRILL

Paintings by
ROY ANDERSEN

Before leaving, the celebrated "picture maker of the Old West" shot some photographs. Disaster! Defective film spoiled every exposure.

An earlier trip had also taken Jackson west, to Colorado. Word came that miners had discovered stone dwellings tucked in cliffs rising from the Mancos River to a great green tableland. Struggling upward, Jackson and a companion reveled in being the first white men to enter this haunting human aerie. This time his film was good, recording the first dramatic photographs of Mesa Verde's famous cliff houses.

On Jackson went, to Hovenweep, remote ruins with many stone towers straddling the Colorado-Utah line. He visited Canyon de Chelly in Arizona, a breathtaking gallery of cliff houses and rock art. Finally he reached the mesa-top homes of the Hopis, living

descendants of the mysterious ancients of the ruins (see article, pages 606-629). In his pilgrimages through the Four Corners area, Jackson traversed the heartland of the Anasazi. Their domain, larger than California, stretched from east of the Rio Grande west into Nevada, and from central New Mexico and Arizona north into Colorado and Utah (map, pages 566-7). Here, at about the time of Christ, hunter-gatherers were making the transition from nomadic life to a sedentary existence based primarily on growing corn. In their struggle to nurture this crop in a dry, unyielding land, the Anasazi lifted themselves to a cultural level unsurpassed by any other prehistoric Americans north of Mexico.

Compulsive builders, the Anasazi raised multifamily dwellings not equaled in size in the United States until the 1870s. Though lacking the wheel and beasts of burden, they laced their land with hundreds of miles of broad roads. To subsist by farming, they evolved ingenious water-control devices that fed larger populations than inhabit many of the same areas today.

Then they abandoned most of what they had built, leaving behind still another enigma to tantalize archaeologists.

For centuries their silent towns slept, until wandering Navajos occupied a large part of the Anasazi's land. Contemplating the brooding remains, the Navajos believed they were built by "alien ancient ones"—Anasazi in their Athapaskan tongue.

Because of the ruins' immense size and often excellent preservation, the Southwest has received as much archaeological attention as any other prehistoric place of comparable size on earth. A leader in this research has been the National Geographic Society, whose support of Anasazi archaeology traces back to the landmark excavations of Neil M. Judd in Chaco Canyon in the 1920s.

Yet such work only scratches the surface. More than 25,000 Anasazi sites have been identified in New Mexico alone. At least this many are known in Arizona, and thousands more in Colorado and Utah. Tens of thousands of sites doubtless await discovery. (See *The Southwest*, a double map supplement to this issue.)

Today, however, these ancient ruins face perils more dire than the eroding toll of time. Pothunters, seeking relics worth thousands of dollars on the black market, have plundered half the known remains, although stiff new laws reduce this vandalism. Immense deposits of natural gas, uranium, and strip-minable coal underlie the region. Many small but exquisite ruins that I visited soon will crumble before draglines gouging out coal for industries here and abroad.

Ironically this same economic force that threatens the remains provides the greatest impetus for their study. Archaeological conservation laws require surveys of jeopardized sites and excavation of those considered important. Further, some concerned energy companies carry their archaeological exploration far beyond the laws' requirements. As a result, research has burgeoned in energy regions of the West.

THE EARLY ANASAZI trod lightly on the land.

"Only a handful of sites tell us about their first settled villages," said Dr. W. James Judge, director of the Chaco Center, a National Park Service research facility at the University of New Mexico. "They made homesteads by clearing a shallow depression and roofing it with a canopy of brush and mud. Storage pits stood behind, and nearby they scattered trash. Among remains of game animals and wild plants, charred corn shows that these Anasazi had become part-time farmers."

Excavating these pit houses, archaeologists discovered that the occupants lacked pottery and instead used vessels of fine basketry, some woven so tightly that they may even have held water. Acknowledging their skills, scholars named these early Anasazi the Basketmakers.

After A.D. 500 the Basketmakers made three fateful acquisitions. Pottery arrived, probably from a southern people of the Mogollon culture, and it attained a cherished beauty (pages 593-605).

From a source still unknown they obtained the bow and arrow, and they developed the hafted ax. Simultaneously, agriculture grew in importance, based on corn, pumpkin-like squash, and the bean, which brought much needed protein to their diet.

With their lives thus enriched, the Basketmakers saw their population soar. Pit houses expanded into most niches of the southern Colorado Plateau, even into precipitous walls of the Grand Canyon, in the land of the western Kayenta Anasazi.

"One of their greatest enemies was fire," I learned from Al Lancaster, whose 50 years as a Southwest field excavator give him unique insights into the Anasazi. "A dwelling's fire pit was only about six feet beneath the pit-house ceiling, which bristled with logs and brush—real tinder. A large number of houses I dug had burned."

This bane of the Basketmakers has proved a boon to archaeologists. Flames that turned timbers and foodstuffs to charcoal also left them resistant to the bacteria of decay, and thus ideal for dating by the radiocarbon method. The fires also permanently fixed the magnetic alignment of iron in the heated clay, permitting scientists to date the events through archaeomagnetism.

Fire-damaged Anasazi roofs also spurred archaeological use of tree-ring dating, a



technology that gives the Southwest a unique chronological record. By identifying distinctive patterns of a tree's growth as preserved in its rings, dendrochronologists can determine when the tree lived, and even the year it was cut for a roof beam.

These dating devices show that soon after A.D. 700 the Anasazi had scaled a new plateau in their cultural climb.

"Across their domain," said Dr. Judge, "the Basketmakers began living in enlarged versions of surface storage rooms behind the circular pit houses, which in turn became kivas, focal points of ceremonial life. This transition to aboveground, community living marks the end of the Basketmaker era and the start of the Pueblo period, which carries down to today's Pueblo Indians."

At this point the Anasazi acquired another distinctive trait: They began strapping their babies to hard wooden cradleboards, causing the back of the head to flatten.

"These characteristics—distinctive pottery, pueblo homes, community living, shared religious practices—give the Anasazi their identity as a people," observed archaeologist Florence Hawley Ellis. "Never a nation or even a single tribe or language group, they nevertheless successfully maintained their traditions across vast expanses of distance and time."

FOR THE NEXT four centuries the Anasazi—with the notable exception of those living in Chaco Canyon—keyed their lives to the rhythm of an unkind climate.

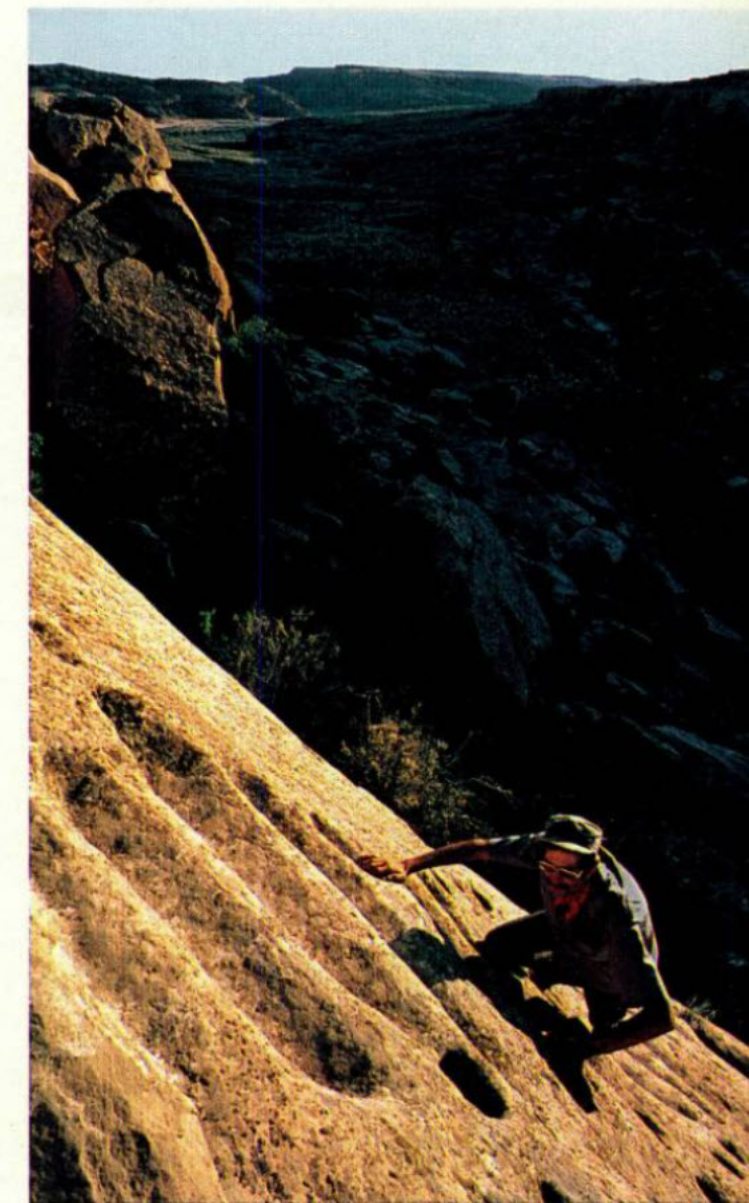
"Much of the southern Colorado Plateau was unfit for growing corn," observed Dr. Kenneth L. Petersen of the Dolores Archaeological Program in Colorado. "Even the best areas were marginal. Land lying below 5,500 feet was too dry, and land above 7,500 feet was too cold. Even within the narrow belt suitable for corn, local droughts and frosts struck frequently. As a result, the Anasazi constantly were moving, looking for areas of favorable rainfall and temperature.

"Our excavations show that 2,000 to 3,000 people lived in the Dolores River valley in the 800s, and in the next century almost all were gone. We think the cause was a slight drop in summer temperatures. The cooler air would have settled in the valley,

shortening the growing season until corn became too great a gamble." This tactic of abandonment and rebuilding has given the Anasazi the name "urbanized nomads."

Formerly slaves to a fickle environment, by the 900s the Anasazi began to assert control. They did it by manipulating water.

"Most of their water-control devices were shallow channels that diverted runoff onto small fields," explained Dr. Arthur H. Rohn



BOTH BY DAVID BRILL

Cradle of culture for one branch of the Anasazi, New Mexico's Chaco Canyon (facing page) contains their finest architectural accomplishments, from giant pueblos to a workmanlike set of steps pecked into a canyon wall for access to a mesa (above).

Complex culture in a harsh land

TOO DRY, too cold, too hot by turns, the great sweep of high mesas gouged by canyons seems marginal for human occupation, ancient or modern. But here for more than a thousand years the Anasazi survived, first as semi-nomads, finally as creators of the Southwest's most elaborate native architecture.



KAYENTA ANASAZI

Reaching west of the Grand Canyon, this branch knew cycles of expansion and contraction. Though their masonry structures were lower and cruder than elsewhere, their potters excelled in craftsmanship and variety.

MESA VERDEANS

Last of the Anasazi to build complex masonry structures within their traditional homeland, the people of Mesa Verde tended to cluster in high-density sites. Their cliff dwellings are among the most spectacular remnants of Anasazi culture.

CHACOANS

Enormous pueblos, irrigation systems, trade goods from Mexico, a complex road system, satellite communities called outliers—all characterize the finest flowering of the Chacoans. By about A.D. 1200 they had left the area and all their works.

■ Basketmaker sites 100 B.C.-A.D. 700

Early Anasazi were spear-throwing hunter-gatherers, then part-time corn, bean, and squash farmers living in log-roofed pit houses. Expert in basketware, by A.D. 700 they made pottery and used bows and arrows.

■ Pueblo I and II sites A.D. 700-1100

The trend was to aboveground adobe or masonry structures, but pit houses persisted. As the population expanded, it was accommodated in larger and larger villages.

■ Pueblo III sites 1100-1300

Multistory buildings and irrigation systems complement evidence for extensive trade and complex social organization. Yet it was also a time of abandonment and migration, perhaps forced by drought.

□ Chaco outliers

Communities surrounding Chaco Canyon emerged as early as 950 and had dispersed by 1200. They shared architectural features of the Chacoan pueblos and often were connected to them by roads.

■ Pueblo IV sites 1300-1540

Dispersed from their original communities, the Anasazi lived in larger though less finely constructed compounds.

■ Culture site contemporary with Anasazi

□ Present-day pueblo

HOHOKAM

Flatland desert farmers put most of their building efforts into very large-scale irrigation systems and complex architecture.

