Desert

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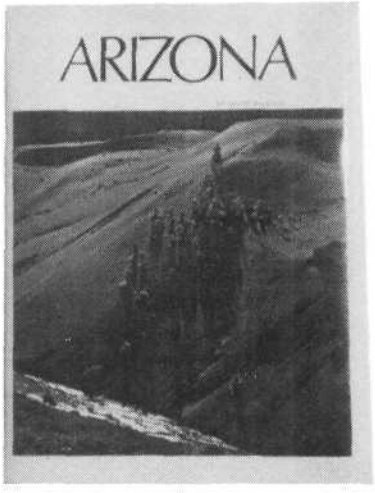
The Best of the West

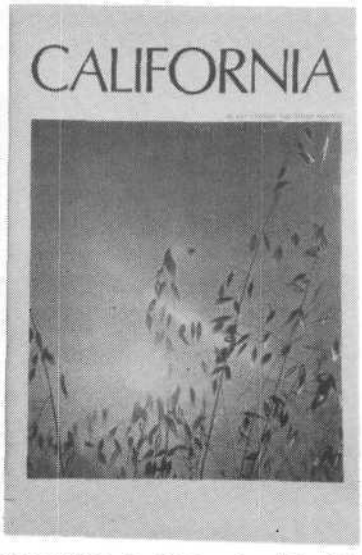
Through the photography of David Muench

UTAH by David Muench, text by Hartt Wixom. The impressions captured here by David Muench's camera and Hartt Wixom's pen bring to life a most beautiful under-one-cover profile of the fascinating state of Utah. Large 11x14 format, hardcover, 188 pages, $25.00.

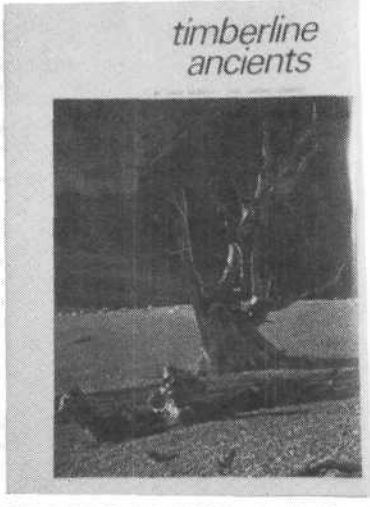
One of the West's truly great photographers, David has spent almost his entire life in pursuit of the perfect picture. It is incredible that one man could be at the right place at the right time so consistently, but with camera in hand he has captured the West for publications such as Audubon, The American West, National Wildlife, Westways, Arizona Highways, Colorado and has been a contributor to Desert Magazine for many years. These are all large format books that make a terrific gift item for anyone who loves the West.



ARIZONA by David Muench, text by David Toll. The finest pictorial presentation of the Grand Canyon State ever published. Muench has selected 160 of his 4-color photographs which are augmented by the comprehensive text of David Toll. Hardcover, 11x14 format, 200 pages, $25.00.



CALIFORNIA by David Muench and Ray Atkeson. Two of the West's greatest color photographers have presented their finest works to create the vibrations of the oceans, lakes, mountains and deserts of California. Their photographic presentations, combined with the moving text of David Toll, makes this a classic in Western Americana. Large 11x14 format, hardcover, 186 pages, $25.00.



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ANASAZI: Ancient People of the Rock. Photographs by David Muench, Text by Donald G. Pike. The superb photography of David Muench, and fascinating text by historian Donald G. Pike blend to product an outstanding publication on the Anasazi, Navajo for "The Ancient Ones." Beautifully illustrated, 11x8½ format, 192 pages, $16.95 until December 31, 1974, then $18.95.

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Desert MAGAZINE

Volume 37, Number 7 JULY 1974

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An airplane is caught in flight over The Maze in colorful Canyonlands National Park. See article on page 12. Photo by F.A. Barnes of Moab, Utah.

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DEPARTMENTS

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BOOKS OF

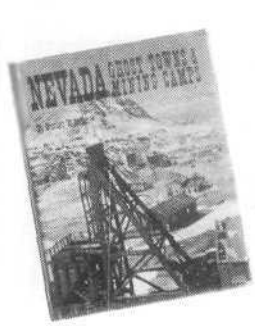
OUR HISTORIC DESERT, The Story of the Anza-Borrego State Park. Text by Diana Lindsay, Edited by Richard Pourade. The largest state park in the United States, this book presents a concise and cogent history of the things which have made this desert unique. The author details the geologic beginning and traces the history from Juan Bautista de Anza and early-day settlers, through to the existence today of the huge park. Hardcover, 144 pages, beautifully illustrated, $9.50.

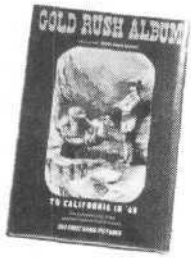
ARIZONA COOK BOOK by Al and Mildred Fischer. This fascinating and unusual five-cookbooks-in-one features recipes for Indian cooking, Mexican dishes, Western specialties, Arizona products and outdoor cooking. Includes sourdough and Indian fried bread recipes, as well as other mouth-watering favorites. Unique collections of hard-to-find Western cooking. Paperback, 142 pages, $3.00.

THE CALIFORNIA DESERTS by Edmund C. Jaeger. Revised 4th edition is a standard guide to Mohave and Colorado deserts with new chapters on desert conservation an aborigines. Hardcover, $4.95.

CACTI OF CALIFORNIA by E. Yale Dawson. A handy guide with description and illustrations of the principal cacti of California. Paperback, 64 pages, $1.95.

GHOST TOWN ALBUM by Lambert Florin. Over 200 photos. Fascinating pictorial accounts of the gold mining towns of the Old West—and the men who worked them. Large format, 184 pages, profusely illustrated, originally published at $12.50, new edition $3.95.





THE CALIFORNIA MISSIONS by the Editors of Sunset Books. A beautifully written history of California's 21 missions. One can feel, as he reads, the ferver of the padres as they gathered materials to build their churches, and an insight into history develops as the authors tell in simple prose what was going on in the world at the same time. 300 pages, complete with artful sketches and photographs, and paintings in color, hardcover, large format, $12.75.

NEVADA GHOST TOWNS AND MINING CAMPS by Stanley W. Paher. Covering all of Nevada's 17 counties, Paher has documented 575 mining camps, many of which have been erased from the earth. The book contains the greatest and most complete collection of historic photographs of Nevada ever published. This, coupled with his excellent writing and map, creates a book of lasting value. Large 9x11 format, 700 photographs, hardcover, 492 pages, $15.00.

THE GREAT AMERICAN WEST by James D. Horan. With over 650 illustrations, many in full color, this is the full western story from the days of the conquistadores to the 20th Century. Many rare photos never published before. Large 9x12 format, hardcover, 288 pages, originally published at $10.00, now only $4.95.

FROSTY, A Raccoon to Remember by Harriett E. Weaver. The only uniformed woman on California's State Park Ranger crews for 20 years, Harriett Weaver shares her hilarious and heart-warming experiences of being a "mother" to an orphaned baby raccoon. A delightful book for all ages. Illustrated with line-drawings by Jennifer O. Dewey, hard cover, 156 pages, $5.95

DICTIONARY OF PREHISTORIC INDIAN ARTIFACTS OF THE AMERICAN SOUTHWEST by Franklin Barnett. A highly informative book that both illustrates and describes Indian artifacts of the Southwest, it is a valuable guide for the person interested in archaeology and anthropology. Includes 250 major types of artifacts. Each item has a photo and definition. Paperback, 130 pages, beautifully illustrated, $7.95.

OLD FORTS OF THE NORTHWEST by H. M. Hart. Over 200 photos and maps. Exciting pictorial history of the military posts that opened the West. Hardcover, beautifully illustrated, originally published at $12.50. New Edition $3.95.

CORONADO'S CHILDREN by J. Frank Doby. Originally published in 1930, this book about lost mines and buried treasures of the West is a classic and is as vital today as when first written. Dobie was not only an adventurer, but a scholar and a powerful writer. A combination of legends and factual background. Hardcover, 376 pages, $3.95.

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THE HINGES OF DESTINY by Ben Lee Parker. A true story of ranch life in the early 20th Century. Ben Lee Parker's life in Texas was crowded with outdoor excitement and adventure. He takes the reader to another era, to a kind of life no longer lived in America, now taken over by concrete, asphalt and tourist attractions. Hardcover, illus., 149 pages, $5.00.

DESERT PLANTS AND PEOPLE by Sam Hicks. Tells how primitive desert dwellers find sustenance, shelter, beverages and healing medicines in nature. Hardcover, $5.95.

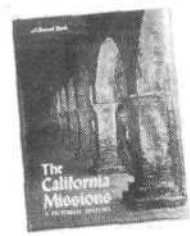
GHOSTS OF THE GOLD RUSH by George Koenig. To really enjoy a trip through California's Mother Lode Country one should have a knowledge of the historical background and a guide to places to see. This travel and historical guide gives this information in a concise and interesting manner. Paperback, illustrated, 72 pages, $1.95.

MINES OF DEATH VALLEY by L. Burr Belden. About fabulous bonanzas, prospectors and lost mines. Paperback, $1.95.

TALES THE WESTERN TOMBSTONES TELL by Lambert Florin. The famous and infamous come back to life in this great photo history including missionary, mule driver, bad guy and blacksmith—what tales their tombstones tell. Large format, 192 pages, originally published at $12.95, now only $3.95.

EARTHQUAKE COUNTRY by Robert Iacopi. Published by Sunset Books, this well illustrated book separates fact from fiction and shows where faults are located, what to do in the event of an earthquake, past history and what to expect in the future. Large format, slick paperback, 160 pages, $2.95.

DESERT, The American Southwest by Ruth Kirk. Combining her knowledge of the physical characteristics of the land, and man's relation to the desert from the prehistoric past to the probable future, with her photographer's eye and her enthusiasm for a strange and beautiful country, the result of Ruth Kirk's work is an extraordinarily perceptive account of the living desert. Highly recommended. Hardcover, beautifully illustrated, 334 pages, $10.00.



GOLD RUSH ALBUM, Editor in Chief Joseph Henry Jackson. 352 authentic first-hand pictures with text. The complete story of the most exciting treasure-hunt in history when some 200,000 persons sought gold in California. Originally published at $10.00. New, complete edition only $3.95.

THE CAHUILLA INDIANS by Lucile Hooper. Compared to the large tribes of the West, the Cahuillas, although being comparatively small, play an important part in the history of Southern California. Customs, living habits, the cultures of this tribe are better appreciated by the author's insight. First published in 1920, and again in print. Paperback, large format, bibliography, 65 pages, $2.50.

EXPLORING CALIFORNIA'S BYWAYS by Russ Leadabrand. Excellent travel guides to passenger car areas by a veteran explorer and popular writer. All books are heavy, slick paperback with detailed maps, illustrations and historical background, 180 pages and $1.95 each. STATE WHICH VOLUME WHEN ORDERING. Vol. 1, Kings Canyon to Mexican Border; 2, In and Around Los Angeles; 3, Desert Country; 4, Mountain Country.

THE WEST

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GEM TRAILS OF ARIZONA by Bessie W. Simpson. This field guide is prepared for the hobbiest and almost every location is accessible by car or pickup accompanied by maps to show sandy roads, steep rocky hills, etc., as cautions. Laws regarding collecting on Federal and Indian land outlined. Paperback, 88 pages, illus., $3.00.

SPEAKING OF INDIANS by Bernice Johnston. An authority on the Indians of the Southwest, the author has presented a concise well-written book on the customs, history, crafts, ceremonies and what the American Indian has contributed to the white man's civilization. A MUST for both students and travelers touring the Indian Country. Heavy paperback, illus., $2.50.

THE WEEKEND GOLD MINER by A. H. Ryan. An electronic physicist "bitten by the gold bug," the author has written a concise and informative book for amateur prospectors telling where and how gold is found and how it is separated and tested, all based on his own practical experience. Paperback, 40 pages, $1.50.

THE WEEKEND TREASURE HUNTER by A. H. Ryan. A companion book to his **Weekend Gold Miner**, this volume is also concise and packed with information on what to look for and what to do with your treasure after you have found it. Subjects range from Beach Combing to Sunken Treasures, Paperback, 76 pages, $1.95.

FIELD GUIDE TO WESTERN BIRDS by Roger Tory Peterson. The standard book for field identification sponsored by the National Audubon Society. 2nd edition, enlarged with new section on Hawaiian birds. 658 in full color. Hardcover, $5.95.

EXPLORING DEATH VALLEY by Ruth Kirk. Good photos and maps with time estimates from place to place and geology, natural history and human interest information included. Paperback, $2.25.

CAMPING AND CLIMBING IN BAJA by John Robinson. Contains excellent maps and photos. A guidebook to the Sierra San Padro Matir and the Sierra Juarez of upper Baja, Calif. Much of this land is unexplored and unmapped still. Car routes to famous ranches and camping spots in palm-studded canyons with trout streams tempt weekend tourists who aren't up to hiking. Paperback, 96 pages, $2.95.

THE INDIANS AND I by Peter Odens. Intimate converstions with Indians by a compassionate author who writes in the style of Ernie Pyle. Paperback, illustrated, 89 pages, $2.00.

COINSHOOTING, How and Where To Do It by H. Glenn Carson. This book presents tips and 'tricks' on coinshooting and hunting other items lost by people over the years. Metal detector owners will find their hobby made more profitable, says this veteran "coinshooter." Paperback, illustrated, 58 pages, $2.50.

LOST MINES AND HIDDEN TREASURES by Leland Lovelace. Authoritative and exact accounts give locations and fascinating data about a lost lake of gold in California, buried Aztec ingots in Arizona, kegs of coins, and all sorts of exciting booty for treasure seekers. Hardcover, $4.95.

MINES OF THE EASTERN SIERRA by Mary DeDecker. Facts about the mines on the eastern slope of the Sierra Nevada and Inyo Mountains. Paper, $1.95.

BYROADS OF BAJA, by Walt Wheelock. In addition to describing the many highways now being paved, this veteran Baja explorer also tells of back country roads leading to Indian ruins, missions and abandoned mines. Paperback, illus., $1.95.

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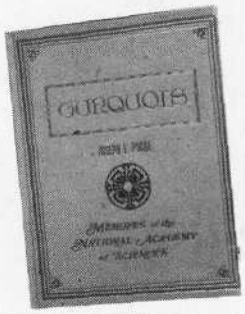

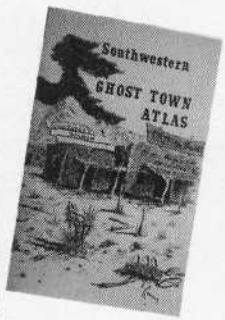

BEACHES OF BAJA by Walt Wheelock. Beaches on the Pacific side of Lower California are described by the veteran Baja explorer. Unlike California beaches, they are still relatively free of crowds. Paperback, illus., 72 pages, $1.95.

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BAJA CALIFORNIA by Choral Pepper. Packed in this comparatively small book is a world of facts about the land, the insects, vegetation, the seashore, the missionaries, vanished missions, lost treasures and strange stories, tall and true, of Baja California. Fascinating reading. Paperback, 126 pages, $1.95.

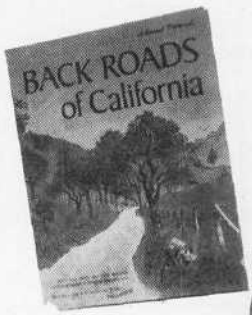
TURQUOIS by Joseph E. Pogue. [Memoirs of the National Academy of Sciences]. First printed in 1915, **Turquois** has in its third printing (1973) been updated in many ways. Among them are listed currently-operated Turquois mines, more color plates. The book is full of incredible results of research and an in-depth study of this fascinating mineral of superficial origin. Hardcover, 175 pages, beautifully illustrated, $15.00.

BACK ROADS OF CALIFORNIA by Earl Thollander and the Editors of Sunset Books. Early stagecoach routes, missions, remote canyons, old prospector cabins, mines, cemeteries, etc., are visited as the author travels and sketches the California Backroads. Through maps and notes, the traveler is invited to get off the freeways and see the rural and country lanes throughout the state. Hardcover, large format, unusually beautiful illustrations, 207 pages, $8.95.

OLD ARIZONA TREASURES by Jesse Rascoe. Containing many anecdotes not previously covered in Aizona histories, this book covers haciendas, stage stops, stage routes, mining camps, abandoned forts, missions and other historical landmarks. Paperback, 210 pages, $3.00.

CALIFORNIA-NEVADA GHOST TOWN ATLAS andSOUTHWESTERN GHOST TOWN ATLAS by Robert Neil Johnson. These atlases are excellent do-it-yourself guides to lead you back to scenes and places of the early West. Some photos and many detailed maps with legends and bright, detailed descriptions of what you will see; also mileage and highway designations. Heavy paperback, each contains 48 pages, each $2.00.

TREES OF THE WEST [Identified at a Glance] by Matilda Rogers, Photographs by Wynn Hammer. Miss Rogers has written graphic descriptions of all of the trees generally found in the Western area of the United States. Mr. Hammer has photographed them when in their prime. The result is a handbook that everyone can understand and enjoy. Paperback, illustrated, 126 pages, $2.50.



A NATURALIST'S DEATH VALLEY by Dr. Edmund C. Jaeger. In this revised third edition, Dr. Jaeger covers and uncovers some of the mysteries of this once humid, and now arid trough. He tells of the Indians of Death Valley, the mammals, birds, reptiles, amphibians, fishes, insects, trees, wild flowers and fossils. Paperback, 66 pages, $1.50.

UTAH GEM TRAILS by Bessie W. Simpson. The casual rockhound or collector interested in collecting petrified wood, fossils, agate and crystals will find this guide most helpful. The book does not give permission to collect in areas written about, but simply describes and maps the areas. Paperback, illustrated, maps, $3.50.

GHOST TOWNS AND MINING CAMPS OF CALIFORNIA by Remi Nadeau. The only good, hardcover book on the California ghost towns. We recommend it highly. $7.50.

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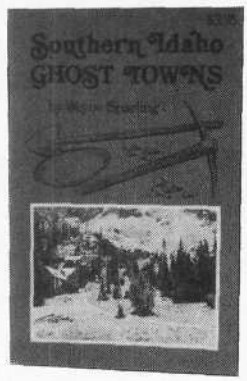


SOUTHERN IDAHO GHOST TOWNS
By Wayne Sparling

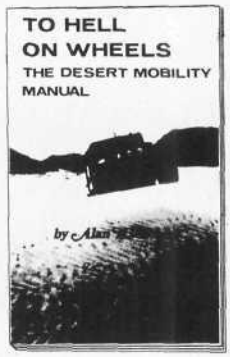
The state of Idaho is so large, so geographically diverse, and so abundantly endowed with natural beauty that to learn about a part of it only serves as encouragement to travel a bit farther, to dig a little deeper. This book has been prepared as a guide to acquaint vacationers and tourists with but one facet of a very fascinating state: the old mining camps.

Scattered through the rugged deserts and mountains of southern Idaho, are the remnants of towns that once were roaring mining centers. Most are true ghost towns, marked now by decaying cabins, the relics of ore mills, and machinery that ranges from abandoned tram cars to remarkably intact arrastras, used to crush raw ore.

The early gold seekers, following in the footsteps of the fur trappers, did much to explore Idaho, and their mining camps helped to create a need for permanent communities. Some of the camps were merely tent cities, others consisted of a few log cabins, and still others, such as Iron Springs, became quite plush cities in their day. The author describes 84 of these sites, which he has visited by pickup, by 4WD rig and by foot. Discussing the history and highlights of each, 95 photographs accompany the text, and maps detail the location of the camps.

As most mining camps in Idaho were up in the mountains, July, August and September are the best months for a visit. The main Salmon River as it crosses Idaho has often served as a north and south divider, and so it does with this book. All mining camps mentioned are located south of the river with the exception of three in the Salmon area.

A welcome addition to the libraries of ghost town buffs, or to those fascinated by Western history. Paperback, 135 pages, 3.95.



TO HELL ON WHEELS
The Desert Mobility Manual
By Alan H. Siebert

To Hell on Wheels is not just another survival book. It is a manual of mobility executed specifically for the recreational vehicle driver who is looking for something more than the organized campground. The deserts have become magnets of attraction to hundreds of thousands of adventure seeking recreationists, but the extremes of climatic change, improper distance-endurance judgements and other natural hazards

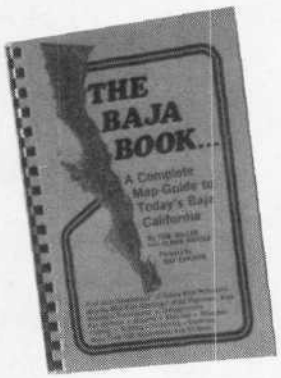
can turn a relatively simple problem of mobility into a nightmare.

This book divides the problems of desert mobility into two parts: The Vehicle and Survival Afoot. The author describes Deceptions in the Desert, such as mirage distortion, climate prediction distortion and mental distortion due to dehydration, and gives excellent survival tips when planning trips. He also advises on proper equipment, getting stuck and unstuck in the sand, what to do for overheating and vapor lock, tire problems, punctured gas tanks, as well as driving techniques for turning around, traction in soft sand and maneuvering rocks.

A must for every desert traveler is his chapter on personal survival in which his first aid and basic kit needed for heat illness should be included in every outing. Equally important is the chapter on poisonous varmits of the desert and how to administer first aid if bitten.

Precautions with water, methods of purifying water and how to construct a sun still; information on edible animals and plants, plus poisonous plants to avoid; navigation and proper methods for signaling make this a manual of mobility designed for the newcomer, but of interest to the old-timer as carry-along reference material.

Paperback, glovebox-size, 64 pages, well illustrated, $2.95.



THE BAJA BOOK
A Complete Map-Guide to
Today's Baja California
By Tom Miller and Elmar Baxter

This new book, the work of veteran outdoor writers Tom Miller and Elmar Baxter, was published in conjunction with the opening of the new Baja California Transpeninsula Highway and covers the entire Baja Peninsula featuring a mile-by-mile grapic map of the new highway.

Maintaining a trailer home at Corona Beach south of Ensenada for many years, Tom Miller is undoubtedly one of the leading authorities on Baja today. He has driven thousands of miles throughout the entire peninsula, exploring, charting, photographing and taking notes against the day the long-awaited transpeninsula highway, Mexico 1, would be opened.

Elmar Baxter, a long-time friend of Miller's, has been an outdoor and travel writer, editor and photographer since 1946. Traveling well over one million miles to all parts of the world, he lists Mexico as his favorite country, Baja as his favorite place.

The two friends have pooled their talents and knowledge to give you every minute detail you want to know about insurance, fuel, weather reports, health hints, boating, surfing, diving, flying, fishing, beachcombing, in addition to a Baja Roadlog which has been broken into convenient segments of about two hours drive between easily recognizable landmarks. More than 100 illustrations and 50 maps list all highways, resorts, trailer parks, campgrounds, gas stations, beaches and missions.

In addition to the interesting text describing the birth, history and people of Baja, there is also included a small synopsis of each mission and town, giving accommodations available and information on pets, entertainment, fishing, telephone numbers, etc.

A great package in one book, and easily the best guidebook of its kind for every type of recreationist who is interested in visiting this fascinating country.

Paperback, 178 pages, profusely illustrated with maps and guidelines, $7.95.

OREGON'S FORT

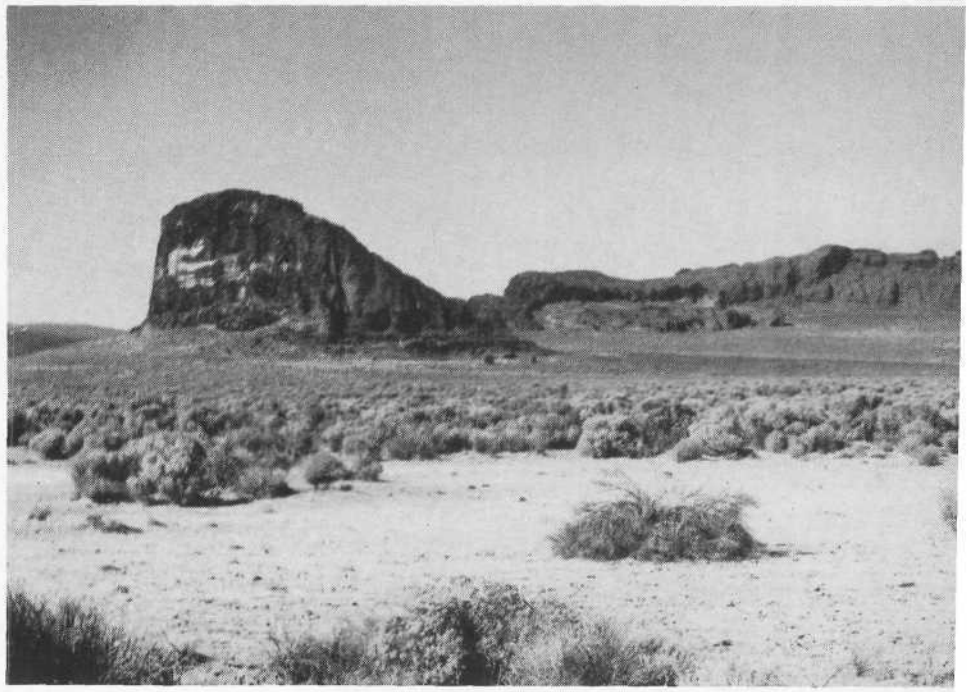
"COOL, GREEN, OREGON," as the brochures so aptly describe it, has yet another face not as well-known as its handsome coast, luxurious forests, snow-capped mountains and sparkling lakes. Encompassing some 24,000 square miles and occupying almost the entire southeast quarter of the state, is a sizeable desert.

The Oregon Desert, with its distinctive landscape and personality, is quite unlike the arid regions of the Great Southwest. Formed eons ago during the final uplift of the Cascade Range, this high plateau found itself lying in the rain shadow of lofty mountains. No longer would storms from the Pacific Ocean drop great amounts of moisture. Though millions of years would pass before the conclusion, a desert was being born.

During the Pliocene Epoch (5 to 10 million years ago), tremendous volcanic eruptions occurred in the Cascades. The plateau was wrenched, shaken, cracked and warped. Volcanic fires and hot gases spewed forth from vents. Ash and rocks were ejected and sheets of lava rolled across the land. It was a "fiery furnace" and would have been awesome to behold.

The Pleistocene Ice Age followed this period of vulcanism and applied the finishing touches to the landscape we know today. As the glaciers melted, nearly every depression filled with water. Scores of sizeable lakes occupied Southeastern Oregon and vast forests covered the land. Mammals, birds and fish proliferated.

Retreat of the glaciers brought great changes. Shallow lakes began to dry up. Though landlocked and dependent mainly on streams from surrounding mountains, many of the larger lakes survived. Their life cycle changed to one of wet and dry and in many cases, salinity. Rabbit brush and Great Basin sage became the dominate plants and covered the region in a somber blanket of gray. Adding a welcome touch of green were scraggly junipers—the only tree apparently able to stand the rigorous climate.



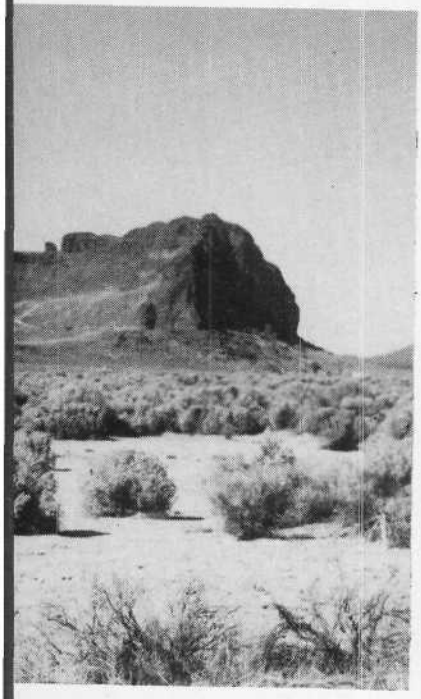
Along with many other species of animals, large herds of antelope came to roam Oregon's Desert. With game plentiful, it was only natural that Indian tribes soon followed. Eventually, the White Man arrived to settle and tame the land. Some were successful, but tame the land—they never could!