MOGOLLON

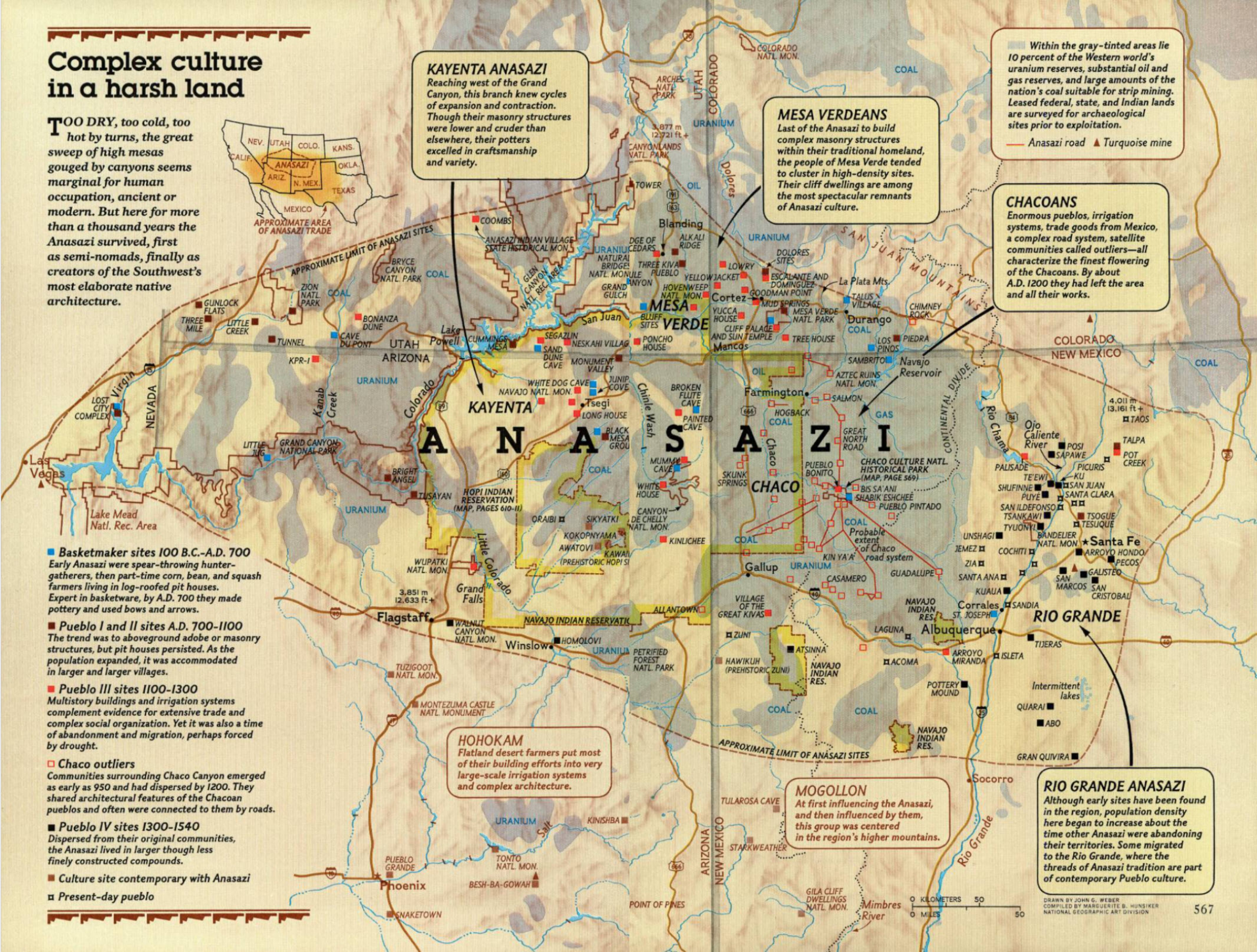
At first influencing the Anasazi, and then influenced by them, this group was centered in the region's higher mountains.

RIO GRANDE ANASAZI

Although early sites have been found in the region, population density here began to increase about the time other Anasazi were abandoning their territories. Some migrated to the Rio Grande, where the threads of Anasazi tradition are part of contemporary Pueblo culture.

Within the gray-tinted areas lie 10 percent of the Western world's uranium reserves, substantial oil and gas reserves, and large amounts of the nation's coal suitable for strip mining. Leased federal, state, and Indian lands are surveyed for archaeological sites prior to exploitation.

— Anasazi road ▲ Turquoise mine



of Wichita State University in Kansas. "They also built check dams that collected eroding soil and held the water that carried it. Though individually small, these devices sometimes numbered in the hundreds in a single community."

PROBING and pondering the Anasazi's most minute remains, including their highly informative skeletons, experts have captured many insights into their daily lives.

Allow yourself to be carried back to the tenth century, to the pueblo occupied by your extended family in Chaco Canyon. The fact that you are alive means you are beating the odds: A third of your brothers and sisters died before age five. As a youth you shepherd the village turkeys as they feed on nuts

and insects. The only domesticated animals except dogs, they provide feathers for warmth and for finery.

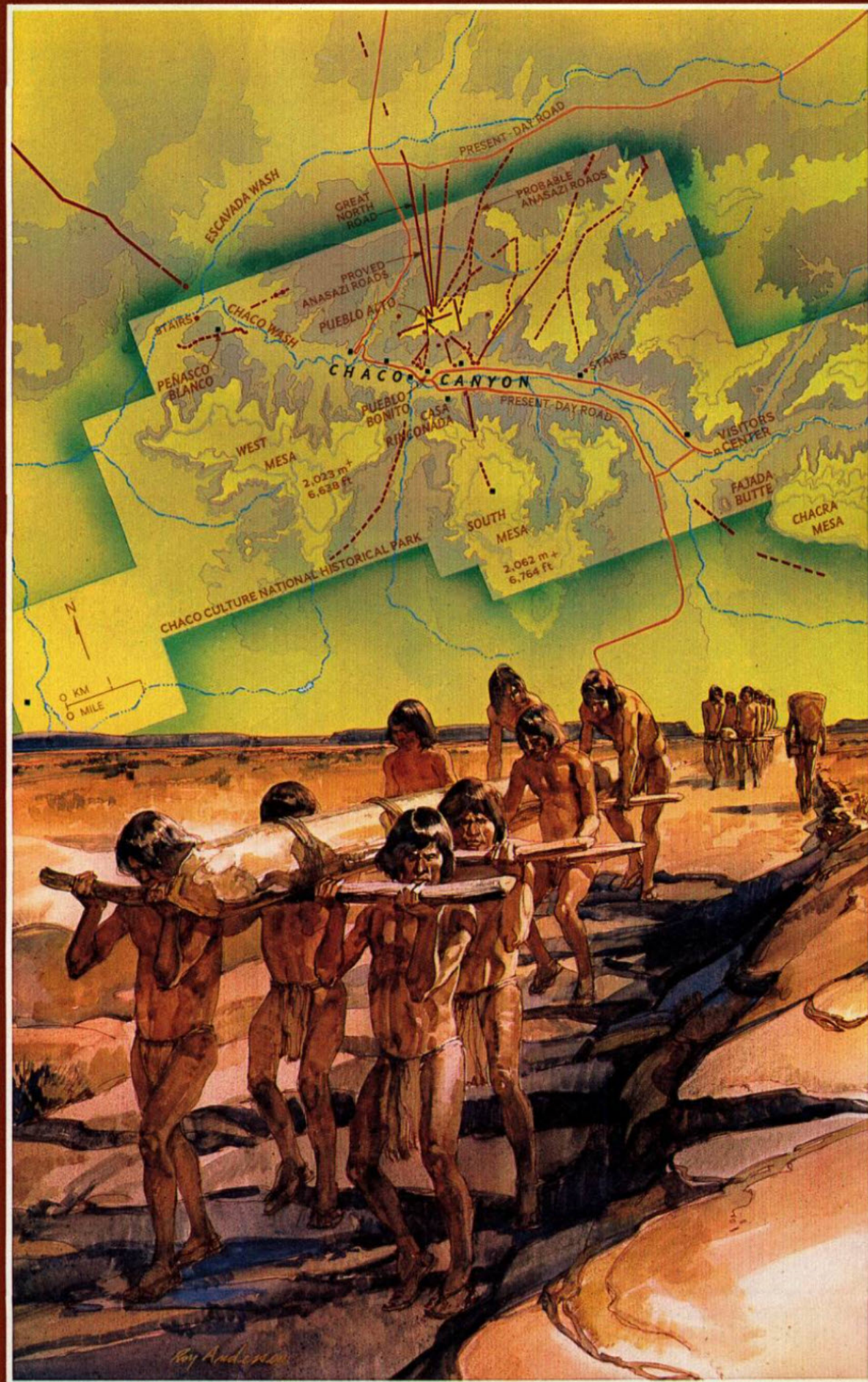
Your clothes are made of hides and of cotton cloth, traded from Anasazi cotton farmers along the Little Colorado River. For stitching, your mother used the sharp tip and attached fiber of a yucca leaf—nature's needle and thread. The generous wild yucca offers banana-like fruit, fibers for sandals and baskets, roots to pulverize into soap, and a sweet stalk for chewing (archaeologists will find your quids by the thousands).

If you are a woman, you probably own all the family's personal property. One of your possessions is a metate, a large troughed stone used for mealing corn and other seeds. You are its slave. Day after day you bend over it, grinding, grinding, grinding.



PAUL LOGSDON

Barely visible furrows, remnants of Anasazi roads cut by deeper modern roadways, converge on the ruins of Pueblo Alto near Chaco Canyon (above). Archaeologists have identified a network of roads (right) that connected the canyon pueblos with satellite communities. Here Anasazi work teams carry logs from forests as distant as 30 miles to serve as roofing timbers.



If you are a man, you run the ceremonial side of life, with its focus in the kiva. This role means much more than possessing property, for religion dominates all—the planting, the hunt, the design of the pueblo and the kiva, the rites to bring rain.

Outside the sanctuary of the kiva a man's life also is hard. You and a few others carried the sandstone for the pueblo—hundreds of tons of it—block by block from a local outcrop. The search for firewood lengthens as stands of piñon and juniper dwindle.

At times the hunting groups fail, sometimes for weeks. Then your diet consists largely of protein-shy corn, and hunger saps your vitality. Hint of famine brings dread; stories tell of starving neighbors who resorted to cannibalism in their despair.

You admire the community artists. One, a priest, occasionally goes forth with a hard stone in hand to peck designs on cliff faces. Another, a musician, entertains in evenings by playing a flute made from the wing bone of a golden eagle.

You reach your 40s, and you groan under the accelerating disrepairs of old age. Arthritis torments your joints. Your teeth, worn to the gums by grit from the metate, pain intolerably from abscesses that are eating deep into your jawbones.

The dreadful winters—surely they are growing colder. You stoke the fire until smoke disturbs the rest of the family; at night you wedge your stiff body between theirs to draw on their warmth.

Deep into that harsh winter you sink into a final sleep. Relatives place your body in an empty storage room or dig a grave in the loose soil of the village trash mound. They fold your body into a fetal position, and place beside it a few possessions to serve you on your journey to the spirit world.

IN A.D. 919, according to the tree rings, workmen from Chaco Canyon cut roof beams for a new pueblo, situated beneath the north rim where a side canyon channeled runoff during storms. Known as Pueblo Bonito, it would be the finest expression of North American Indian architecture.

Two other large structures also began taking shape, both situated near mouths of side canyons. Their locations support other archaeological evidence that Chacoans had



BOTH BY DEWITT JONES

begun to capture runoff from the canyon rim to water crops on the canyon floor.

Within a few years the buildings were immense. Pueblo Bonito rose three stories and embraced more than a hundred rooms; no other Anasazi building rivaled it. Then, for almost a century, construction halted.

The lull was perhaps a strength-gathering time, a period when Chacoans were drawing back a cultural bow that would catapult their society to its heights. As they entered the 11th century, the people of the canyon cast off the bonds of the past and launched



Time-gnawed walls of Pueblo Bonito (above) testify to prodigious labor that fitted sandstone blocks into towering five-story walls. Wooden beams nestled into the masonry reveal the builders' attention to detail. A layer of mud plaster, long since eroded, smoothed the walls. Probably afflicted by drought, these Anasazi abandoned Chaco Canyon around A.D. 1200.



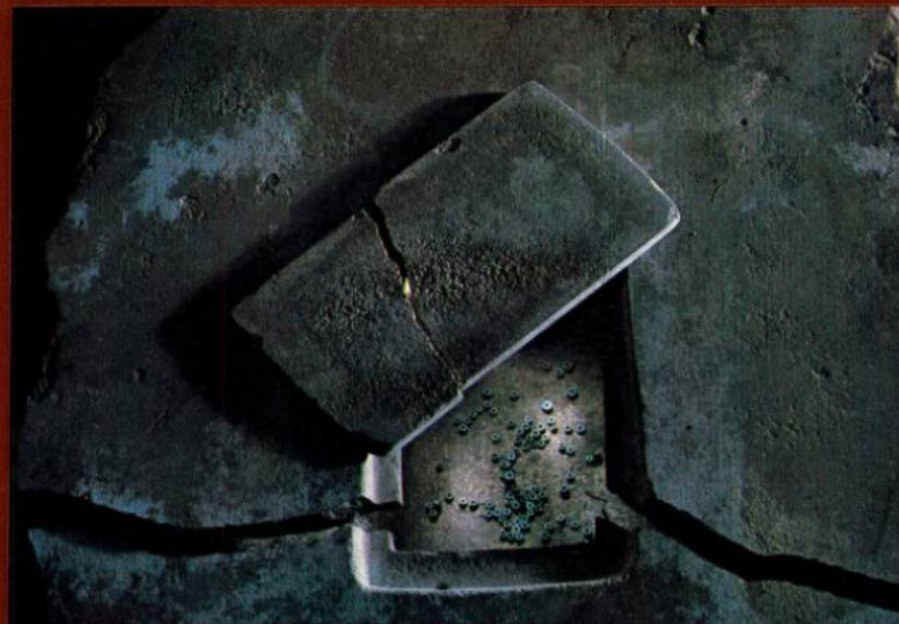
CHACO CENTER, ALBUQUERQUE, NEW MEXICO



HERITAGE CENTER COLLECTION,
BUREAU OF LAND MANAGEMENT,
DOLORES, COLORADO



SMITHSONIAN INSTITUTION



CHACO CENTER

The Mexican connection

PUEBLO riddle: Did the great Chaco edifices and complex road system originate with the Anasazi, or were they the result of outside influence?