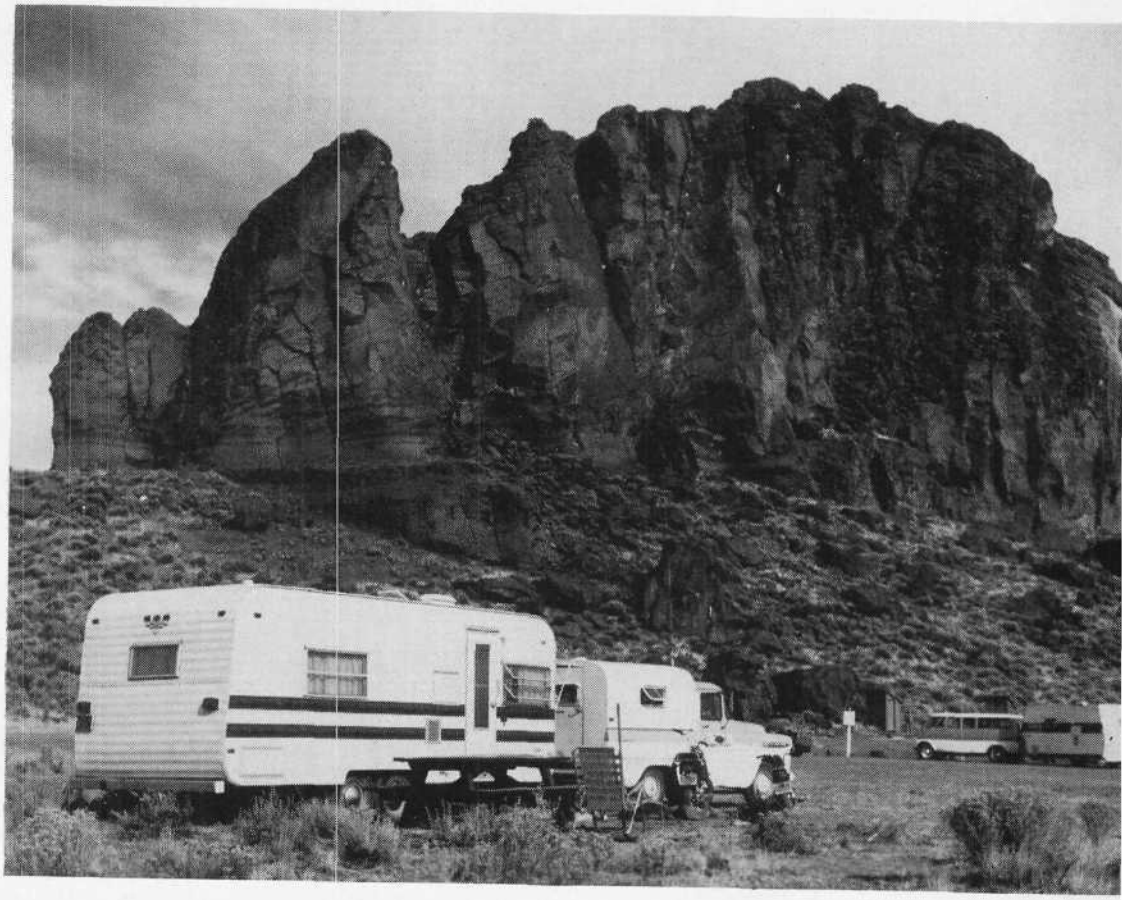
Fort Rock Country in northwestern Lake County, is a microcosm of the geologic past and the Oregon Desert of today. It provides visitors with a delectable sampling of the old and the new. East of State Highway 31, 100 miles northwest of Lakeview, lies Fort Rock Valley and the "hub" of this volcanic, desert region—the little community of Fort Rock.

Less than a mile north, rising from the desert floor and resembling a bulwark built by giants, is one of Oregon's most spectacular geologic formations—Fort Rock, known affectionately as "the old volcano." The area is now a State Monument with a campground and picnic sites. It makes an ideal base camp from which to explore the many other points of interest in this fascinating land.

At first glance, Fort Rock appears to be a huge caldera with a collapsed south rim. However, it is an eroded remnant of

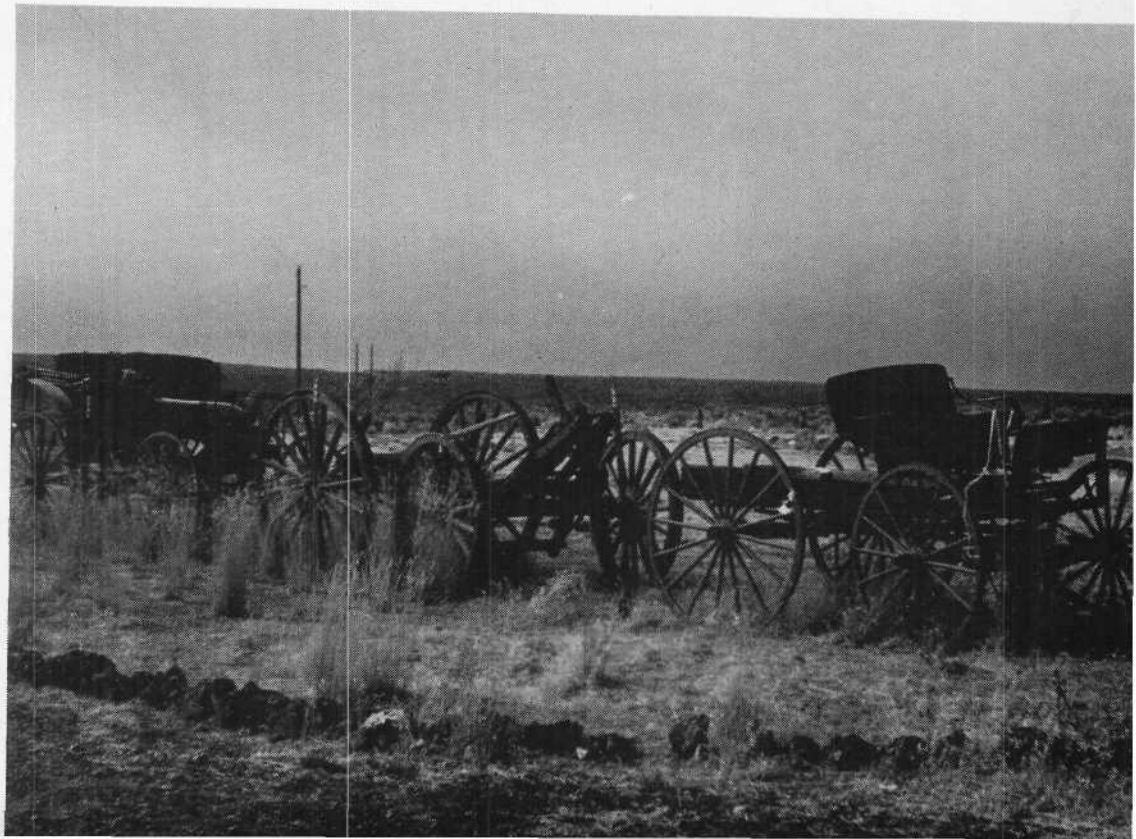
ROCK COUNTRY





by
MARY
FRANCES
STRONG

Photos
by
Jerry
Strong



Above: Fort Rock, one of Oregon's spectacular geologic formations, appears to be a huge caldera with a collapsed south rim. Actually, it is the remains of a very large, relatively shallow, flat-bottomed explosion crater called a "maar". Left: "Lost Forest" in the Oregon Desert, is a 9,000-acre stand of Ponderosa pines growing in an area of far less rainfall than is normally required. Many of the trees are quite large and very old. Upper right: An improved campground at Fort Rock State Monument serves as a good base camp from which to explore the many other points of interest. Right: Great numbers of homesteaders came to Fort Rock Country around the turn-of-the-century. Over a dozen towns sprang up within 40 miles of Fort Rock, but only three survive. Only a few wagons, such as these, recall the early days.

a tuff ring or "maar" as geologists now refer to such basaltic tuff landforms. Maars are relatively shallow, flat-floored explosion craters, the walls of which consist largely or entirely of loose fragments of country rock and only partly of essential magmatic ejecta."

While appearing sizeable, Fort Rock is the remains of a much larger maar formed by eruptions of subterranean lava along the shores of an ancient lake. The eruptions were followed by a slumping of material which plugged the vent. Then, water rushing into the crater furnished steam for subsequent explosions. Gravity sorted the expelled particles which dropped into place and resulted in the hundreds of layers now exposed in the steep walls. Studies of this layering indicate the vent was outside and northwest of the crescent-shaped formation. The unusual shape of Fort Rock is due to wave action in a Pleistocene Lake. Wave terraces can readily be observed.

We explored Fort Rock on trailbikes, using a dirt road that followed along the base of the rim. Almost immediately we climbed well above the valley floor and had the feeling of steep walls encircling us. Inside, the rim, Fort Rock seemed to have grown immensely in size. Perhaps this was due to our being on bikes, but it appeared much larger than when viewed from below. Actually, it is about a third-of-a-mile across the rim with the walls rising well over 300 feet from the desert floor.

At the center, beneath the north rim, a summit was reached and the road began a descent. We elected to park and enjoy the view. The buildings at Fort Rock and nearby ranches were reduced to toy size and Oregon's Desert stretched endlessly to the horizon. It was October and the brilliant blooms of rabbit brush had given a golden hue to the usually somber land. I tarried while Jerry sped down the western rim. In what seemed only a few moments, he was on the road far below—a tiny figure, almost unrecognizable. A desert has a vastness that seems to diminish all else in size. I was reluctant to leave. The song of the wind pleased my ears and the beauty before me soothed my eyes. I am always "at home" on a desert, no matter where it is located.

At least a week or more could easily be spent enjoying the sights in Fort Rock Country. Oregonians are proud of their "lunar landscape," as this region of vulcanism is often called. State maps clearly indicate the locations of special interest. If time is limited, it is difficult to select between areas with such enticing names as "Hole-In-The-Ground"—a depression 300 feet deep and a mile across. Its resemblance to a lunar crater is startling. The "Lava Beds, Lavacicle Cave, Ice Cave and Crack-In-The-Ground" are self-descriptive. "Big Hole" is another maar within easy access of Highway 31.

East of Fort Rock lie two important and unusual areas—Lost Forest and Fossil Lake. Now a "happy playground" for dune buggy enthusiasts, the latter is surrounded by over 12 miles of shifting sand dunes. A lake "full of bones" lay among them unnoticed until George Duncan, first postmaster at Silver Lake, recognized their important scientific value. In 1902, many fossils of prehistoric mammals and birds were gathered by students and sent to the Smithsonian Institute.

"Lost Forest" isn't lost at all, since its location is shown on Oregon's official highway map. Scientifically speaking, it is a 9,000-acre pine forest growing where it should not! Yet, here in a desert region of only 10 inches rain annually, the forest survives. This unique forest has been studied for over 20 years and some interesting data uncovered. Lost forest pines differ from other Ponderosas only in that "their seed germinate more quickly." However, at the present time, they cannot perpetuate their kind due to the aridity and extreme temperatures occurring throughout the year.

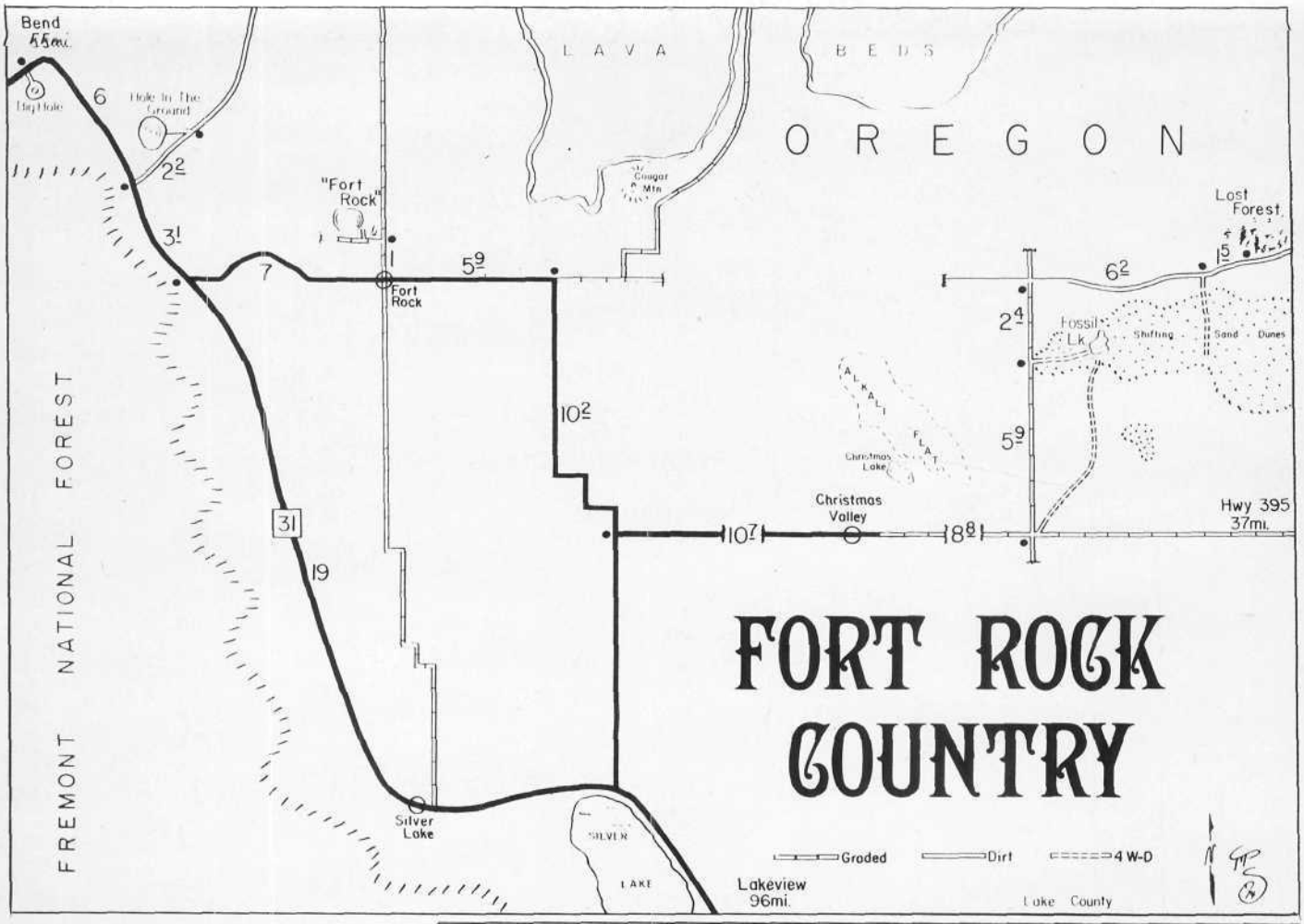
The forest is believed to be the descendant of a forest which covered the region 10,000 years ago. Its survival is probably due to a layer of compacted, volcanic ash being covered by drifted sands. Acting as a mulch, the sand readily absorbs the slight rainfall and holds it in basins above the somewhat impervious ash layer. This provides the tree roots more moisture than 10 inches normally would.