Scholars debate the question, but a macaw-feather skirt (right) found in a Utah cave in 1954 by guide Kent Frost, here seen on a return to the site, confirms ties of trade with Mexico.

Examining the artifact, archaeologist Lyndon L. Hargrave concluded that it was "probably made by a 'Mexican' Indian in the 12th century . . . and reached Utah through various trade routes."

An abalone-shell frog (center at left), found in a 12th-century Colorado site, evidences trade with the Pacific coast.

Of the Anasazi ritual life, only fragments remain. A wooden headdress (top) probably had a ceremonial function; a stone cache of turquoise (bottom) may have been a shrine.

Decorative inlays in a deer-bone scraper (center) hint at an owner's high status.

DAVID BRILL (CENTER RIGHT AND BOTTOM); DEWITT JONES





an epoch of transcendent grandeur known as the "Chaco phenomenon."

Construction boomed, and workmen swarmed over Pueblo Bonito and its two sister structures, tearing out old walls, building larger ones. Seven other great pueblos rose, some little more than a bowshot apart, several situated near side canyons.

"There was an astonishing similarity between the buildings as they grew during

the next 130 years," said Dr. Judge as we surveyed the enormous ruins. "Despite the long construction period, each building's growth suggests careful planning from the start to achieve uniformity of design."

We paused at the base of Pueblo Bonito, its rear wall towering five stories. "Where heights such as this were needed," Dr. Judge explained, "lower walls were built more than three feet thick, tapering as they rose to

support each higher level. For extra strength the builders devised a distinctive wall structure. Earth-and-stone rubble, forming the wall's center, was carefully worked into outside layers of sandstone blocks—a design we call core-and-veneer.

"Timbers for roofing the first rooms may have come from sparse stands of pine and fir in the canyon. But soon the Anasazi were seeking beams in mountain forests as much

Coaxing corn from the desert soil, a Chaco Indian cultivates plants with a dibble stick at Bis sa'ani Pueblo, one of some 70 satellite communities, or outliers, of Chaco Canyon. Harvested ears go into ground-level bins for storage. The Anasazi diet also included squash and beans, game, and wild plants such as squawberries and piñon nuts.



PAUL LOGSDON (LEFT); DEWITT JONES

Like waffle irons, the remnants of Anasazi farms stipple the land near the Ojo Caliente River in New Mexico (left). Here rock and cobble borders created miniature catchments about a yard wide to retain water, most likely for nurturing corn, the principal crop.

Some Anasazi corn may have been larger than people think, argues botanist Paul Knight of Corrales. Taking two ears about seven inches long (above) of a variety once grown by Pueblo Indians, he burned them in his fireplace. The resulting cobs in the dish at left are virtually indistinguishable from burned cobs, at right, that Knight recovered from a dig dated at A.D. 1300. A cornstalk pecked out on a rock face near the ruins of San Cristobal shows two ears—one large, one small (top).

as 30 miles distant, and dragging or carrying them back to the canyon. We estimate they manhandled as many as 100,000 timbers to roof the great pueblos."

The roof beams demanded as much craftsmanship as the stonework. "The Chacoans weren't content with rough, axed-off rafters," said Dr. William J. Robinson of the University of Arizona Laboratory of Tree-Ring Research. "Using slabs of sandstone, they sanded the beams until the ends of each were smooth."

When finished, Pueblo Bonito held some 650 rooms and was the largest, most complex building of its kind in the Anasazi world. The front plaza held two large circular chambers known as great kivas, used for community functions. Eleven other great pueblos in or near the canyon embraced another 2,000 rooms. Here, in what is now a wasteland, stood housing for thousands.

Artifacts from the great pueblos suggest

their occupants' activities. Thousands of turquoise beads, found among galaxies of flakes, tell of craftsmen working this stone, possibly for trade with Mexican civilizations. Unversed in metallurgy, the Chacoans imported small copper bells along with brilliant macaws, prized for plumage.

Grinding rooms held ranks of stone metates, and other chambers yielded personal effects that indicate dwelling areas. Many held nothing, suggesting that they were used for storing food and other perishables.

As they built the great pueblos, the Chacoans also were installing a vast array of water-control devices.

"The north side of the canyon was probably covered with irrigated fields," explained Dr. Gwinn Vivian of the Arizona State Museum in Tucson. "The source of the moisture was runoff from the rim that normally cascaded uselessly down side canyons into Chaco Wash. With a system of ditches and

diversion dams the Anasazi managed to control and distribute this flow—an ingenious means of irrigating without a river."

AS LABORERS constructed the great pueblos, at least 70 communities, similar in design but generally smaller in scale, were rising outside the canyon. As close as a few miles, as distant as 100, these outliers often included a great kiva and a multistory central house, built with core-and-veneer masonry. Most obviously were preplanned, and many appear to have been built from a single, standardized design.

Few outliers have been excavated by archaeologists. But many have yielded to the shovels and bulldozers of pothunters.

In 1967 this appeared to be the fate of a mammoth outlier known as the Salmon ruins, 40 miles north of Chaco on the banks of the San Juan River. A developer was buying

the mound to subdivide into ten-foot "digging rights" for sale to pothunters. Seventy-two hours before the deal closed, nearby residents hastily organized a door-to-door campaign and scraped up funds to make the down payment.

Excavating the massive ruin, however, would require a multimillion-dollar archaeological effort. The local residents enlisted the help of Dr. Cynthia Irwin-Williams, an archaeologist then at Eastern New Mexico University in Portales. After intensive fund raising and lobbying, one of the nation's largest digs began pouring forth information about the Chacoan outlier.

"The entire complex of nearly 300 rooms was built according to a preconceived plan," said Dr. Irwin-Williams. "Begun in 1088, it was virtually complete only six years later. Loggers journeyed to Colorado's La Plata Mountains, more than 75 miles away, to cut huge beams. The stonework was



Etched by moonlight, a ladder and its shadow point the way to a cave carved from volcanic tuff at the base of Frijoles Canyon in Bandelier National Monument (left). Candles light the cave's interior, as well as that of another to the right.

Most archaeologists feel that the caves were living and storage rooms contiguous to main dwellings built of blocks of tuff; the remnants of walls stand beside the ladder. But Charlie R. Steen, an archaeologist formerly with Los Alamos National Laboratory, believes that such cave rooms had a religious purpose.

"They were small, poorly ventilated, and intentionally blackened by a fire from resinous woods," he says. Some, like a cave in Sandia Canyon (right), contained rock art such as this animal figure surrounded by human ones.

"The caves were places where a man could go to pray," Steen concludes.



The seasons strike on a clock of stone



PAUL LOGSDON



DAVID BRILL (ABOVE AND BELOW)

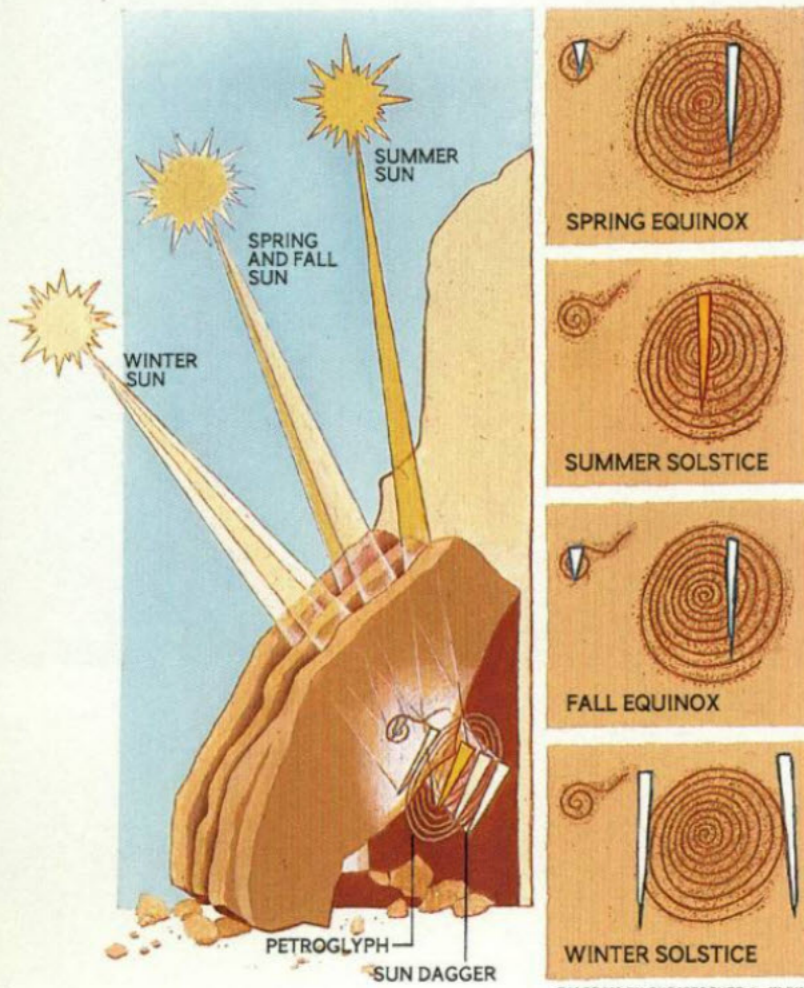


DIAGRAM BY CHRISTOPHER A. KLEIN
NATIONAL GEOGRAPHIC ART DIVISION

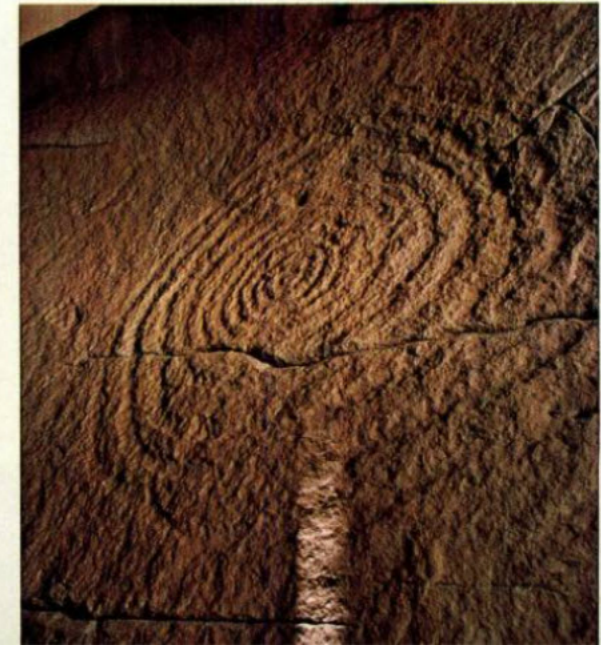
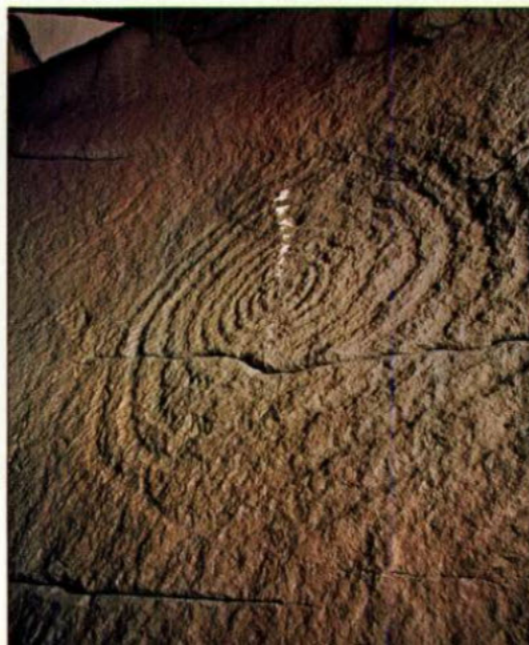
“SUN DAGGER” PHENOMENON:
Winter’s first day is marked by rays of sunlight guided between stone slabs; they bracket (**above**) a spiral petroglyph on 443-foot Fajada Butte (**top left, inset**) at the south entrance to

Chaco Canyon.