Further studies of Lost Forest are planned by the Bureau of Land Management. As a protective measure, they have filed an application to withdraw the area from all forms of appropriation on public land.

Enroute to Lost Forest and Fossil Lake, we passed the little community of Fort Rock and recalled this region had been heavily homesteaded around the turn-of-the-century. Prior to the influx of "sod busters," men, wise to the ways of arid land, had developed successful cattle ranches. The ranchers were a hardy lot and survived through their own initiative. The nearest town was 100 miles away and one's neighbors were "down the road apiece"—usually 15 to 20 miles. They lived with the land rather than on it; and the weather was their partner. Cattle ranching continues today.

Before the first ranchers, long before, Indians lived in Fort Rock Country. Many artifacts, including mortars, pestles, skinning knives, arrow and spear heads have been uncovered in their campsites and caves. It would seem the prehistoric tribes found it a land of plenty, where lakes and game abounded. When the lakes began to dry up, the Indians moved out. However, the region remained a common meeting ground where several tribes regularly returned to hunt and trade.

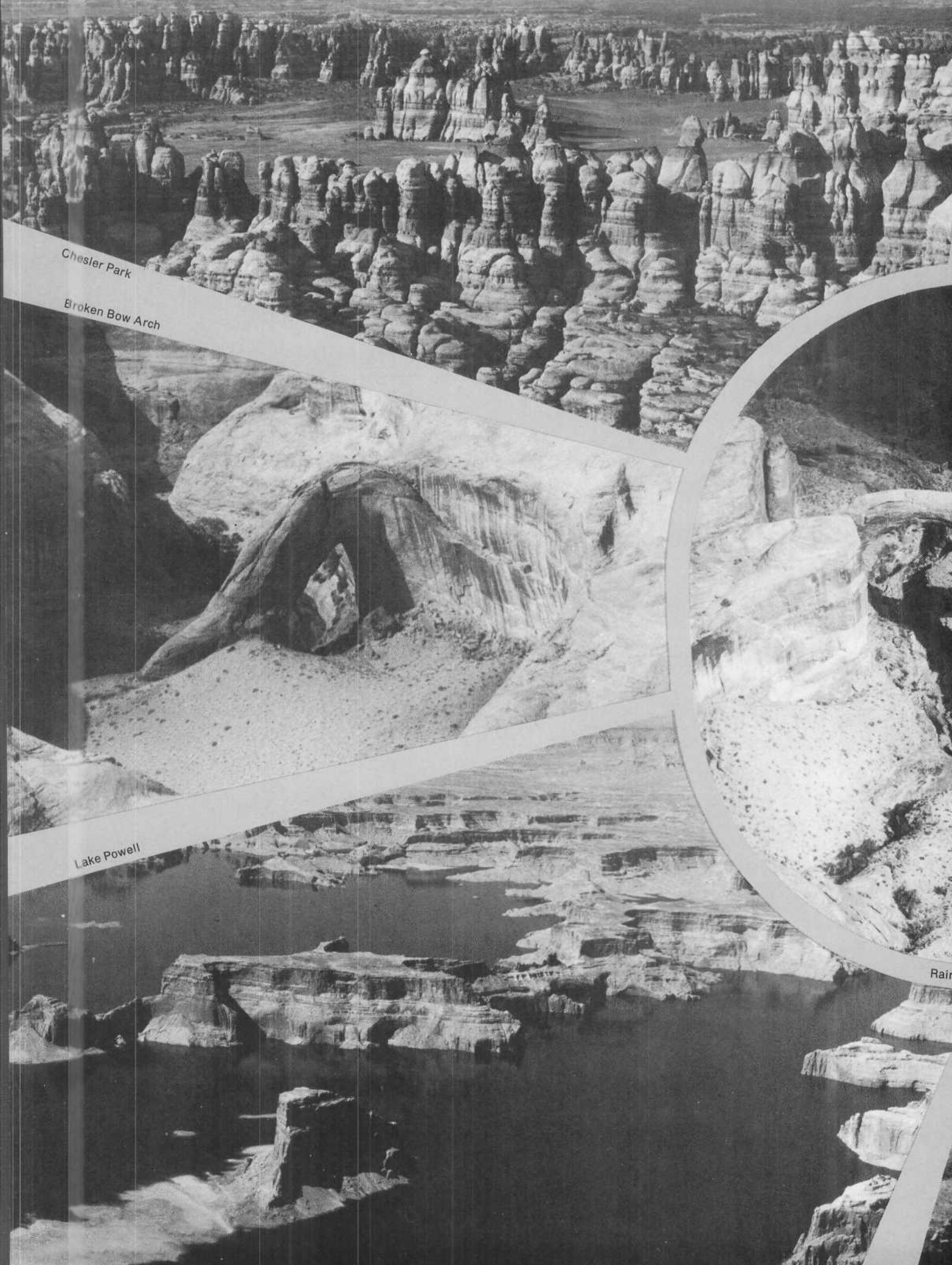
Homesteaders did not fare as well as the Indians and early ranchers. It was their way to change the land by fencing, plowing, planting and building towns.

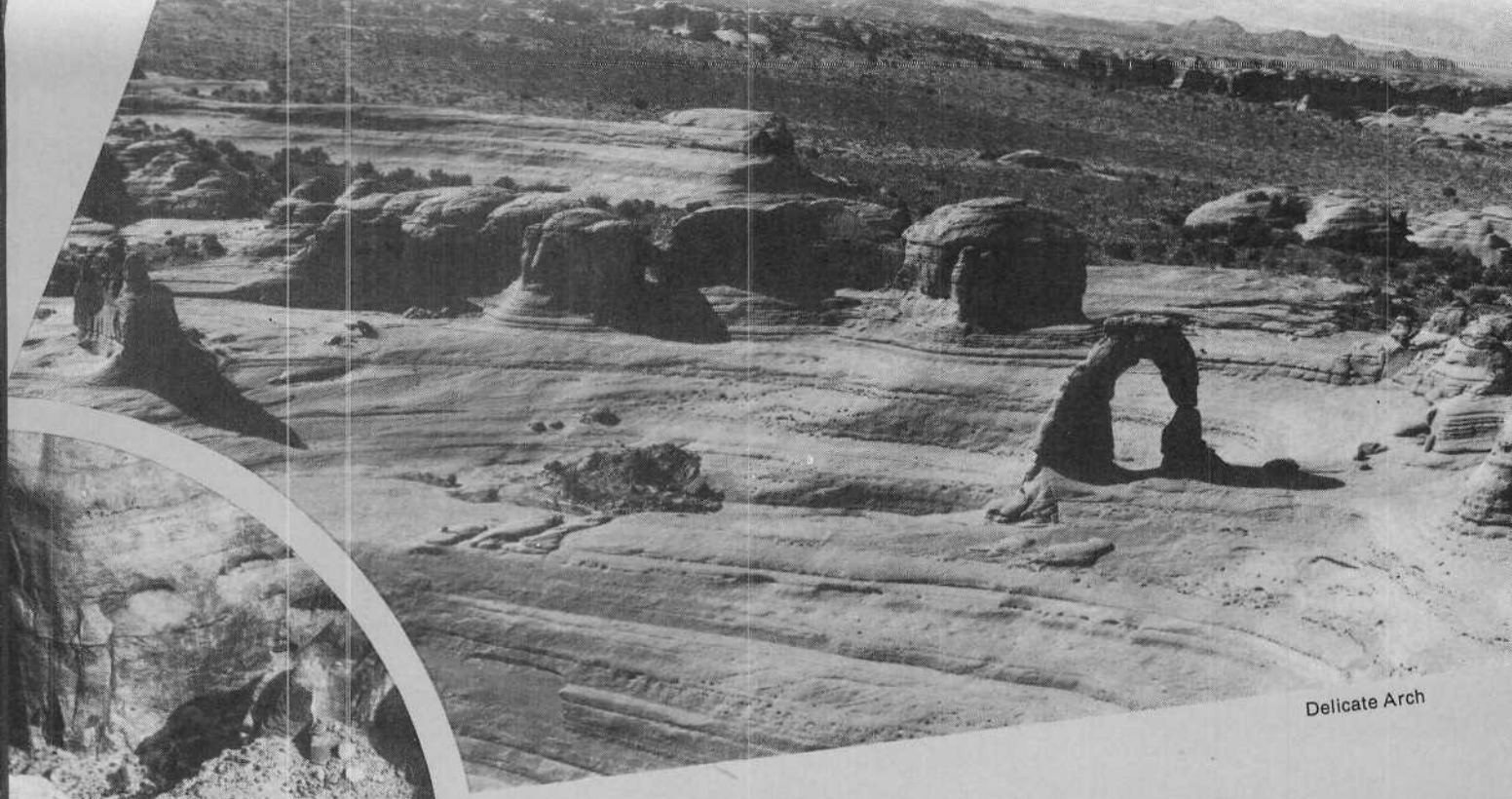


They were uninformed and ill-equipped to survive in a desert region. By 1914, a dozen small communities had sprung up within 40 miles of Fort Rock. All had a postoffice and a few stores. When a postoffice was removed, the town was dying. Within two years, Burleson and Viewpoint had met this fate. Arrow, Woodrow and Conley hung on a little longer.

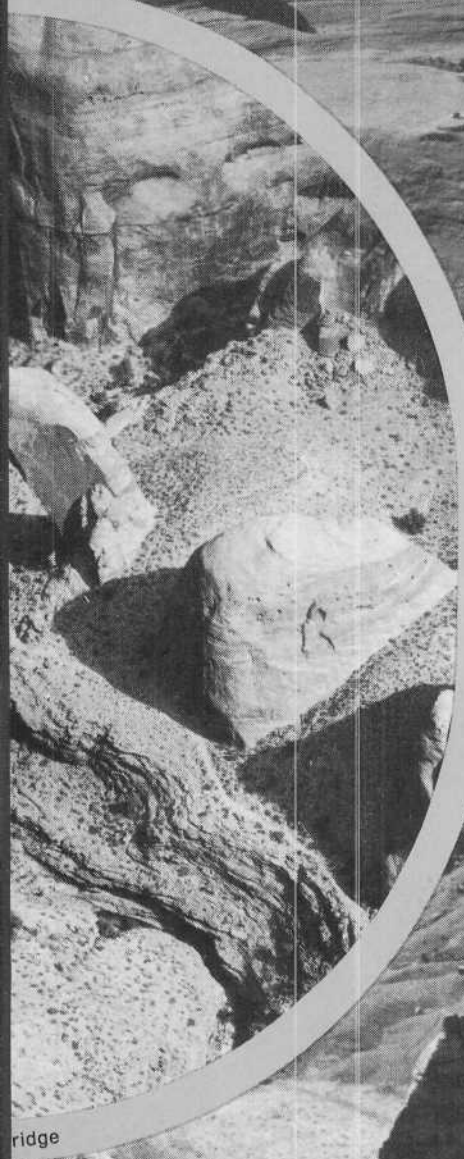
The year 1920 seems to have lowered the final curtain on the rest with the exception of Fort Rock, Silver Lake, Summer Lake and Fremont. All but the latter (deceased 1928) survive today. Unlike Western mining towns, there are no ghostly remains of those departed.

Visitors in Fort Rock Country, who live in crowded cities or classic rural areas, quite possibly will ask, "Why would anyone choose to live in this forsaken place?" The residents of Oregon's Desert are a special breed of Man. They love their land, tolerate the wind, suffer the heat and cold, enjoy the unrestricted primeval views and cherish the peace, quiet and clean air. Even today, many modern "settlers" do not remain. But those who stay and accept the desert's challenge are the happier for it! □


Chesler Park
Broken Bow Arch
Lake Powell
Rain



Delicate Arch



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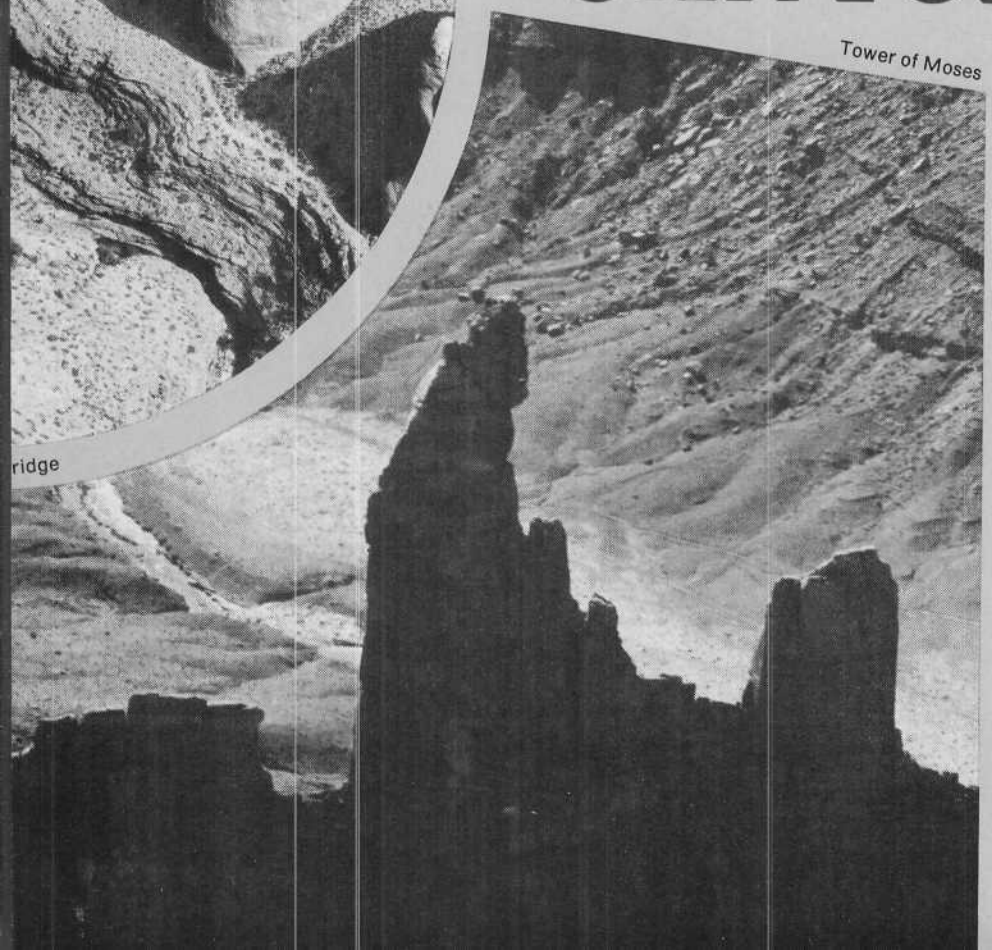
AIR TOURING IN CANYONLANDS



Tower of Moses

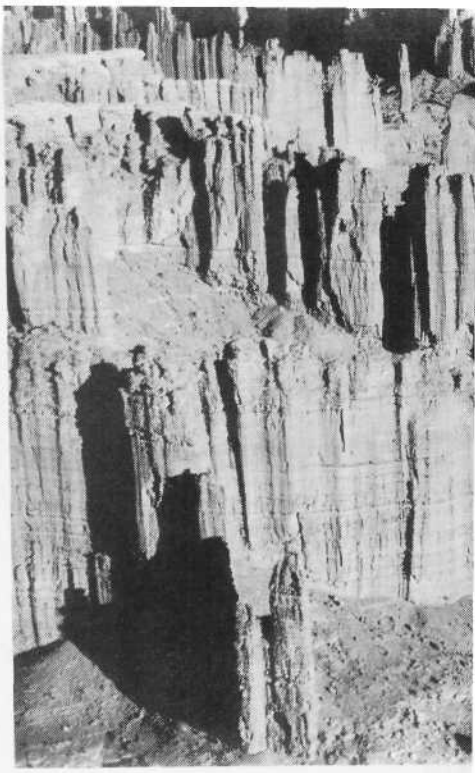
by F. A. BARNES

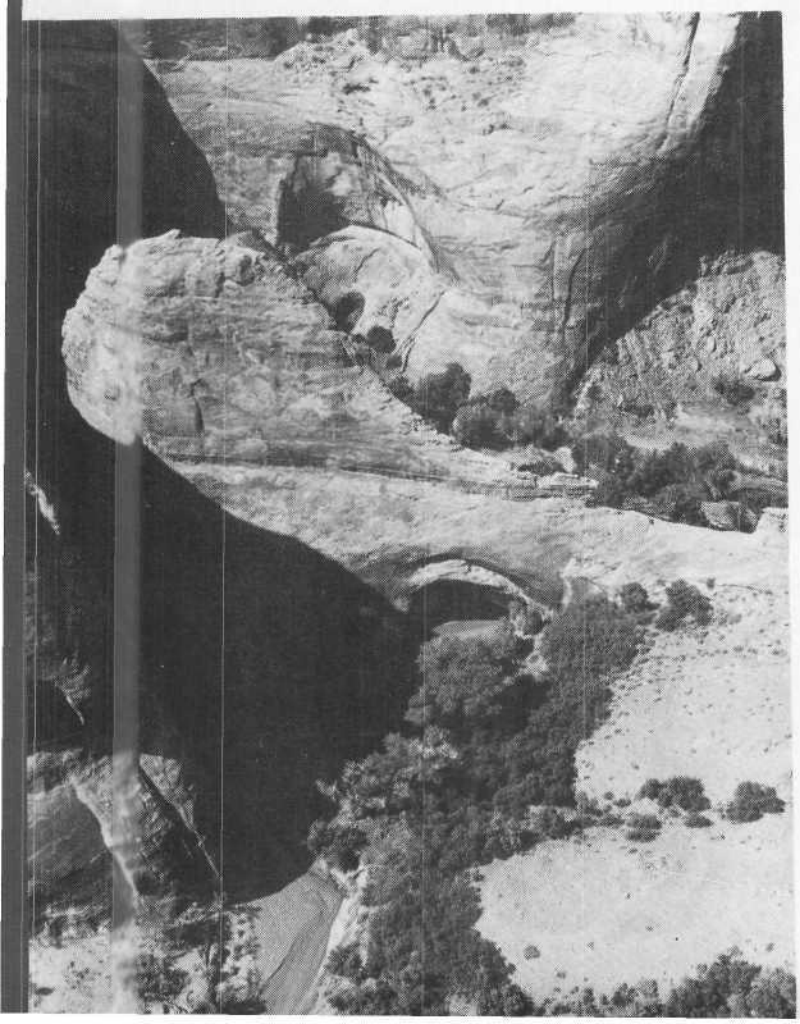
THE AVERAGE VISITOR to the canyon country of southeastern Utah has a very limited time to spend getting a glimpse of a land so vast and complex that learning to know it intimately would take a lifetime.

Those with only a few days available generally drive through this sprawling, elevated desert wilderness, stay a night or two at one of the several communities there, take a boat tour on Lake Powell to see Rainbow Bridge, drive to one or two of the more publicized viewpoints in Canyonlands National Park and take a swing through Arches National Park.

If a little more time is available, visitors often take one or more guided tours into various canyonlands wilderness areas, aboard river crafts, or in an off-road vehicle. Those planning to spend their whole vacation in the region may also do a little hiking along the various marked foot trails in the region's national parks and monuments.

But most visitors overlook what can be

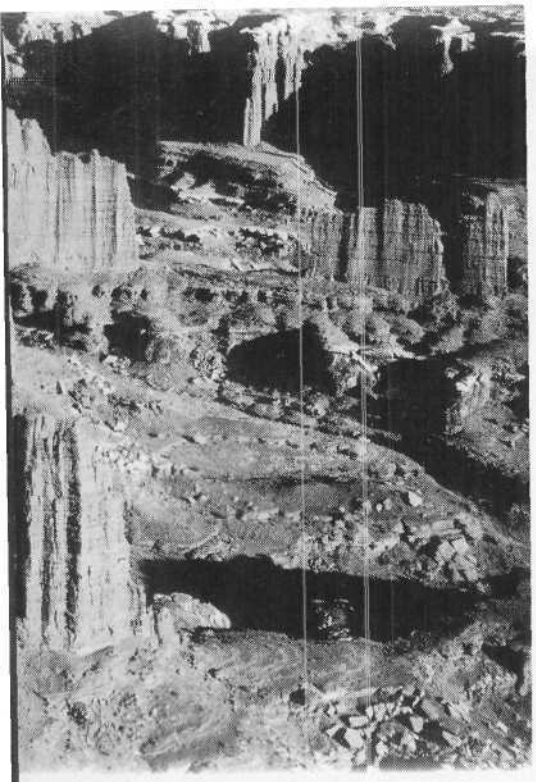




Upper left: The Totem Pole, in Monument Basin in Canyonlands National Park, is over 350 feet tall, yet seems small when viewed from an airplane. Upper right: Monument Basin, in Canyonlands National Park, closely resembles a city of skyscrapers. The "buildings" seen here are over 40 stories high. Right: Scenic flying can be enjoyed by whole families in the comfort of six- and eight-seat enclosed airplanes. Left: Coyote Natural Bridge is in a remote branch of the Escalante Canyon system to the north of Lake Powell.

the most exciting, spectacular and novel canyonlands adventure conceivable—a guided tour by air, over the most breath-takingly beautiful scenery in the world.

Even the most hurried tourist can spare an hour or two for a scenic flight that will provide an overall view of a national park that would take months to attain by land and water travel. And those who have more time to spend should also not neglect this approach to seeing and



A Behind-The-Scenes Account from the Utah Associate Editor

F. A. Barnes

PERHAPS *DESERT* READERS would like to know that the last of the several flights I took to obtain photos for the accompanying air-touring article turned out to be one of the most spectacular, exciting and beautiful adventures I have had in six years of exploring the canyonlands of southeastern Utah. The flights were provided through the courtesy of Sky West Aviation out of Canyonlands Field, the airport that services Grand County and the big-little city of Moab. On an earlier flight over Arches National Park, a single plane, piloted by Bob Rynio, manager-pilot for Sky West, had been used, but for this flight we utilized two planes so that I could photograph a plane in flight over scenic Canyonlands National Park. This turned out to be easier said than done. But let me tell it like it happened, with a few of my own personal impressions thrown in.

Using a four-place Cessna 172 and a six-seat Cessna 206, we had picked the late afternoon for our flight because the lowering sun casts shadows that make the three-dimensional features of this rugged land stand out in sharp relief. The ground temperature was in the upper 70s and the skies were blue with a few scattered and photogenic clouds. Once in the air, I tried out the arrangement we had made for taking pictures unobscured by the optical imperfections of the plane's window. A retainer brace had been removed on the pilot's hinged window so that it could be unlatched and swung upward against the wing and permit both forward and rearward picture-taking. Once the plane was airborne, the air stream under the wing kept the window pinned to the wing. This didn't always work so well. Once in a while, when we slowed down, the diminished air stream let the window come down, obscuring my view. Of course, to use the window, I had to ride in the pilot's seat, and the pilot, Don Garrick, had to use the co-pilot's controls. That open window sure made for fine picture-taking, but it also had several drawbacks.

When I wanted to close the window after a series of pictures, it was all I could do to reach into the airstream and get the window pulled down! It got cool, too. The temperature at our flight level was 40 degrees! It also made the cockpit noisy, causing problems with radio communications, and it gave me several thrills when Don made sharp left turns, leaving me looking down at the rugged terrain through a thousand feet of pure nothing! It's amazing how much security you can get from a pane of plexiglass! But despite the difficulties, the results were thrilling and spectacular. From my viewpoint, Bob's red-and-white Cessna added an element of graceful man-made beauty to the stark natural wonders spread out below us to the far horizons. For more than an hour we flitted about over the gigantic parkland.

Beauty, indescribable beauty, was everywhere below and around us. The slanting shadows of The Needles speared across the open meadows of Chesler and Virginia Parks, giant arches stood out in stark relief, the elevated tableland upon which they stood was edged by dark-shaded bluffs that plunged steeply into the darkened river gorges, and to the south and northeast the snow-capped peaks of the Abajo and La Sal mountain ranges pierced a deep blue sky afloat with islands of colorful cumulus clouds. Reluctantly, we headed for home, out of time and out of film, and tired from our two hours of concentrated efforts, but still fascinated by the continuous, moving panorama of gorges and mesas and eroded rocky wilderness below us. Past the vast plateaus of Hatch Point, Dead Horse Point and Island in the Sky we flew in the vivid evening sun.

That flight will be a cherished memory for me so long as I live. And I sincerely hope that all who take my advice and try a scenic flight over this wonderful country, those who follow my invisible path over this land that defies superlatives, have air adventures as unforgettable as mine.

understanding the diverse beauty of a canyon country that rivals the Grand Canyon for sheer magnitude and color, and far exceeds it in variety.

Of those who have sampled this bird's-eye-view of canyonlands, some would rather take a flight first, then spend time to explore special points of interest by land or water. Others prefer first to visit various areas and features by car, four-wheel-drive, boat or on foot, then take a scenic flight over the same areas, spotting familiar landmarks and places they have already seen from a different perspective.

Whenever a guided air tour is taken, however, whether before, after or instead of more earthbound explorations, this method of sightseeing offers rewards and thrills that cannot be attained any other way. Where else in the world could you spot a dozen or more giant arches in red-hued sandstone within a few minutes? By what other means could you see spread out below you the many twisting, blue arms of Lake Powell, set in its salmon-pink rocky gorge? What land-based vehicle or water-borne boat can move over this rugged terrain quickly enough to give the human eye a true sense of the appalling depth and maze-like complexity of its canyons, the height of its massive walls and towers

and mesas of colorful sandstone, the sheer size of its lakes and rivers and snow-capped mountain ranges?

Flying, in the comfortable interior of a small plane, operated by a pilot who knows the country, at elevations low enough for good viewing yet high enough for safety, can provide all these advantages over conventional touring methods. Flying can also provide an exciting highlight for traveling families, and most air tour services offer special rates for families or groups.

Most such services also offer a variety of flight routes, some short and surprisingly inexpensive, some longer but still reasonably priced. For example, the same air service might offer short flights over Arches National Park, longer ones over Canyonlands National Park and half or full-day excursions over the Lake Powell region.