A single shaft of light, moving downward to bisect the petroglyph (**below, left to right**), signals the start of summer. Spring and fall are announced with an additional light on

a smaller petroglyph (**diagram**).

Discovered by artist Anna Sofaer, the device reflects the intellectual capacity and achievement of the prehistoric Anasazi, who utilized the midday sun to record time’s passage.



phenomenal. After the masons shaped and placed each block, they smoothed it further by pecking with a hard stone, then gave it a final sheen by sanding."

Salmon held a great kiva, but its centerpiece was a commanding structure known as the Tower Kiva. Rising from the second story of the town, the tower's six-foot-thick walls were supported by solid buttresses similar in principle to those of Europe's cathedrals.

Two centuries after it was built, the Tower Kiva became a theater for tragedy. Fire started nearby, and two matrons herded a group of 50 children onto the sanctuary roof. But the fire spread. Soon the roof crashed down with the screaming crowd, the heat so great it melted sand on the floor. When archaeologists uncovered the scene, scorched skeletons showed that many children had died in each others' arms.

THE SURGE that built the Chacoan outliers produced other works. In a 1970 report on the water system, Gwinn Vivian included mention of Anasazi "roads." Though known to local Navajos and mentioned in earlier reports, the alleged network had left archaeologists skeptical: Why would a people lacking vehicles have built elaborate highways?

To study the system, the Chaco Center examined aerial photographs, some taken by Charles Lindbergh soon after his solo flight across the Atlantic in 1927. Faint lines hinted of a web of roads, most of them radiating out from Chaco Canyon. The threat of energy development recently generated an intensive surface study under the direction of the Bureau of Land Management (BLM), custodian of the largest part of the system lying on public lands.

"The roads usually ran arrow straight regardless of the terrain," explained BLM archaeologist John Stein as we walked the sandy soil north of the canyon. "Usually they were 30 feet wide, with the beds scooped down to bedrock or clay hardpan.

"A few segments are easy to detect at eye level, such as where the Chacoans cut paths through high dunes, built low stone curbs, or carved steps to scale cliff faces.

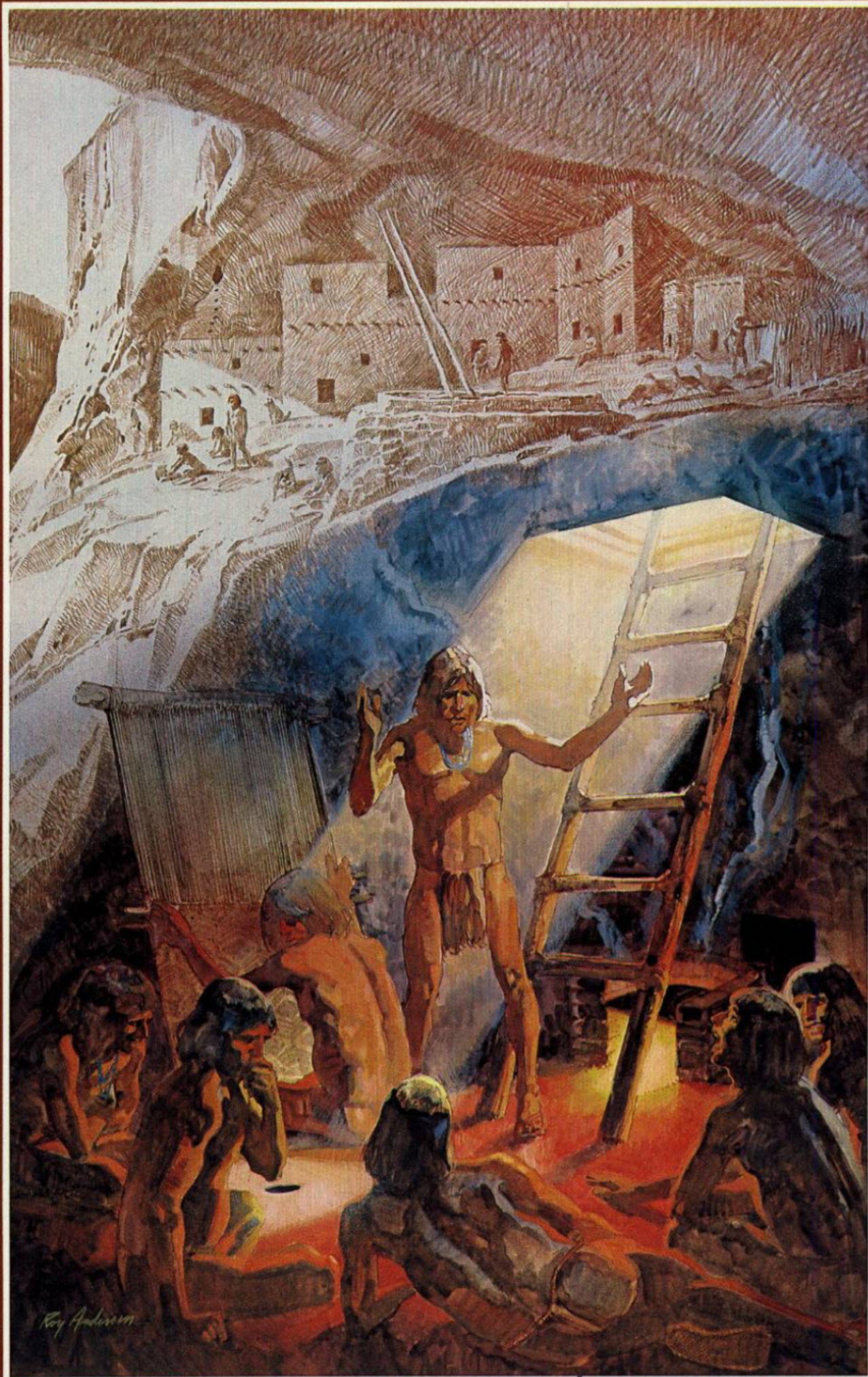
"But most of the roads in the aerials are invisible on the ground. To find them, we



DEWITT JONES

A brooding thunderstorm unleashes a cascade of rain near Puyé, a Rio Grande

ruin northwest of Santa Fe. Principal source of water for Anasazi farms, the capricious storms would drench one locale while leaving another dry.



looked for pottery sherds—remains of the many pots that probably broke during transport. Like here at our feet.”

I looked down. Hundreds of sherds paved a path about 30 feet wide, stretching far ahead. We followed it, among the first pedestrians in almost a millennium.

“We call this the Great North Road,” Mr. Stein continued. “It runs past several outliers almost to the Salmon ruins, then vanishes in present-day development along the San Juan River. Most of the roads connect outliers.”

Exhaustively analyzing the aerial photographs, Gretchen Senter Obenauf, now of the BLM, has identified nearly 500 miles of possible roads, and speculates that many more await discovery. Five major roads converge at Pueblo Alto, a hundred-room ruin on the canyon rim that could have served as a trade center. At times two roads run parallel. At one point the Great North Road swells to four separate lanes, wider than many of today’s interstates.

To complement the road system, the Chacoans appear to have devised a communication network, operated from high mesa tops scattered throughout the region. Some experts are skeptical, but one school of thought holds that these sites were located so that fires, or sunlight reflected by mica mirrors, could have been seen for great distances between outliers, and between outliers and the canyon.

Like other agrarians, the Chacoans set their ceremonial and planting calendar by close observation of solar cycles. To monitor the sun’s seasonal progressions, they devised a solar observatory atop Fajada Butte, a 443-foot stump-shaped promontory rearing abruptly from the canyon floor. Spiral patterns, carved into native rock, caught shafts of light between other rocks precisely at the solstices and equinoxes. Discovered in 1977 by artist Anna Sofaer, this Chacoan “sun dagger” is widely regarded as the prehistoric Southwest’s most sophisticated astronomical device.

Relating a tale, a Rio Grande Anasazi entertains his fellows in a kiva, an underground meeting place that served ritual purposes. The hole in the floor is a sipapu, symbolic link to the spirit world. Archaeologists infer the role of the kiva for the Anasazi from its use by their descendants, today’s Pueblo Indians.

SUNDAGGER, long-distance communications, mysterious roads, mammoth buildings, outliers. . . . What social system created these sophisticated ingredients of the Chaco phenomenon? Answers to this great riddle of archaeology run the gamut of speculation.

Chaco’s undoubted contact with Mexico, combined with architectural features common to the two areas, leads many scholars to embrace a hypothesis often referred to as the “Mexican connection.”

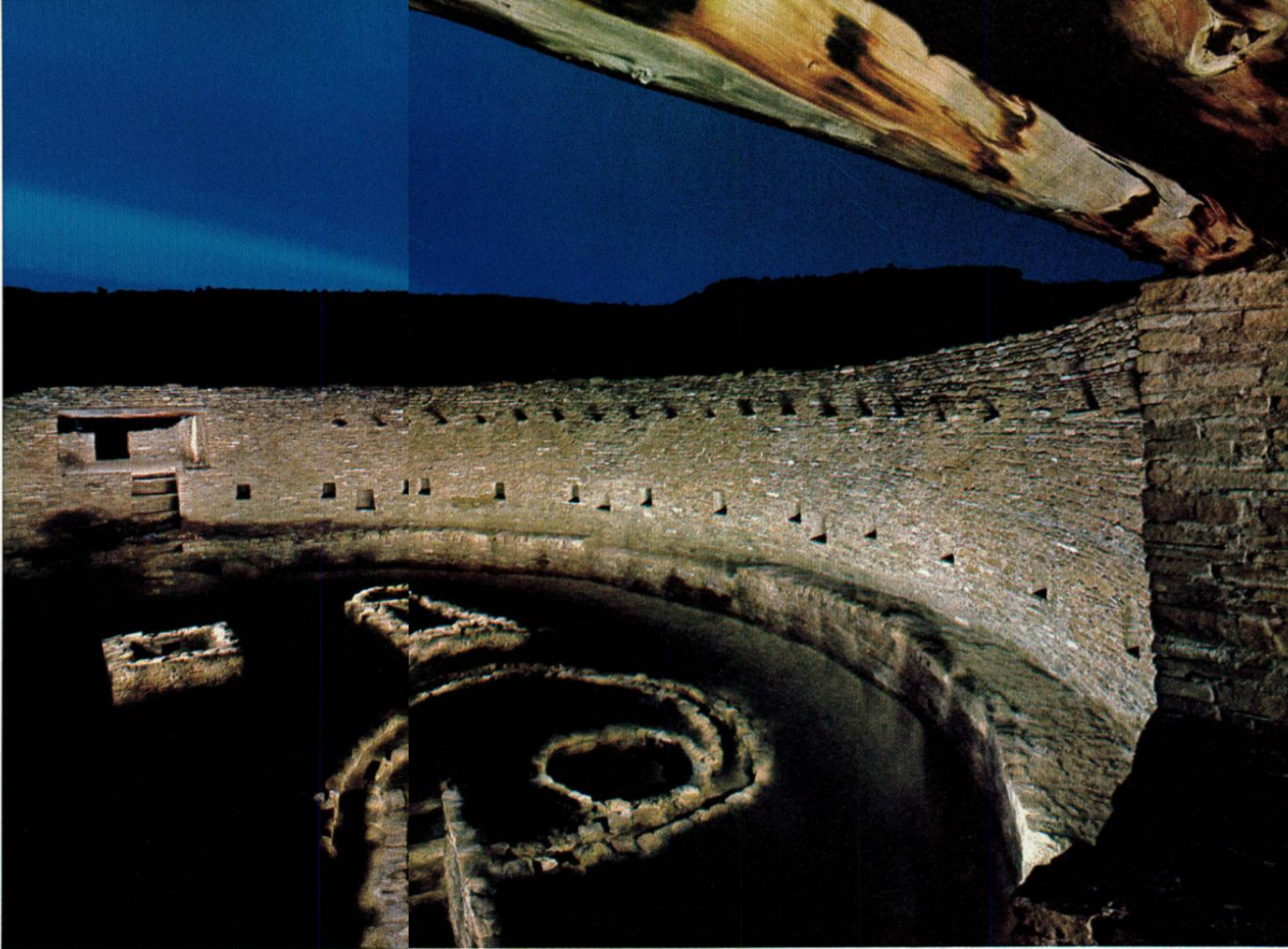
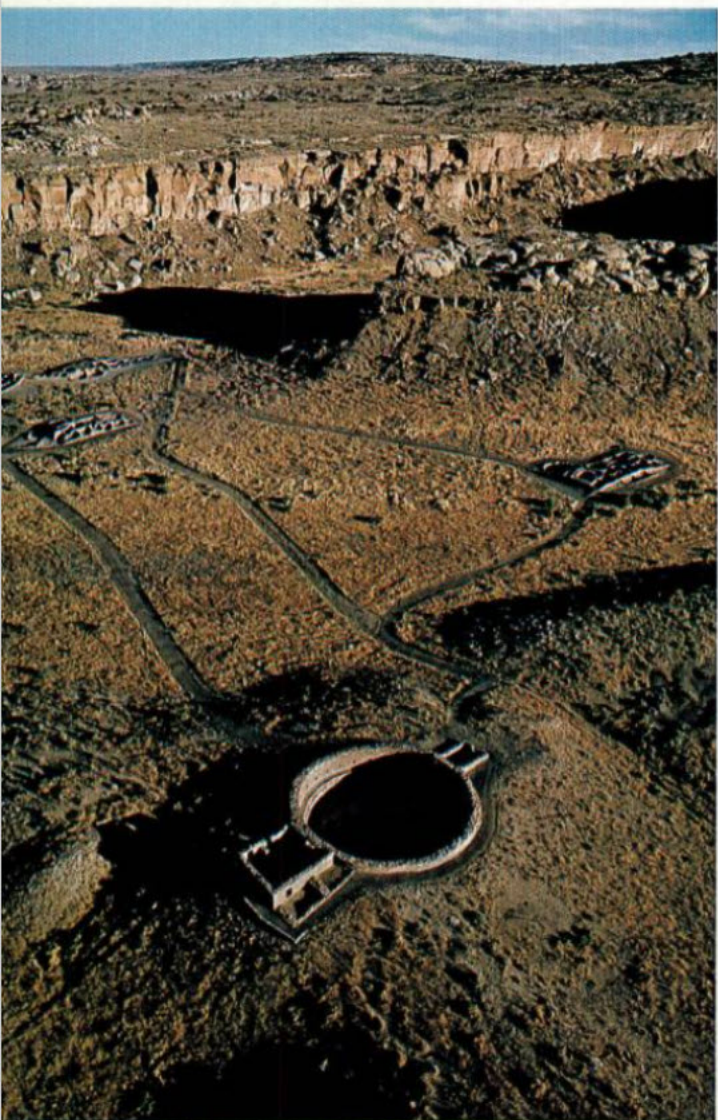
“The two cultures had many common economic goals as well,” asserted Dr. Charles C. Di Peso, director of the Amerind Foundation. Excavator of the colossal Casas Grandes ruin in nearby northern Mexico, Dr. Di Peso believes that a merchant class in that city designed a Chacoan-like exchange system that operated trading outposts for dealing in turquoise and other exotics, with a road network that led north into the land of the Anasazi.

Support for the Mexican connection came from Alden Hayes, a respected former Park Service archaeologist. “Too much happened too fast to have been a local happening,” said Mr. Hayes. “The jump from one- to five-story buildings, the roads and astronomical observatory, the complex social organization they imply—it’s too much to accept without outside influence.”

Another camp explains Chaco in terms of events that occurred within the area itself—a school of thought Dr. Judge labels “local boys make good.”

“A key lies in the Chacoans’ water-control system,” said Dr. Vivian, a leading spokesman for this view. “To manage the water-diversion gates and canals and prevent washouts during violent downpours required a vast labor pool. The workmen would have lived in the great pueblos, which also stored the crops. When not involved with agriculture, people built the roads and great pueblos, both of which were partly make-work. Excess population was siphoned off to the outliers.”

Bands of light illuminate Casa Rinconada (**right**), an Anasazi great kiva 63 feet wide in Chaco Canyon. Its size and location near several small village sites (**below**) suggest a community-wide role combined perhaps with administrative functions. Oddly, some great kivas lack sipapus.



BOTH BY DAVID BRILL

Midway between these camps stands a third group that takes a regional approach to the phenomenon.

Dr. Judge contends that the great pueblos, outliers, and roads formed the framework of an immense distribution system, administered from the canyon pueblos and designed to even out the availability of food in an area of variable climate. When patchy rains brought local scarcity, signal fires beaming from shrine to shrine may have

borne the message to administrators back at Chaco. They in turn could have requisitioned foods from areas enjoying surpluses, or dispatched stores kept in the great pueblos, which served as massive silos.

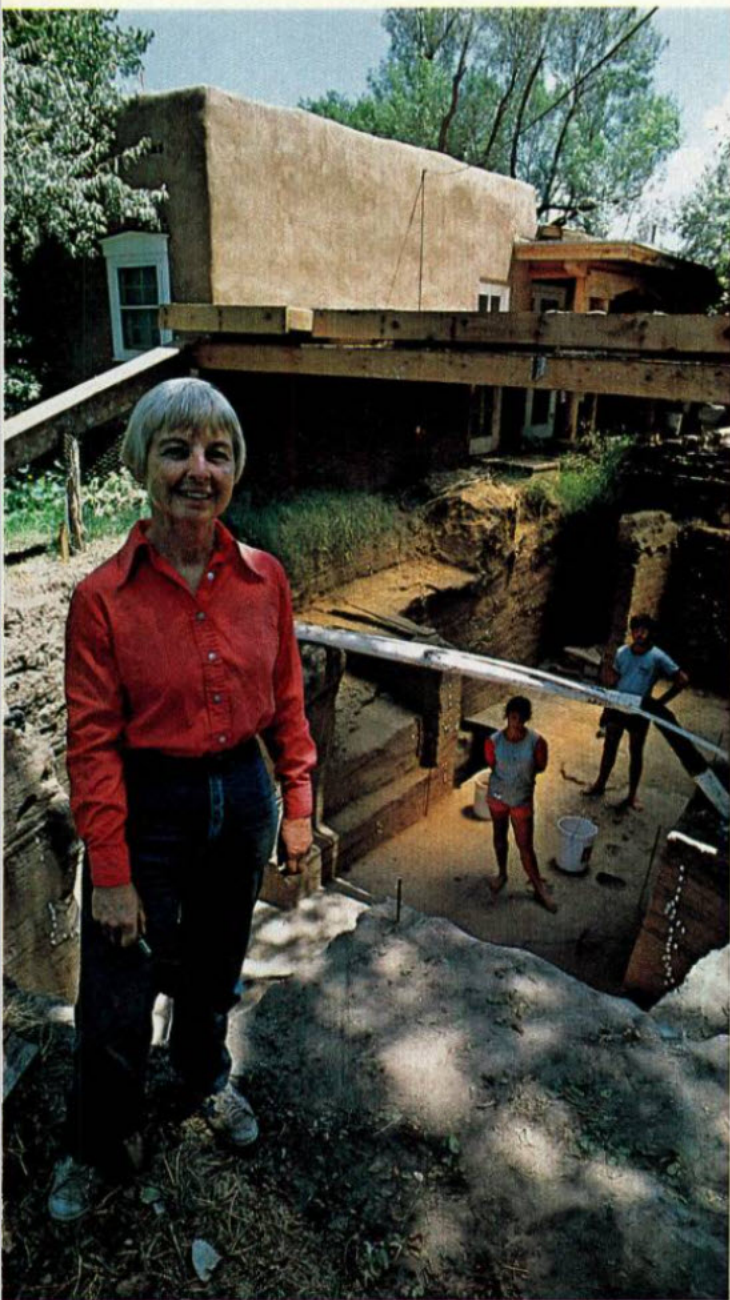
A number of archaeologists liken Chaco to a Hudson's Bay Company, in which relatively few agents organized the outliers to control local trade. Others see the great pueblos serving as largely ceremonial centers—meccas visited by pilgrims thronging

the roads. This theory explains the puzzling scarcity of human burials at the great pueblos. An intriguing theory formulated by Albuquerque archaeologist Michael P. Marshall holds that the great pueblos were creations of the outlying districts, built as a sort of federal city for handling the outliers' trade and political alliances.

The roads hold the greatest of Chacoan enigmas. "Engineering them may have required more energy than building the great

pueblos and outliers combined," said Michael Marshall. Adding little to the efficiency of foot-borne carriers, they perhaps served to symbolize the system's authority and to employ seasonally surplus labor.

By A.D. 1085 Pueblo Bonito stood virtually complete, although work continued on the other great pueblos. They hummed to the routine of everyday life: the endless grinding of corn, the bickering of traders, the tapping of masons shaping stones, the



DEWITT JONES

Backyard excavation for a swimming pool and a studio became an adventure into the past for Albuquerque archaeologist Kit Sargeant. When a bulldozer turned up numerous Indian artifacts, she enlisted the help of graduate students from the University of New Mexico and began a systematic dig financed by herself and her husband.

"We found six layers of occupation, the earliest dating to A.D. 1300," she says. The excavation yielded hundreds of potsherds, animal bones, corncobs, and a hole 12 feet deep. "It's our \$10,000 hole," says Mrs. Sargeant.

soft footfalls of sandaled porters bearing foods along with other goods.

When storm clouds gathered and thunder signaled a summer downpour, people abandoned their tasks and rushed to the waterworks to manage the runoff that would spill from the canyon rim.

On mesas beyond the canyon, porters plied the roads bearing roof beams, firewood, food, and trade goods: pottery, baskets, and cloth. Messengers sped the spoken word between canyon and outliers; by night, lights on mesa-top shrines could have carried communications to distant points.

In the mid-1100s this even tempo faltered. Work on the great buildings halted. Gradually the social system collapsed, and before long most Chacoans enacted the Anasazi's ultimate response to stress: They abandoned the area.

What triggered the collapse?

The tree rings, faithfully keeping their chronicle, show that about 1150 drought struck, drought that would become more widespread and protracted than living Anasazi had ever known. As desiccation intensified and vegetation withered, eroding arroyos slashed the fields, lowering the water table and further crippling crops.

"With the entire system afflicted simultaneously, no part could respond to another's need," observed Dr. Linda S. Cordell, who with colleague Fred Plog has contributed numerous thoughtful analyses of the Anasazi. "And when the system collapsed, they were unable to return to the high level of energy necessary to reestablish it."

"When you look at the arid area it occupied," said Alden Hayes as an epitaph, "Chaco was a poor idea in the first place. It's a wonder it lasted as long as it did."

As Chaco writhed in its death throes, the Anasazi living on Mesa Verde were achieving their moment of destiny. Moving from the mesa top, for reasons still unknown, they descended to the tableland's vertical cliffs. There, beneath scores of rock overhangs, they built their citadels of stone.

Where Chaco stands as a monument to a grand design, Mesa Verde rings out as the Anasazi anthem. With a sweep of the eye I read this song from the overlook at Sun Point, my favorite vantage within the national park. Stone structures cling to the

cliffs like notes of a long-silent chord. Small dainty structures struck the high notes, while the bass echoed from enormous Cliff Palace, embracing 225 rooms.

"As large as that seems," warned Dr. Rohn of Wichita State, "recall that the park ruins reflect only a small fraction of the population that we call Mesa Verde Anasazi. Probably 95 percent of them lived off the mesa, some in giant communities that held thousands. More people lived in parts of southwestern Colorado then than now."

With Dr. Rohn I visited ruins scattered northwest of Cortez—low, sprawling mounds covering acres, hoary with sage and juniper. "The remains don't attract attention because they lack dramatic standing walls," said Dr. Rohn. "Yet some hold a thousand rooms, a hundred kivas. Their very size frightens away archaeologists; to excavate even one would cost a fortune."

The succession of droughts that had brought down Chaco persisted, and in the 1200s came the added peril of increasing cold. Spring arrived late, autumn struck early, and frosts preyed on crops.

But the Mesa Verde Anasazi hung on. "Nature favored them," said Dr. Petersen of the Dolores Program.

"From Mesa Verde west to Blanding, Utah, the Anasazi occupied the Great Sage Plain, a 4,000-square-mile area tilting slightly to the south. This tilt toward the sun creates a warm 'solar oasis' that extends the growing season a few crucial weeks."

AS THE 13TH CENTURY wore down, the cliff dwellers of Mesa Verde mounted a heroic effort to appease the gods. Above the mesa's strongest springhead they began construction of a magnificent masonry temple. Housing kivas three walls thick, it probably was oriented to record the annual seasons of the sun.

"I believe the Sun Temple represents a last great effort, born of despair, to read the heavens, to fathom the reason for the ordeal," said University of New Mexico anthropologist Alfonso Ortiz, himself a Pueblo Indian. "But before the temple was complete, the Mesa Verdeans too gave up hope and abandoned their homes."

Across most of the Four Corners region the land emptied. Silence claimed the

teeming towns of the Great Sage Plain, the cliff dwellings of Canyon de Chelly and Tsegi Canyon, the parched western reaches of the Kayenta Anasazi.

For some, abandonment meant only a localized disruption. Anasazi who dwelled in Homolovi, a complex of thousands of rooms near Winslow, Arizona, simply climbed the bold mesas lying to the north, where they joined their relatives, the ancestors of today's Hopis.

Some moved south, to beckoning green mountains of the Mogollon people. As with refugees everywhere, they were not always welcomed. At Point of Pines, a large Mogollon community in Arizona, archaeologist Emil Haury found evidence that the local populace rose up against an enclave of Anasazi immigrants and burned them out, then built a protective stockade around the town as if fearful of retaliation.