Outstanding scenic flights can be taken from four air fields within the Canyonlands area, one 15 miles to the north of Moab, Utah, another near Blanding, Utah, the third at Page, Arizona, near Glen Canyon Dam, and the fourth at Canyonlands Resort.

The flight service at Page specializes in air tours over Lake Powell, but also penetrates other nearby scenic areas on longer flights. The tour guide at Blanding specializes in trips over the southern part of Canyonlands National Park and famous Monument Valley, but also offers longer flights to Lake Powell, as well as combination land-and-air tour packages.

The Moab air tour operator specializes in Arches and Canyonlands National Parks, but has longer routes over Lake Powell, as well as a variety of short tours to other scenic highlights in the Moab vicinity.

Scenic flights are also available from other air fields on the borderlands of canyonlands country, but due to their locations cannot offer travelers the amount and variety of scenery in a short flight that is available from air fields in the very heart of the more picturesque country.

Taking a scenic air tour is simplicity, itself. Although it is possible to make advance reservations, and even advisable for large families or groups, normally all that is necessary is just to drive to the airport, wait a few minutes for the plane to be readied or to return from a flight,

then climb aboard for a thrilling and outstandingly scenic air adventure.

Most of the four- to eight-seat airplanes used in scenic air tours are not pressurized, but since they rarely attain high elevations, even those with disabilities that preclude high altitude travel can enjoy this kind of flight. Children, too, especially like sightseeing by air, and this is an excellent way to introduce youngsters to their first flying experienience.

Photographers will find themselves challenged by the unique opportunities and limitations offered by low elevation scenic air travel. The colorful, varied landscape below provides an endless source of spectacular pictures, and points of interest can be photographed from the air that cannot even be approached by any other practical means.

This type of photography also has its problems, however, problems unique to flying and not normally encountered by the average amateur photographer. The speed of the plane is one such problem, taking pictures through glass or plastic windows has its disadvantages, and desert scenery is exceptionally bright when viewed from the air. Those unprepared for these unusual conditions are often disappointed with their pictures.

Movie cameras, of course, do well for aerial photography, especially those that adjust automatically to changing light conditions.

A few helpful hints will make still photography from a plane more fun and less disappointing. First of all, non-adjustable, point-and-click cameras are generally unsuitable because they cannot compensate for the speed of the plane and the brilliance of the landscape. Such cameras can, however, take good pictures of more distant scenes during seasons, or times of day, when the lighting is not so bright.

Adjustable cameras should be set for their fastest shutter speeds, and allowances made for the brilliant desert sunlight. Care should also be taken to shoot through clean and unmarred areas of the plane's windows, at roughly a right angle to avoid optical distortion. This precaution applies to movie cameras, too. Window frames should also be carefully avoided, although often a picture will gain perspective by including a wing of the plane.

Even the most skilled photographers, though, have trouble with composing a picture in the normal manner. The scene is shifting too fast for leisurely study. The only answer to this problem is a keen eye for composition, alertness to what is coming up next, and a fast shutter finger. At best, however, photographers should expect to get a lower percentage of outstanding pictures from the air than they would normally produce. To overcome these odds, simply take more pictures—or more scenic flights.

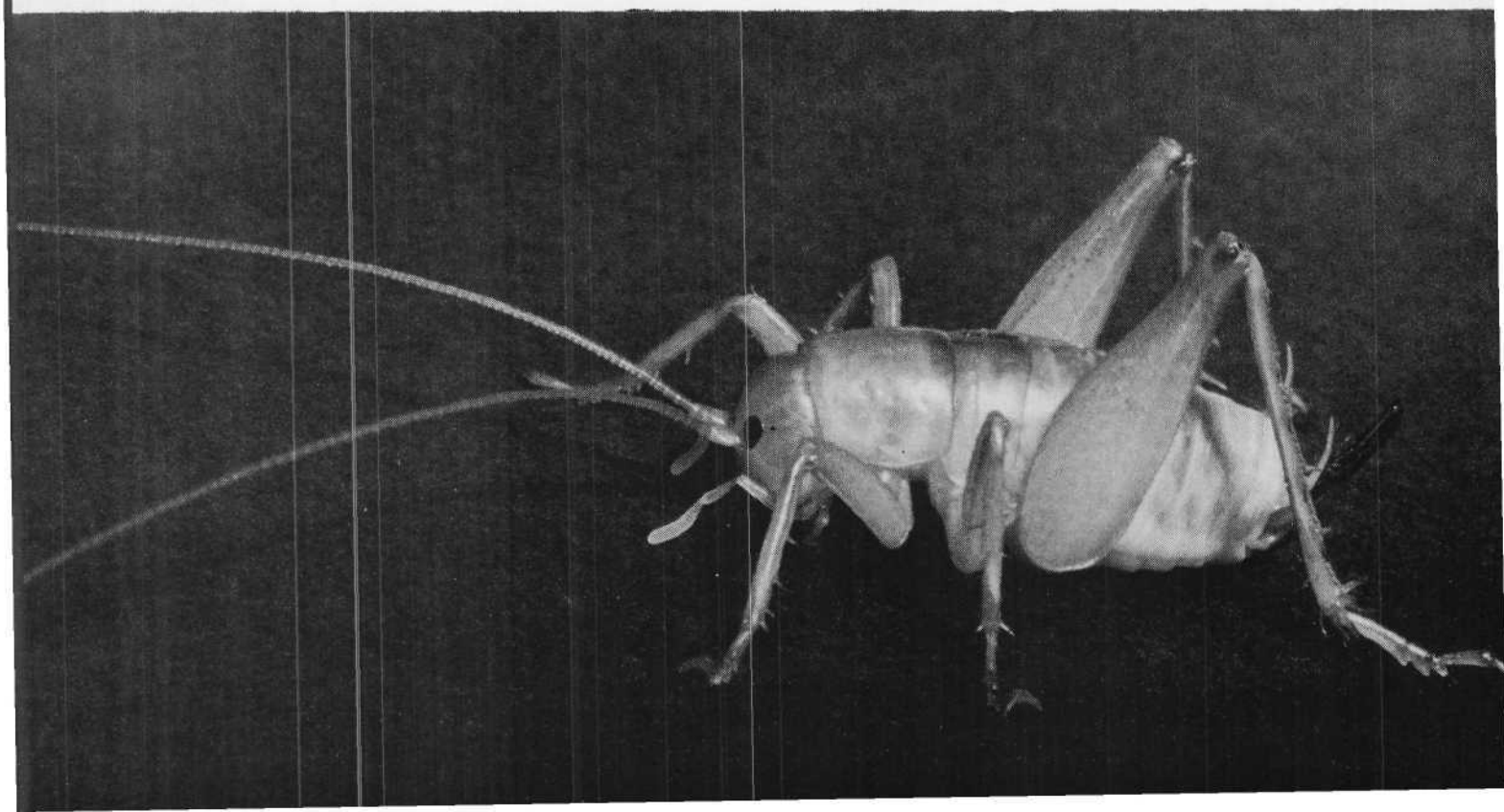
But whether or not you are a photographer, when you take an air tour over the colorful canyonlands of southeastern Utah, you can expect to get an eyeful of this scenic wonderland that cannot be acquired any other way. From the air, vast chasms, towering pinnacles, Indian cliff dwellings, upthrust mesas, serpentine rivers, soaring mountain ranges, unbelievably blue lakes and rolling, dune-covered deserts are all spread out below you, like a gigantic, mind-boggling relief map, but with impressive reality.

Seeing the canyonlands by air is a truly unique and special experience, one that should not be overlooked by Utah visitors. □

Desert Life

by Hans Baerwald

A night raider, the camel cricket is a rarely-seen, pale, wingless creature, and an extremely lively fellow. Taken with an Exacta and 50mm lens.



A MOTORHOME OWNER TELLS OF HIS EXPERIENCES ON THE NEW BAJA CALIFORNIA TRANS PENINSULA HIGHWAY . . .

A RUN ON MEXICO 1

by JIM SMULLEN

FEBRUARY 9—LEAVING Ensenada, Baja California, after a night spent at the luxury trailer park in Estero Beach, it was an opportunity to fill the water tank of our motorhome with what we knew to be good water. Water supplies ahead were unknown.

The highway south, the new Mexican trans-peninsular Route 1, was strange to us. It would lead all the way to the tip of Baja, ending at Cabo San Lucas, a 1,000-mile-plus stretch opened the prior December. It ended, perhaps forever, the old Baja Adventure over the torturous route that tore at the endurance of both men and machines. Now there was a new road costing the Mexican Government $160 million that expanded the promise of Baja for the American traveler.

From what we had read, it offered new problems with its promises: narrow stretches that had already claimed lives—one report said as many as 100 which we discounted—and while not a shortage of gasoline, a scarcity of locations where it could be bought. Tourist accommodations were more scarce than the spotty gasoline supplies. We knew that the most successful means of travel was by recreational vehicle, preferably one with large capacity gasoline tank. This we had.

The two of us, my wife and I, along with our two dogs, were old hands at Mexican travel. But that was the mainland where we knew almost every turn on Mexican 15 from Nogales to Mexico City. This would all be new.

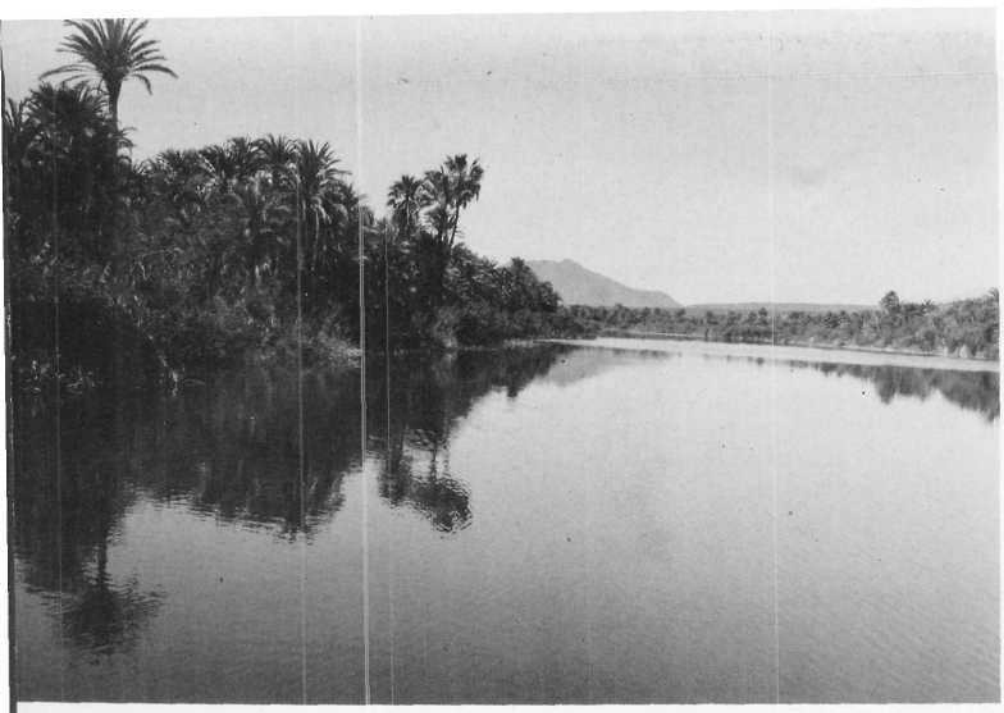
About a dozen miles south of Ensenada at Maneadero, we stopped to have our visitor permits verified by the officials. This permit is available at that point, or from the Mexican Government Tourist Office in Los Angeles, after proof of U.S. citizenship is shown. We had also purchased Mexican automobile insurance which is a must as U.S. policies are not valid in Mexico. And an uninsured motorist — Mexican or American — is headed for trouble in Mexico if he has an accident and is not covered—*whether he is at fault or not.*

On the mainland, a car permit is required, but throughout Baja no permit is necessary. The dogs had their up-to-date rabies innoculation certificates which are usually needed to return to the states. Technically, there is a provision that a special visa be obtained to take dogs into Mexico. Much paper work is involved and it is very time-consuming. A dozen years ago, we had gone through this procedure only to find nobody on the Mexican side cared to see the visa. Since then, on our annual treks, we have eliminated that formality.

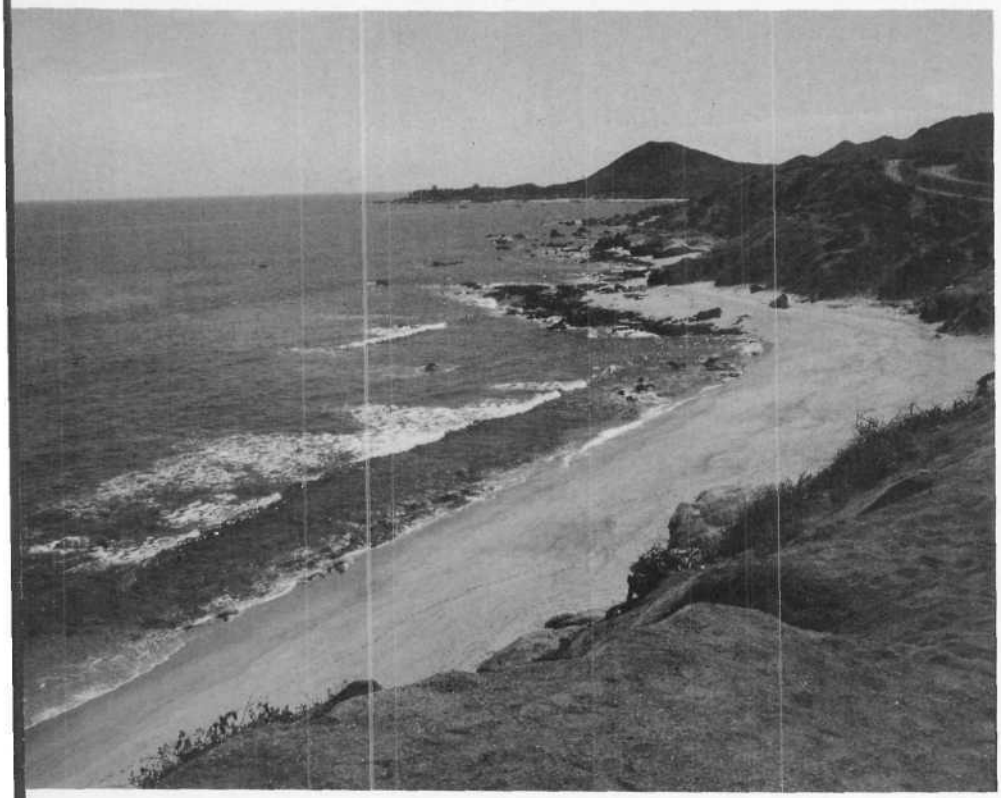
A typical scene on the new highway.