A number of the émigrés, however, made their way eastward, across the Continental Divide. Settling among their kind in the valley of the Rio Grande, they developed the final phase of Anasazi culture.

Since Basketmaker times a scattering of Anasazi had occupied the Rio Grande, from south of Albuquerque north to the present pueblo of Taos. Along with the gradual arrival of the immigrants came an increase in rainfall, and the communities flourished.

"The speed of the buildup was breathtaking," asserted Dr. Douglas W. Schwartz, president of the School of American Research in Santa Fe and excavator of Arroyo Hondo Pueblo. "About A.D. 1300 three families moved into an area above a spring and founded Arroyo Hondo. Within 30 years the population had soared to 1,500. The same happened all along this stretch of the river. Had more of these Anasazi built with stone instead of mud, the Rio Grande would be lined with dramatic ruins."

With Stewart Peckham, a veteran archaeologist at the Museum of New Mexico, I flew the upper Rio Grande to inspect these sprawling adobe citadels. Mr. Peckham pointed out the gaunt bones of Pecos Pueblo, occupied until 1838 by Anasazi descendants. We skimmed over the vague outline of Galisteo Pueblo, near a long igneous outcrop that the Anasazi had adorned with rock art.



Living link with the Anasazi? Atop a mesa 65 miles west of Albuquerque, Acoma Pueblo was established late in the 12th century after the fragmentation of the Chaco culture. Though some 2,300 Acoma Indians maintain ancestral

homes here, most have permanent residences in nearby satellite communities—a seeming parallel to the Chaco Anasazi. The Acomas pursue lives as farmers, miners, and truck drivers, returning to the pueblo during times of celebrations.

DEWITT JONES

Northward, Bandelier National Monument cupped homes and apartment caves hewn into canyon walls. Beyond marched more ruins, many holding hundreds of rooms: Puyé, Ku, Te'ewi, Sapawe, Posi. Most bore the craters of pothunters. Farther north, at the limit of corn country, lay the stark ruin of Palisade, whose 60 rooms protected by a stockade had been inhabited for only four years in the early 1300s.

Frequently I saw rectangular plots that appeared darker than surrounding fields. These marked an ingenious Anasazi effort to cultivate their hardscrabble land.

"I've identified seven different ways that the Rio Grande Anasazi coped," said Dr. David Bugé, formerly of California's Occidental College. "The dark fields you saw were mulched with gravel; there may have been thousands of acres of them. Stone mulch reduced the amount of water lost to evaporation, which explains why the fields produce lush plant growth even today."

Intensive farming, supplemented by foraging and the raising of turkeys, supported large numbers of Anasazi along the Rio Grande from the 14th century through the 16th. That population density was creating problems for Kit and Arnold Sargeant, who had recently purchased an old adobe home in Albuquerque's North Valley area.

"We suspected that the gentle rise under our house was the ruins of a pueblo," said Mrs. Sargeant, showing me around. "As an archaeologist myself I planned someday to do a small excavation, literally in my backyard. But we didn't bargain for *this!*" she said, eyeing three large excavations.

"It began when I made a test pit where Arnold planned to put in a pool, and found crumbled adobe walls. Later we tested an area where we wanted to build a studio and encountered a small plaza surrounded by room blocks." We viewed the prospective studio, a hole 12 feet deep showing six different village levels. "Someday it will make a neat wine cellar," Mrs. Sargeant said.

FOR THE ANASAZI of the Rio Grande, a valued source of food lay available to the east. There, Indians of the southern plains—perhaps Apaches—hunted buffalo, whose fat and dried meat the Anasazi prized.

"From Taos to Socorro we find buffalo remains along the Rio Grande, where no bison grazed," said Dr. Richard I. Ford of the University of Michigan. "And on the Great Plains of Texas—buffalo country—we find Anasazi corn and pottery. This meant a trade network stretching more than 200 miles and crossing sharp cultural and language boundaries. Perhaps Plains Indians' dogs pulled travois that carried buffalo products westward and returned carrying Anasazi corn."

Always adept at painting and chipping designs on rocks, the Anasazi polished another art form during their flowering along the Rio Grande. "They painted marvelous murals on kiva walls," explained Dr. Jerry Brody, director of the University of New Mexico's Maxwell Museum. "These usually portrayed ritual themes of the supernatural world, such as symbols for clouds and lightning, and other devices associated with rainfall. The art also records details of the kachina cult, whose benign spirits are portrayed by the masked figurines so prominent in Pueblo religion today."

To see kiva art, I drove north of Albuquerque to Kuaua, a huge complex of 1,000 rooms restored at Coronado State Monument. Kiva walls, some bearing 85 coats of plaster, exhibited scenes of spirit dancers invoking rain and other blessings.

In this great adobe town the Anasazi lifeway encountered a force it could not surmount. From the south in 1540 came a strange procession: fair-skinned men encased in shiny metal, astride fearsome four-legged beasts.

For Francisco Coronado and his band of Spaniards, Kuaua was a place to winter during the quixotic search for cities of gold.

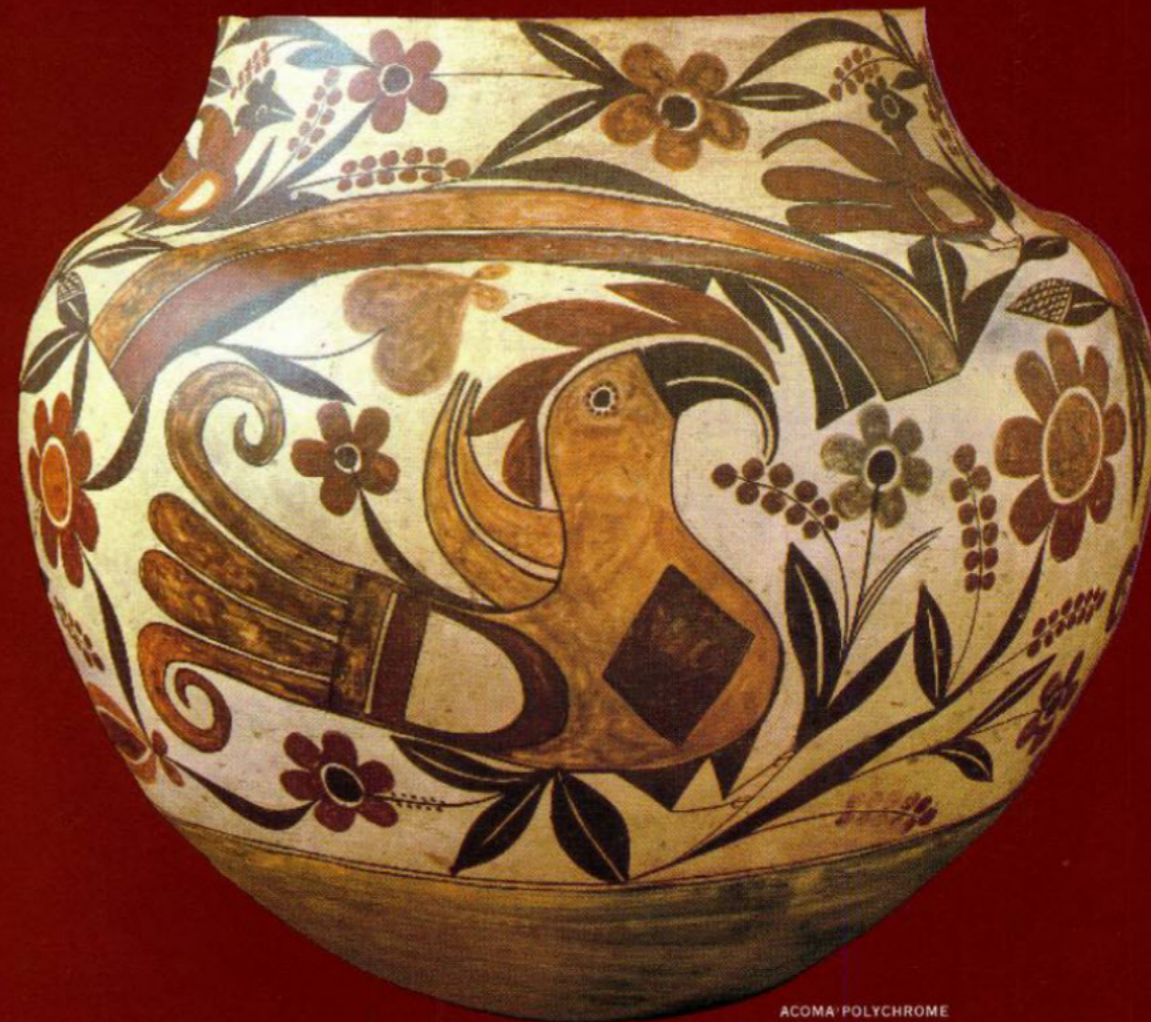
For the Anasazi, the Spanish *entrada* signaled a profound wrenching of 15 centuries of cultural development. Spanish officials seized farmlands, exacted tribute, and attacked the religion of the people they called the Pueblos. Navajos pressed in from the north, harassing the Pueblos. Soon the arrival of Anglos would impose new stresses.

Despite all, much of the Anasazi tradition survives with today's Pueblo Indians. Stolidly, stubbornly private in their ways, the Pueblos preserve this past with a tenacity as enduring as the silent ruins. □

Pueblo Pottery

2,000 YEARS OF ARTISTRY

By DAVID L. ARNOLD
NATIONAL GEOGRAPHIC STAFF



ACOMA POLYCHROME

Fantasy of flowers and birds decorates a jar crafted in the 1890s by an unknown potter of New Mexico's Acoma Pueblo. Heir to traditions 20 centuries old, the artist worked without potter's wheel or kiln, making paints from minerals and using a chewed yucca leaf for a brush. With such ancient methods and motifs, modern Pueblo potters create new masterpieces.

HOHOKAM



VAHKI RED BOWL [EARLIEST HOHOKAM STYLE]

A.D. 1



ESTRELLA RED-ON-GRAY PLATE

200



SACATON RED-ON-BUFF EFFIGY VESSEL

1000



CASA GRANDE RED-ON-BUFF PITCHER

1200

Tracing a ceramic lineage

THREE MAJOR Southwest cultures—the Hohokam, Mogollon, and Anasazi—flourished almost simultaneously from the time of Christ until the late 13th century. Pottery became their most prolific artistic legacy, with creations of such distinctive form and design as to identify the time and place they were made.

The Hohokam from Mexico settled in present-day southern Arizona, bringing with them developed ceramic talents. Farmers skilled in irrigation, they thrived; so did their artists, whose designs became more and more

complex. Their eastern neighbors, the Mogollon, created plain brownware with red paint designs until almost A.D. 900, when their work exploded in a sudden burst of black-on-white, a development borrowed from their northern neighbors, the Anasazi. This style reached great sophistication in the 11th century with the intricate geometric and pictorial renderings created by the Mimbres branch of the Mogollon (pages 600-601).

Although the Anasazi of the Four Corners area had traded for good fired pottery,

their own first crude attempts consisted of shaping clay in baskets, which were then burned away. But within a

ANASAZI



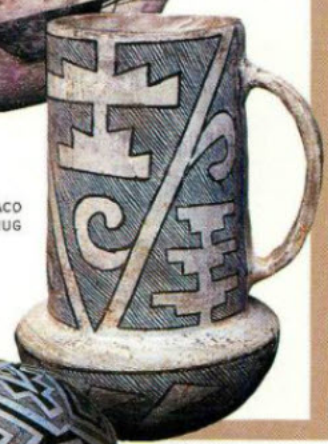
BASKETMAKER II BOWL

few hundred years their creations blossomed with the diverse styles that still characterize the work of their modern Pueblo inheritors.

Florescence of Anasazi pottery coincided with the high-water mark of their civilization. Expanding populations in centers like Chaco Canyon and Mesa Verde supported pottery specialists. Ever growing trade created a need for group identification. Thus the ground was laid for regional variations of the Anasazi basic black-on-white.



MESA VERDE BLACK-ON-WHITE BOWL



CHACO BLACK-ON-WHITE MUG

Abandoning their homes in the late 1200s, Anasazi groups relocated among other indigenous peoples. Although they continued for a time to make black-on-white pottery, soon new designs emerged, the result of cultural intermingling. Among the Hopis the polychrome tradition continued uninterrupted.



Checkerboard design over a cloud symbol adorns the neck of a pot from San Ildefonso.

RIO GRANDE GLAZE "C" BOWL



SANTA CLARA BLACK JAR

Scalloped rim of Santa Clara blackware reflects Spanish influence. Black is carbon charged into clay when it is fired in oxygen-poor air, created by smothering flames with powdered dung.



SAN ILDEFONSO BLACK-ON-WHITE JAR

Elements of nature—stars, lightning from sacred bears—decorate a ceremonial jar.



SAN ILDEFONSO POLYCHROME JAR



LINO BLACK-ON-GRAY BOWL

First Anasazi painted ware followed two broad styles. Dot-filled design (above) presaged precise hatching on Anasazi black-on-white. Use of color in less formal patterns (below) foreshadowed later polychrome tradition.



KAYENTA BLACK-ON-WHITE BOWL



TULAROSA BLACK-ON-WHITE JAR

Glaze decoration, a major departure from black-on-white, appears on the Rio Grande and Kwakina bowls.



HAWIKUH GLAZE-ON-RED BOWL

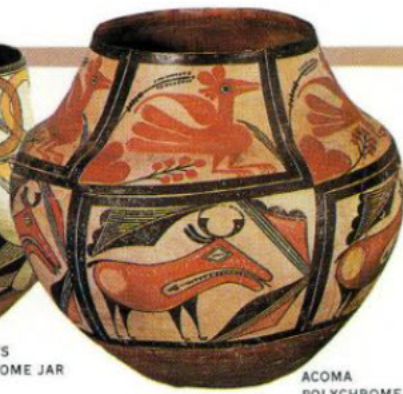
Famous for thin walls and white clay, Acoma pottery moved from geometric figures to naturalistic motifs in the historic period.



ACOMITA POLYCHROME JAR



MCCARTY'S POLYCHROME JAR



ACOMA POLYCHROME JAR



ABAJO RED-ON-ORANGE BOWL

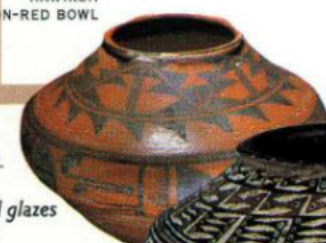


DOGOSZHI BLACK-ON-WHITE JAR

Plate depicts a speared and emasculated figure with centipede. Masked kachina figure on the canteen wears a feather costume.

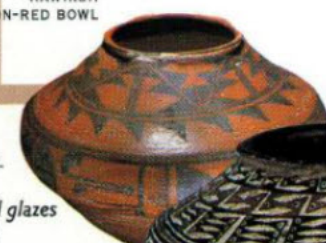


BIDAHOCHI POLYCHROME PLATE



KWAKINA POLYCHROME BOWL

Pueblo potters used glazes for decoration, not waterproofing.



ASHIWI POLYCHROME BOWL



ZUNI POLYCHROME JAR

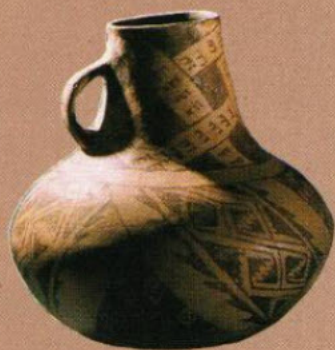
Heartline deer, a symbol in sub-arctic taiga art, may have come to the Zunis via Navajos arriving from the north.

MOGOLLON



SAN FRANCISCO RED BOWL. LIKE MOST EARLY CERAMICS, MOGOLLON AT FIRST WAS PLAIN AND UNPAINTED. A WASH OF RED CLAY LINES THE BOWL. ITS USE CONTINUED THROUGHOUT MOGOLLON HISTORY.

A.D. 1



MOGOLLON RED-ON-BROWN PITCHER; TEXTILE DECORATION

900



MIMBRES BLACK-ON-WHITE PLATE; FEATHER DESIGN

1150

Collectors' items even in the aboriginal world, Sikyatki polychromes and Jeddito black-on-yellow were traded widely. Early potters worked with an abandon of sweeping curves and brilliant colors. Frequent bird motifs reflected the importance of that magical creature that soared between man's world and the realm of the spirits.



SIKYATKI POLYCHROME PARROT EFFIGY VESSEL

JEDITTO BLACK-ON-YELLOW JAR



SIKYATKI POLYCHROME JAR



SIKYATKI POLYCHROME CANTEEN



POLACCA POLYCHROME JAR

A.D. 1350

1600

1900

SANTA CLARA

The tradition of making blackware continues at Santa Clara Pueblo, with innovations in carved designs.



ELIZABETH NARANJO

VIRGINIA EBELACKER

MELA YOUNGBLOOD

SAN ILDEFONSO

Pottery production declined at San Ildefonso near the end of the 1800s but today provides a large share of pueblo income.



TONY DA

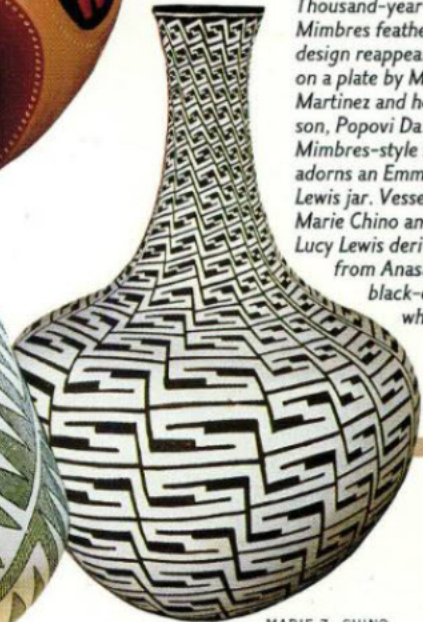
Santa Clara and nearby San Ildefonso share design elements such as the awanyu, a serpent, which is carved on a double-necked wedding vase, and the bear paw, sometimes inlaid with turquoise.

ACOMA

Pictures in a notebook sparked interest in old designs at Acoma. Dr. Kenneth Chapman, who had long urged pueblos to retain their heritage, first showed Mimbres material to Acoma potters in the early 1940s.



LUCY M. LEWIS



MARIE Z. CHINO

Thousand-year-old Mimbres feather design reappears on a plate by Maria Martinez and her son, Popovi Da. A Mimbres-style figure adorns an Emma Lewis jar. Vessels of Marie Chino and Lucy Lewis derive from Anasazi black-on-white.

HOPI

Old Sikyatki polychromes inspired Hopi potter Nampeyo and her artist husband, Lesou, who had helped excavate Sikyatki ruins in 1895. To re-create their heritage, they found clay like that used in the originals.



NAMPEYO

FANNIE NAMPEYO



JODY FOWELL

MELA YOUNGBLOOD



JOSEPH LONEWOLF

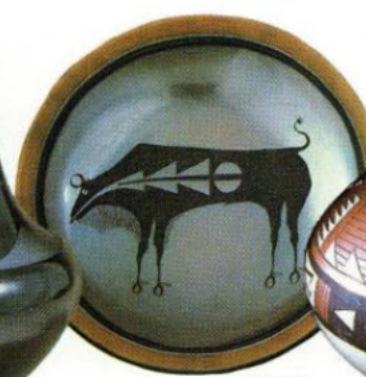
GRACE MEDICINE FLOW

Incised and engraved wares, often in miniature, may take months to complete. Double-holed seed jar shows a masked dancer holding evergreen boughs.



MARIA MARTINEZ AND POPOVI DA

MARIA MARTINEZ



TONY DA

Spirals on a canteen recall those of the 12th-century Tularosa black-on-white jar (page 595).

BLUE CORN



EMMA LEWIS

Mudhead figure, ritual clown of the Hopis, is a departure in Pueblo ceramics, though grounded in tribal culture.

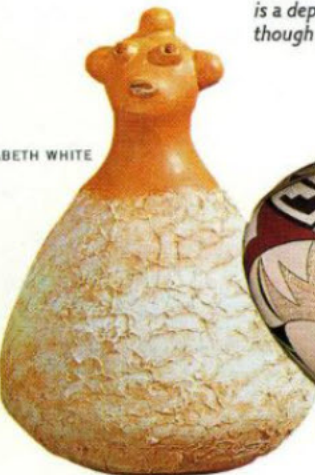


JUANA LINO



AL QÖYAWAYMA

JOY NAVASIE (FROG WOMAN)



ELIZABETH WHITE

Ever experimenting, Al Qöyawayma applies new designs to traditional shapes and enlists scientists to help identify sources of Sikyatki clays.

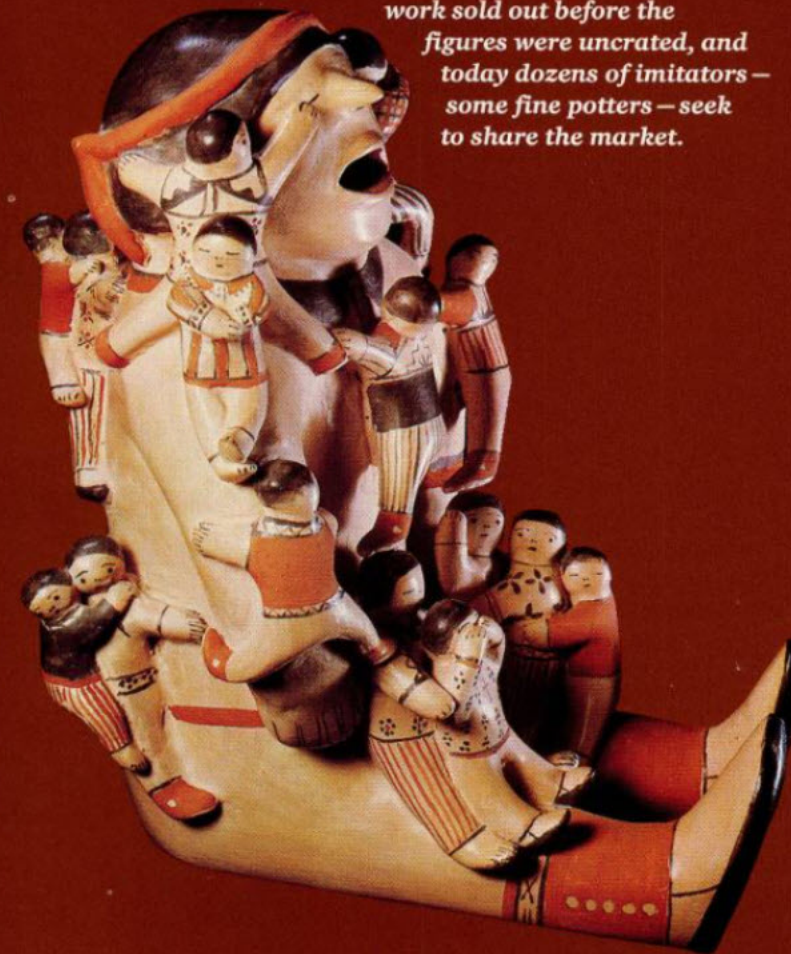
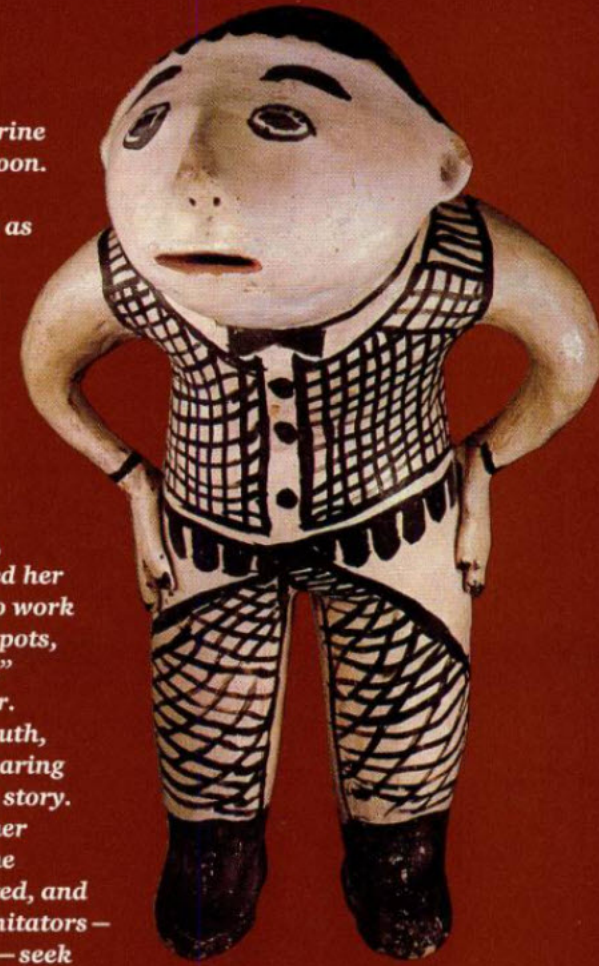
COCHITI FIGURINES
Characters in clay

UNFLAPPABLE as Gary Cooper, a cowboy figurine (right) seems ready for a quick draw at high noon. Such clay caricatures, created by potters of New Mexico's Cochiti Pueblo, enjoyed brief popularity as collectors' items in the late 1800s. The vogue followed the coming of the railroad to the region, and artists delighted in mimicking their new visitors: supplicating padres, mustachioed Italian tenors, businessmen, two-headed people from circus shows, even dancing bears. "They were making fun of the white man," folklorist Barbara Babcock believes, "but they weren't malicious."