With all documents in order, we moved out on the wide two-lane highway through farmlands we learned produced olives and chili peppers. It was much like the agricultural valleys in Southern California. Reports told of the possibilities of fog through this area as the road began its climb to the higher desert country. We encountered none.

At Colonet, about 75 miles south of Ensenada, there is a gasoline station where it is a good idea to top off your tank if it is of average capacity. Just as you enter Colonet, there will be a Red Cross ambulance parked by the road. Volunteers seek donations. We have never failed to contribute to this cause whenever we had the opportunity.



Lagoon created by underground river at San Ignacio.



Stretch of beach just above the tip at Cabo San Lucas.

Now the road continues south toward Camalu and you notice the large fields of tomatoes and the many packing sheds along the road. A few miles farther and you approach the village of Colonia Guerrero and from there another 15 miles will bring you to Bahia de San Quintin, known for hunting and fishing. Quail and brant are plentiful on all the bays from San Quintin north to Ensenada. Again, if your gas gauge indicates, a fill-up would be in order here.

There are more vegetable farms spreading toward the horizon and then you come to a *parador*. This is a government-provided stopover—under construction when we went through—where by now the gas station is in operation, along with a restaurant and grocery store. A mile away, on the beach, a 66-room hotel was under construction along with another hotel, the Cielito Lindo.

El Rosario is the next community and the last of the coastal villages on the Pacific side. At El Rosario, we decided to call it a day. We had traveled over 150 miles, had seen no accidents and very little traffic. Buses came booming down the highway, but they were no threat. The road was wide, but in some spots lacked the encouragement of a solid shoulder. However, we could see no problem.

There were no camping facilities in El Rosario, and while we would have felt perfectly safe and comfortable pulling off the road somewhere, we did decide to head out toward the ocean for the night. It is not a good idea to leave the main highway unless your vehicle is equipped with four-wheel-drive. This can lead to disaster. However, we did see some vehicles heading out toward the ocean and decided to give it a try.

As we moved out in low gear, we found the road deeply rutted and ready to test every squeak in our rig. A camper preceded us and we held back until we saw how it fared. Gingerly, we both proceeded until we came to water. It proved to be only an inlet and not the coast line. We had taken the wrong fork in the road. By now there were four vehicles moving out in search of the shore and finally we found it, a high bluff overlooking an empty expanse of beach stretching north and south.

FEBRUARY 10—The next morning, in the company of two other campers, we headed over the same rough road toward the highway. We made it without incident or accident. A few miles down the road was Punta Prieta where we thought there would be a gasoline station at the *parador*. We found the *parador* under construction and no station, so we picked our way through the sleepy town hopefully looking for gas. There was no desperation on our part, but the two campers were in need. Finally, we found gasoline in 50-gallon drums siphoned out into small containers and then transferred into the gas tank. The two campers took on about 15 gallons apiece and we took on five just to be sociable. High octane gas (about 94) comes in at 64 cents per gallon and lower grade about 50 cents. This lower grade produced a ping in the campers but, because we had an ample mix of higher octane, it didn't bother us.

Back on the highway we climbed through more desert country. Cardon

continued

Hotel cabanas at the very tip of Baja.

cactus reached out toward the horizon in all directions and ocotillo dotted the desert floor. Then, for the first time we were introduced to the *cirio* (or *boojum*) trees. These are clowns of the desert, rakishly thrusting their trunks in unpredictable directions in defiance of the orderly growth of the circumspect cardons.

At Guerrero Negro, one of the largest salt-producing communities in the world, we were greeted on the highway by a *parador* under construction, plus a national monument being built. The monument, an ultramodern design suggesting the section of a drawbridge, was of steel and promised an arresting sight when finished. We turned off into the town and found a gasoline station with a supply of "premium" gas.

Our destination for the night was Scammon's Lagoon on the coast. This was the breeding ground for the great grey whales that rendezvoused there each year from November until February when they would go north to cooler Pacific waters. It was our hope to catch sight of them.

But we must again leave the paved highway. This time the roads were only a trifle better as compared to the route at El Rosario. It was a 20-mile trip and took an hour over the washboard surface. When we came to a camping spot, we saw the first indications of the invasion of Baja from the north. On the road we had seen a number of recreational vehicles, but they were well spaced along the highway. But here there were at least 15 clustered in one spot hoping to see the last of the whales. All had come over the rough road well marked with signs bearing the drawing of a whale and the word *ballenas*, which is whales in Spanish. A group of four motorhomes proved to be a motion picture unit from Disney Productions that would be there for two months shooting activity in the area.

FEBRUARY 11—The next morning we found that this excursion to Scammon's Lagoon wasn't in vain. Out in the bay we could see the giant spouts of the grey whales, the last contingent, perhaps, putting on a final display because this was February and their schedule demanded they head north.

Our schedule dictated that we move south, so in late morning we left the cluster of recreational vehicles and rumbled our way over the unpaved road back to the main highway. Our destination that night would be over on the Sea of Cortez, perhaps on Bahia Concepcion.

As the highway turned inland toward the east, we encountered the narrow part of the road (nineteen and one-half feet). True, as the reports had said, there were stretches where there were no shoulders, and some spots promised a plunge deep into ravines if a driver wasn't alert. Off in the sand and brush, you could see the old road, broken and winding, and we had been told that many Mexicans still used it, preferring it to crazy drivers on the new road. This may have been true, but again traffic was extremely light.

Several times we had seen American drivers stopped for some emergency. When we paused to see if we could be of help, we were always told the problems were minor. For anyone with either major or minor troubles, it was reassuring to know that if there should be an emergency, another American would be along in a matter of minutes. Then there are the Green Angels, the radio patrol sponsored by the Mexican Government. These rescue units, equipped with emergency know-how and equipment, have the sole duty of helping drivers in distress. Every mile of the highway is patrolled at least once daily by the Green Angels.

About 80 miles from the junction of the Scammon's Lagoon road with High 1, you come to San Ignacio. Here, there was a *parador* under construction and it is also here that the hurried driver, if he isn't careful, could miss one of the most unusual sights in Baja. By taking the road to San Ignacio, he will suddenly be exposed to two shimmering blue lagoons ringed by swaying palm trees. This is no trickery, no mirage in the dryness of the surrounding desert. Here is a true oasis created by underground rivers that surface to create an instant paradise among the yucca and cactus. San Ignacio itself is a picturesque little town with its quiet plaza and mission dating back to the 1700s. A pause here is an immediate retreat of several centuries into the past.

The highway from San Ignacio goes through the main desert for about 35 miles and then, very abruptly, begins a steep descent through the hills, winding its way toward the Sea of Cortez. Finally, there is a glimpse of blue water, then after several miles the sight of beaches and breakers greeting the desert sands. At sea level, the highway approaches the town of Santa Rosalia where all services are available in this mining village.

We didn't stop in Santa Rosalia, but kept going to Mulege—that resort city once only accessible by boat or by air—excluding the hardy souls who used the old road. We checked our gas at the station in Mulege, admired the oasis atmosphere where dates and bananas are grown, and then continued down the coast.

Between Mulege and Loreto is a stretch of country hugging the coastline where many access roads—usually rough but passable— take you down to

the beach. On one of these, at Bahia de la Concepcion, we dropped down for a stay. Again we found the area crowded, more so than at Scammon's Lagoon. Our spot had no facilities and most recreational vehicles were self-contained. Good water could be obtained back at Mulege and a truck selling groceries came by each day.

The area abounds with fish and off shore a shrimp boat moored each day. For a dollar, a small motorboat takes you out where you could buy shrimp for $3.00 per kilo, or about $1.50 a pound.

FEBRUARY 13—After spending a day here in the calmness of the bay, we moved south. This time it would be a short trip to Loreto and a trailer park with hookups. We found one at the Flying Sportsmen Lodge where there was potable water and electricity in the trailer facilities under the palms.

FEBRUARY 14—Ahead lay the 200-mile trip to La Paz. At this point the road climbs up and through spectacular mountainous area, and breaks on desert country where we came to Villa Insurgente, a thriving agricultural community that reflected the thriving life in the southern part of Baja.

Flanked by yucca and cactus, the highway winds through rolling hills for about 100 miles until it enters La Paz. This city of 50,000 has all services, including modern supermarkets. Two recreational vehicle parks, one with 20 spaces and another with 478, were each nearly full, demonstrating the draw of Baja California on the RV'er from the north.

FEBRUARY 15—Our final destination was still 151 miles south. This was Cabo San Lucas at the very tip of the peninsula, but our arrival was delayed. About a dozen miles from the city and after we had gone past San Jose del Cabo, we saw an inviting stretch of nearly deserted beach with breakers thundering in. An access road took us to within a few yards of the high-tide mark. Here we stayed, with occasional neighbors coming and going, for two days. Cabo San Lucas could wait. It had been there a long time and now would be there at our leisure. Right now, we wanted to savor the luxury of doing nothing. The road, most of it, was behind us and the short stretch ahead was predictable. We knew we were approaching the end, and we wanted to postpone it a little.

FEBRUARY 19—Cabo San Lucas, for all of its distinction of resting on the very tip of Baja California and across the Tropic of Cancer, is another Mexican town, quaint and charming. It boasts luxury hotels and all the refinements, including chartered marlin boats, cocktail lounges and airstrips.

For us, the real Baja lay back up the road over that 1,000 miles among the *cirio* trees. □

An Open Letter to Our Readers

EDITOR'S NOTE:
Desert Magazine has for 37 years represented the highest standards of preservation and conservation. It has been alluded and implied that the magazine was responsible for tremendous vandalism being done to a well-known group of petroglyphs. This we must categorically deny and the photographer-writer team that produced the article herein answer those charges.

AT THE PRESENT TIME, there is a great concern in our country in regard to the protection and preservation of our Public Land, wild life and antiquities. This is as it should be, as they are a valuable natural heritage which should be enjoyed by our generation and those who follow.

To preserve, protect and enjoy—could be easily the consensus of all citizens, if a sensible approach to the problem would be put forth. This is not an impossible dream. We Americans have the savoir-faire and dedication for the task.

Unfortunately, there are many people who are not willing to "give a little in order to obtain a whole lot" for everyone. Special interest groups have organized. No longer is the good of the land, animals or antiquities the real issue. Instead, each such well-organized group is fighting to "have things its way" with no holds barred.

It is proper to fight for one's rights as long as the real objective is not lost or replaced by personal desires. Nor is it good judgement to plead one's case by using "scare tactics" based on untruths. This latter method is being deliberately used in order to gain the support of deeply concerned citizens. What follows is a case in point.

As members of our local archaeological club, we recently attended the monthly meeting which featured, as guest speaker, Ike Eastvold.

Sometimes referred to as, "The Petroglyph Man," Mr. Eastvold informed his attentive audience that petroglyph sites were in need of greater protection due to the rise of vandalism and theft of petroglyph rock.

As one example, he cited the recent, near total destruction of a nearby, pristine petroglyph site located in Woods Wash, San Bernardino County. He indicated this had occurred over the Thanksgiving weekend as a result of an article and accompanying map published in a national magazine (see *Desert*, Oct. '73). Mr. Eastvold stated that tons of petroglyph rock had been removed, blasted or defaced in place. The site was apparently in shambles.

We talked with Mr. Eastvold following the meeting and he stated, "The photograph of the petroglyps you had in *Desert* Magazine is now one of a kind. Little remains at the site because it has been defaced, blasted and most of it hauled away. Great piles of broken petroglyphs are lying all over the ground."

We were shocked. How could people do such a thing? The wanton destruction of such priceless Indian art hardly seemed possible. We must see this senseless rape for ourselves.

An immediate call to William Knyvett, *Desert*'s Publisher-Editor, met with the same reaction. "Check it out," he directed.

Now returned from an inspection of the Woods Wash site, we are happy and relieved to report it is still as unique and beautiful to behold as we found and photographed it in February, 1972—over two years ago! We saw little evidence of man's recent visitation or the senseless destruction as represented by misinformed individuals who proliferate untruths under the guise of "Guardians of the Desert."

Using photographs we had taken in 1972, to prepare the Oct. '73 issue, we meticulously examined the rather extensive site. It became quite obvious that someone doesn't understand the forces of geology and has blamed people for the natural erosion. There are glyphs on the ground—they were there in 1972! Eventually, the glyphs will all fall prey to erosion. Two of the rocks bear beautiful "sheep glyphs" and they are still there!

The large glyph rock pictured in *Desert* had one small piece gone. We looked and there it was—on the ground below. Jerry returned it to its original position, but probably the next heavy storm will wash it down again. The "chia, ballerina, lizard" and other outstanding petroglyphs are still there to see. Had evil people been removing and destroying the petroglyphs here, they certainly would not have left fine ones on the ground.

Those who have spread the prefabrications relating to Woods Wash have a noble motive—protection of the petroglyphs. Unfortunately, the dishonest approach can lead only to the alienation of public support and the disqualification of spokesmen for the cause.

No man, or group of men, can claim an exclusive protectorate over the Desert

that many of us have come to love, each in his individual way. Is it their own inherent greed that makes them distrustful of others?

Make not the assumption that all who enter the Great Mojave Desert are bent upon its destruction. Were this true, Mr. Eastvold and his compatriots would not be seeing the hundreds of petroglyph sites they have only lately decided to protect.