Figurines are still a popular product of Cochiti, thanks in large part to Helen Cordero, who created her first "Storyteller" figure in 1964. "I didn't begin to work in clay until I was 49," she says. She started with pots, but as she puts it, "They just didn't turn out right."

Cordero's storyteller model was her grandfather. Recalling with affection the tales he told in her youth, she models him (below) with clinging listeners wearing expressions of rapture or fright, depending on the story.

A recent gallery show of her work sold out before the figures were uncrated, and today dozens of imitators — some fine potters — seek to share the market.



The pottery in this presentation came from the following museums and private collections: Arizona State Museum, University of Arizona; Marjorie and Charles Benton; Margaret Cross; Rick Dillingham; Field Museum of Natural History; Hand and the Spirit Gallery; Heard Museum; Mr. and Mrs. William E. Hinkley; Richard M. Howard; Mr. and Mrs. Dennis Lyon; Mesa Verde National Park; Museum of the American Indian, Heye Foundation; Museum of Northern Arizona; Peabody Museum, Harvard University; Al Qöyawayma; Millicent Rogers Museum; School of American Research; Tanner's Indian Arts; University of Colorado Museum; Woodard's Indian Arts.



STANDING FIGURES

Mimbres art

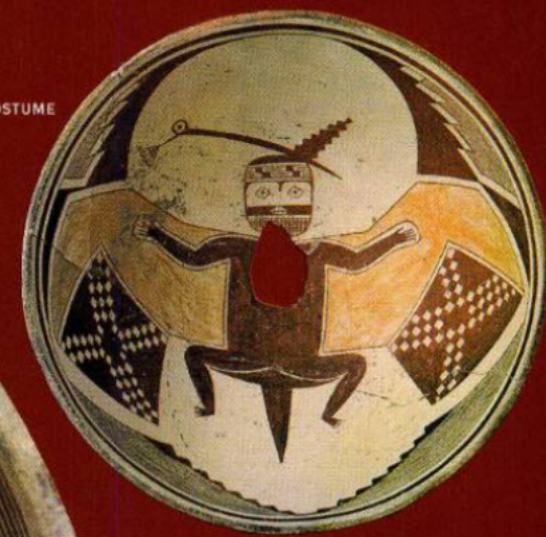
THESE POTS tell stories, but what do they relate? Between A.D. 1000 and 1150 – barely five generations – a small branch of Mogollon peoples living in the Mimbres Valley area of New Mexico produced an astonishing array of black-on-white and polychrome pottery. Most designs were elaborately geometric, but many portrayed human and animal figures that seemed to offer a glimpse of vanished life. But what is reality and what is myth?

A depiction of childbirth (lower right), with the newborn waving a greeting, seems the stuff of everyday life. So, too, does the scene of a man who appears to be snaring birds in a thicket (center). Yet modern Hopi Indians feel that a deeper, hidden meaning lies in the movement of the unsnared birds. Hopis also identified the standing figures (upper left), saying only a woman would wear a necklace and only a man armbands. Yet both wear headbands and facial marks, either tattoo or paint, a design repeated on the “bat man” (upper right), whose tail mimics that of a bat of the Southwest. Water bugs (bottom center) cross a pond under the gaze of two figures – or could it be one figure and its reflection?

Some experts believe the decapitation scene (lower left) may be a Mimbres rendition of the Aztec god Quetzalcoatl, since his style of headdress and human sacrifice were common in the land to the south, a major trade area of the Mogollon. Another interpretation: the last desperate attempt in times of severe drought to appease the rain deities through human sacrifice.



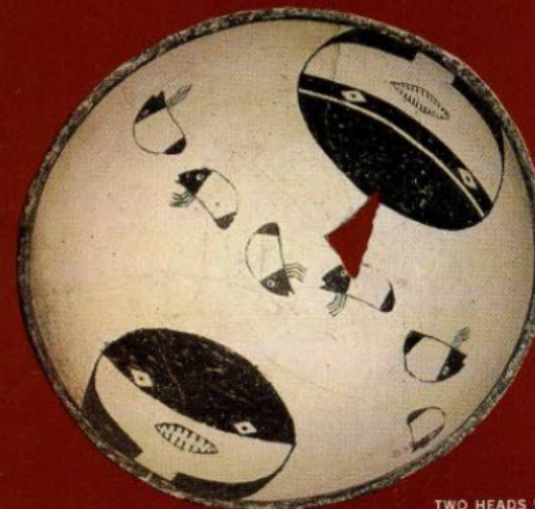
MAN TRAPPING BIRDS IN A GARDEN



MAN IN BAT COSTUME



DECAPITATION



TWO HEADS WITH WATER BUGS



CHILDBIRTH

FUNERARY OBJECTS, these Mimbres pots were buried upside down over the faces of the dead, and the pots themselves were “killed” – a hole punched in a ritualistic act of breakage that did little damage. In fact, many kill holes seem carefully placed to avoid design elements.

The Mimbresños’ high regard for their art is shared by collectors today. Private sales of Mimbres material have reached \$20,000 per pot. Most distressing, however, is the fact that almost every Mimbres site has been effectively destroyed by pot diggers. “It is the most looted culture in the United States,” says Mimbres Foundation director Steven LeBlanc. “This makes it terribly difficult to understand these remarkable people.”

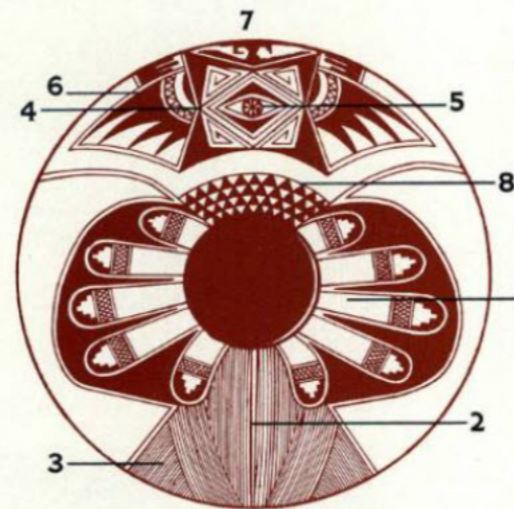


Age-old methods, timeless symbols

COIL UPON COIL, Hopi potter Dextra Quotskuyva builds a pot (right) using techniques passed down from mother to daughter since ancient times. With a piece of gourd, she shapes the vessel (center). After air drying and scraping, a slip, or thin wash of clay, is added before final polishing and painting (bottom). The piece will be fired in a crude oven of dung cakes. Only when the ashes are brushed away will Dextra know if she has succeeded or failed.

Great-granddaughter of the famed Hopi potter Nampeyo, Dextra did not make her first pot until 1967, when she was 39. "One day I asked my mother to let me help paint pots," she remembers. "She gave me a cracked one to start with, but when she saw how I could paint, she was sorry she had given me the cracked one. It came easily."

A completed seed jar (left) shares Dextra's worktable with stones holding organic and mineral paints, yucca-leaf brushes, polishing stone, and a 400-year-old sherd of Sikyatki polychrome, whose designs inspired her family and other modern potters.



Dextra explains her design: From the seed-jar hole in the center, representing the sipapu, or mythical hole in the earth, the Hopis emerged from the underworld. Hands reaching out (1) represent the Hopis and all other living things coming into this world. The womb of mother earth (2) is flanked by other lines (3) signifying the spirits of all unborn people entering the world. The four corners of the earth (4) surround the eye of the Great Spirit (5), itself centered in the wings (6) and head (7) of an eagle. Four rows of triangles (8) indicate the Hopis' reverence for groupings of four.

Continuing a rich legacy

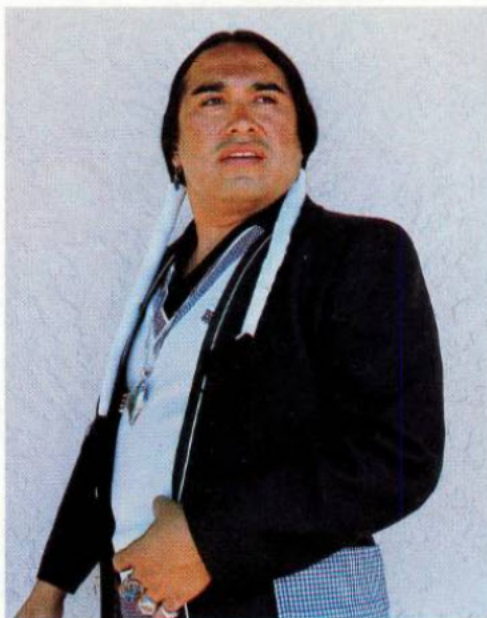
ENTICED from her mesa-top home one day in 1901, an Acoma woman (below) brought on her head a work of art—the bread jar shown on page 593—to the hands of purchaser and photographer Henry G. Peabody. In that time his name was worth recording while hers was unknown. But Indian anonymity changed as the



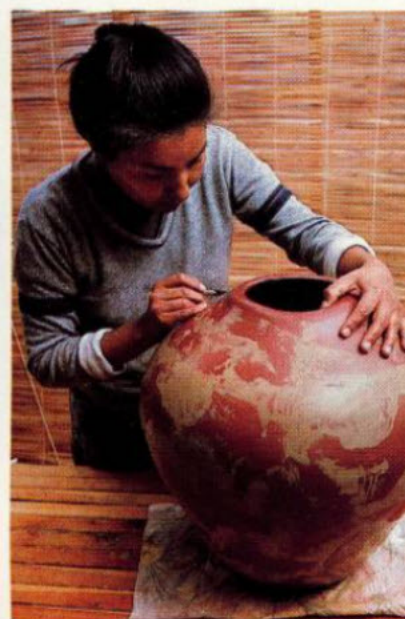
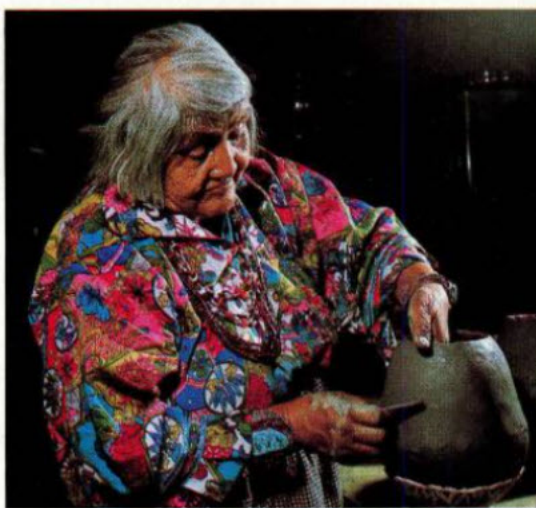
ueblos' need of income coincided with the white man's fascination with things Indian. Maria Martinez of San Ildefonso Pueblo (top right), first to sign her work, soon became famous both for her polychrome and black-on-black creations. Today scores of potters from 16 pueblos supply a growing market. Their products are art, and their craftsmanship—rooted in 2,000 years of tradition—endures.



Best-known of modern pueblo potters, **Maria Martinez** led the artistic revival until her death in 1980.



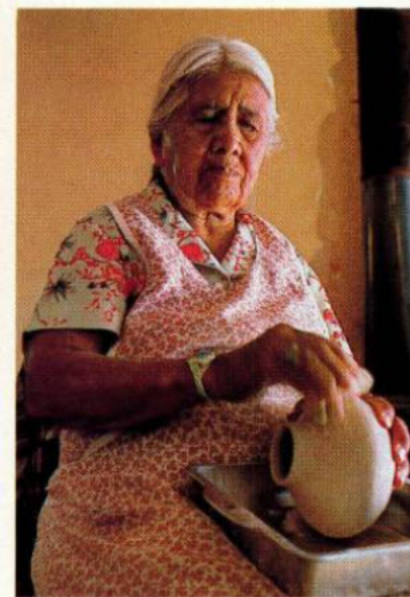
Tony Da—Maria's grandson and one of the few male traditional potters—adds new designs to old techniques.



Jody Fowell of Santa Clara combines incising with abstract slip-painted designs (above).

Mimbres designs were made popular in Acoma by **Lucy Lewis** (left).

Polished blackware is the hallmark of **Margaret Tafoya** of Santa Clara (above). Bear paws are a frequent motif. "They are good luck," she says. "The bear always knows where the water is."



Joy Navasie (Frog Woman) applies Sikyatki-style designs on almost pure white slip (above).

Teacher **Fannie Nampeyo** (left) has passed the artistic legacy of her famous mother to her daughters and granddaughters. □

Dr. Alfred E. Dittert, Jr., of Arizona State University, was the major consultant for this presentation. The majority of the photographs were made

by Jerry D. Jacka, with the following also contributing: American Federation of Arts, David L. Arnold, Peter L. Bloomer, Hillel Burger, Rick

Dillingham, Susan Einstein, Lowell Georgia, Bob Hanson, Dewitt Jones, Robert Lightfoot III, Guy Monthan, Steve Northup, and Julia Vasquez.