Desert Magazine's policy has been built upon the strong moral ethics of its founder, Randall Henderson. Publisher William Knyvett and his staff continue the policy of, "To tell of this sublime land, to enjoy and to protect it." Nearly all of the petroglyph sites mentioned in articles are shown on the U.S. Geological Survey maps available to the general public. They are available in most libraries. Auto Club maps also pinpoint many of the sites. It does not take lengthy research in obscure files to find them, as Mr. Eastvold indicates.

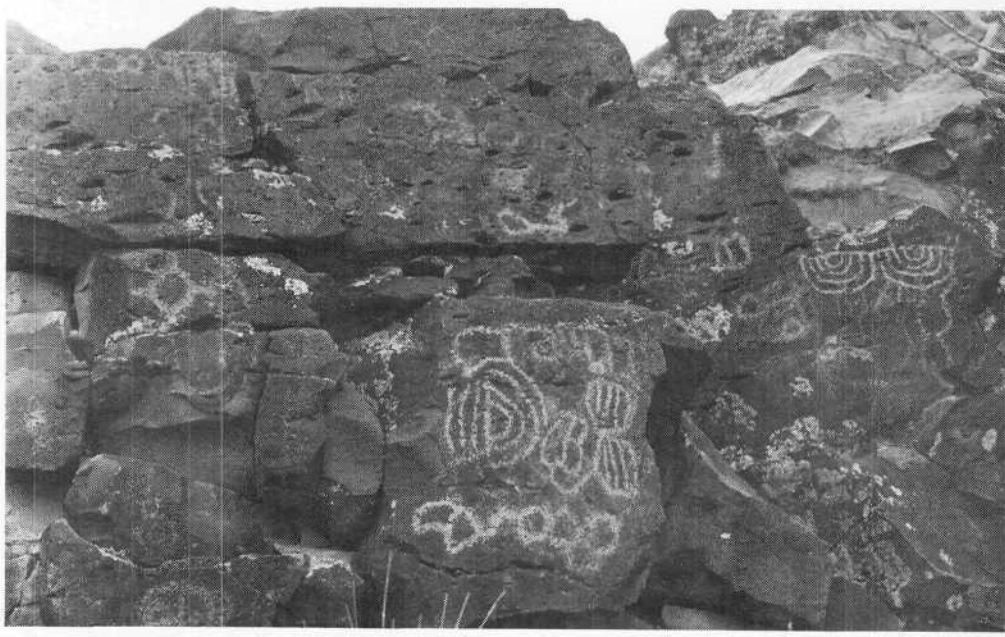
Should the beauty of a Monet, Renoir or Piccasso be denied the view of those who love great art and reserved to only the professional artists? Should everyone be punished for the actions of those who have stolen paintings from galleries? Of course not. Nor should anyone who loves our Great American Desert be denied the right to read about petroglyphs and perhaps visit a prehistoric Indian art site.

It is our concern that all endangered species and rare antiquities be protected—and they can be. Surely those espousing a just and worthy cause need not resort to untruths and innuendos in order to interest the citizenry. To do so, leaves doubt and arouses deep concern about their motives. Good is not attained through evil.

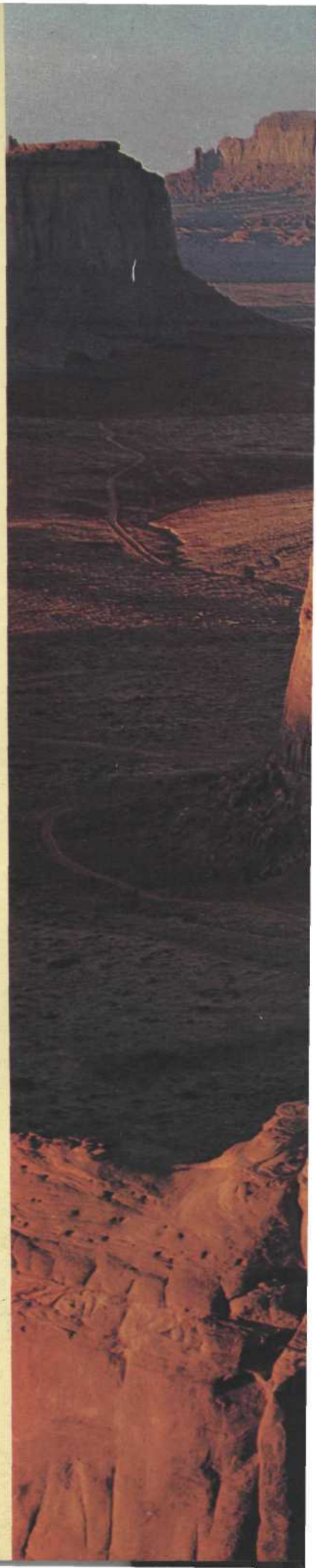
There is a movement underway to close the Desert to all recreationists except the back-packer and hiker. We urge *Desert*'s readers to be on guard and resist such actions. Do not be fooled into relinquishment of the enjoyment and use of Your Public Lands by those who would take away your birthright under the pretense of "protecting the desert." Keep informed. Write your Congressman and Senators. Save the desert land for all of us who love, but don't abuse it.

Jerry and Mary Frances Strong.

Above: This photograph of a group of petroglyphs in Woods Wash appeared in the October 1973 issue of DESERT Magazine. Mr. Eastvold stated "That photo is now one-of-a-kind. Little remains at the site because it has been defaced, blasted and most of it hauled away." Note cracks and looseness of glyph in upper right-hand corner.



Above: The same group of petroglyphs photographed in March 1974. Careful study will show the glyphs have not been blasted, defaced or hauled away as Mr. Eastvold stated. Note the cracked segment of glyph in upper right-hand corner is missing. Below: The missing glyph was lying on the ground, a victim of erosion—not vandalism. An in-the-field study of the Woods Wash petroglyph site showed, just as these photos—no vandals had damaged the area, since we photographed it in 1972!



Dramatic aerial view of Monument Valley at sunrise.

Father Liebler

by
JACK PEPPER

Color photo by STEVE TOHARI

WHENEVER HIS NAME is mentioned throughout the Indian reservations of Utah and Arizona, it is with respect, reverence and affection. The older natives of Navajoland refer to him as "the priest with the long hair," while others call him *Ee-nii-shoodi*—"the one who drags his robes." The younger generations of Indians and the white settlers address him simply as "Father Liebler."

But only a few of the thousands of families to whom he has brought spiritual solace, physical health and comfort and restored pride in their individual abilities and crafts during the past 30 years know he resigned an important position as an Episcopal clergyman in a prosperous eastern community to devote his life to the underprivileged.

Born in Brooklyn, New York and educated in eastern universities, the Reverend Harold Baxter Liebler had a secure position as a rector of an affluent Episcopalian parish in Old Greenwich, Connecticut. If he had remained, he undoubtedly would have advanced to a much higher position in the hierarchy. But in 1942, at the age of 50 and after 25 years in church service in the east, the life of this man of God suddenly changed.

On a vacation to visit the Spanish missions of the West, Father Liebler decided to visit the Indian reservations. Dressed in his long black cassock and riding an Indian pony, he traveled through Arizona and into Utah. With the exception of not being escorted by *conquistadores*, he must have appeared like the Spanish padres who first entered the country in the mid-1700s.

After several weeks of travel, Father Liebler finally arrived at Bluff, Utah, on

the San Juan River. On the day of his arrival, he started his new life as a missionary.

"I've got to stay," he wrote to friends in Connecticut. "These Navajos seem like Fortune's stepchildren to me. It's unbelievable that human beings are living such underprivileged lives in our great country. In this Bluff area, the Navajo seems the most primitive. Not a school, not a church, not a hospital in 1500 square miles!

"A mission here could perform miracles. I'll build one. It will be a mission to serve the whole of man—body, mind and spirit—because you cannot preach the gospel to the hungry and tell them to be warmed and clothed."

Father Liebler's decision to establish a church and school at Bluff was made 62 years after pioneers of the Church of Latter Day Saints first came to the area to establish a farming community on the San Juan. The incredible trek of the Mormons across 200 miles of Utah "wastelands" and through the famous "Hole-in-the-Rock" is described in the May, '72 issue of *Desert*.

On July 29, 1942, Father Liebler held a small mass in Hyrum's Field, named after one of the stalwart Mormon pioneers. It was on Saint Christopher's Day, and since the Saint is the patron for those who travel, it was only natural that the good Father named his future mission St. Christopher.

While making friends with the few Mormon families in the area, Father Liebler realized he needed help to build the mission. A dispatch to Boston resulted in the aid of his good friends, Helen Sturges, Father Clement, Brother Michael and Brother Juniper, all of whom arrived within a few weeks with less than $1,000, which they had raised from the eastern parish.

As they gradually made friends and convinced the Indians of their dedication, they lived in tents in the caves of the sandstone bluffs which caused the early Mormons to give the community the name of Bluff. With the aid of the Indians and friendly Mormons, they constructed the first permanent building. Gradually, other facilities were built to house the mission, school and medical clinic.

For the next 20 years, Father Liebler and his dedicated followers led spartan lives as they improved the welfare and education of the Indians who would come from miles around to attend the school and services. In addition to running the mission, Father Liebler, in a Model A Ford—or by mule—traveled thousands of miles every year to bring medical supplies and hold services in the isolated areas of the Indian reservations.

To raise money for his mission, school and clinic—which had to be privately endowed since there were no government funds—Father Liebler would periodically leave his adopted land and present slide lectures in metropolitan areas. One must remember this was long before the present-day "Great White Fathers" in Washington, D.C. suddenly "discovered" the plight of the American Indian.

I was living in Las Vegas, Nevada in 1961 when I read an article about Father Liebler lecturing in Salt Lake City and appealing for used clothing. Since I had scheduled a trip to Utah to gather material for articles, I collected clothing from my neighbors with the idea of dropping by Bluff as a goodwill gesture. The gravel road through Bluff had recently been paved, and I planned my schedule for a half-hour stop at the mission.

I parked in the area outside the mission among several old pick-up trucks and a half-dozen wagons whose horses were munching on hay which had been scattered on the ground. Navajo boys were playing baseball and young girls were skipping rope. Their carefree shouting and laughter reverberated against the red sandstone cliffs.

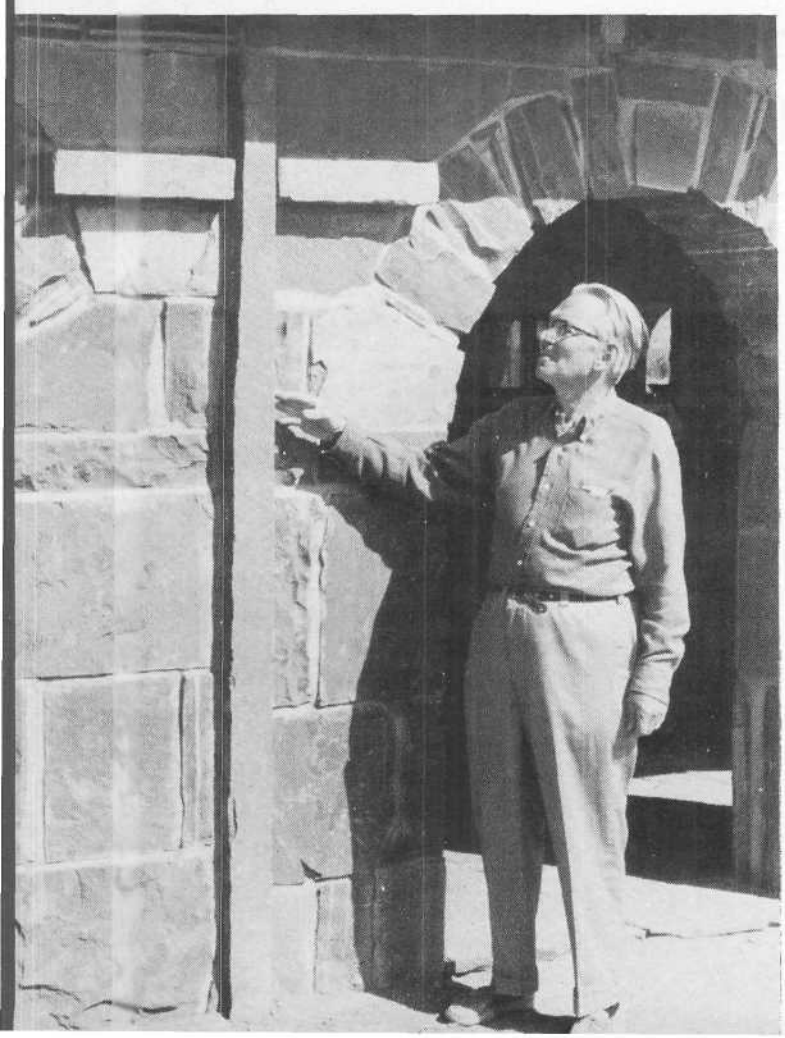
I was greeted by Brother Juniper. When I informed him I had brought clothing, He said I had arrived just in time as they were having their weekly clothing sale. Without thinking, I blurted:

"But I thought you *gave* the clothes to the needy!"

He smiled and said, "Come inside, my son, and I think you will understand once you have talked to Father Liebler."

Inside the main building, Navajo women were looking at clothing which was spread over three tables. Speaking their native language, the voices of the women were hardly audible. I followed Brother Juniper as he gently waded through the crowded room and then introduced me to Father Liebler. His handshake was firm and his voice was soft.

I could feel the powerful force within his body. He stood six-feet straight. His



Brother Juniper examines stone cross on St. Mary of the Moonlight.

greying long hair—tied in back, Navajo-style—sharply contrasted his weathered and tanned face and was further accentuated by his long, black cassock. His laughter was soft, and his blue eyes became azure as he talked about his adopted land and people. Father Liebler does not reminisce in the sense of looking back. Even when he talks of his past experiences, he does so only in how they have helped him in the present and how they can be applied to the future.

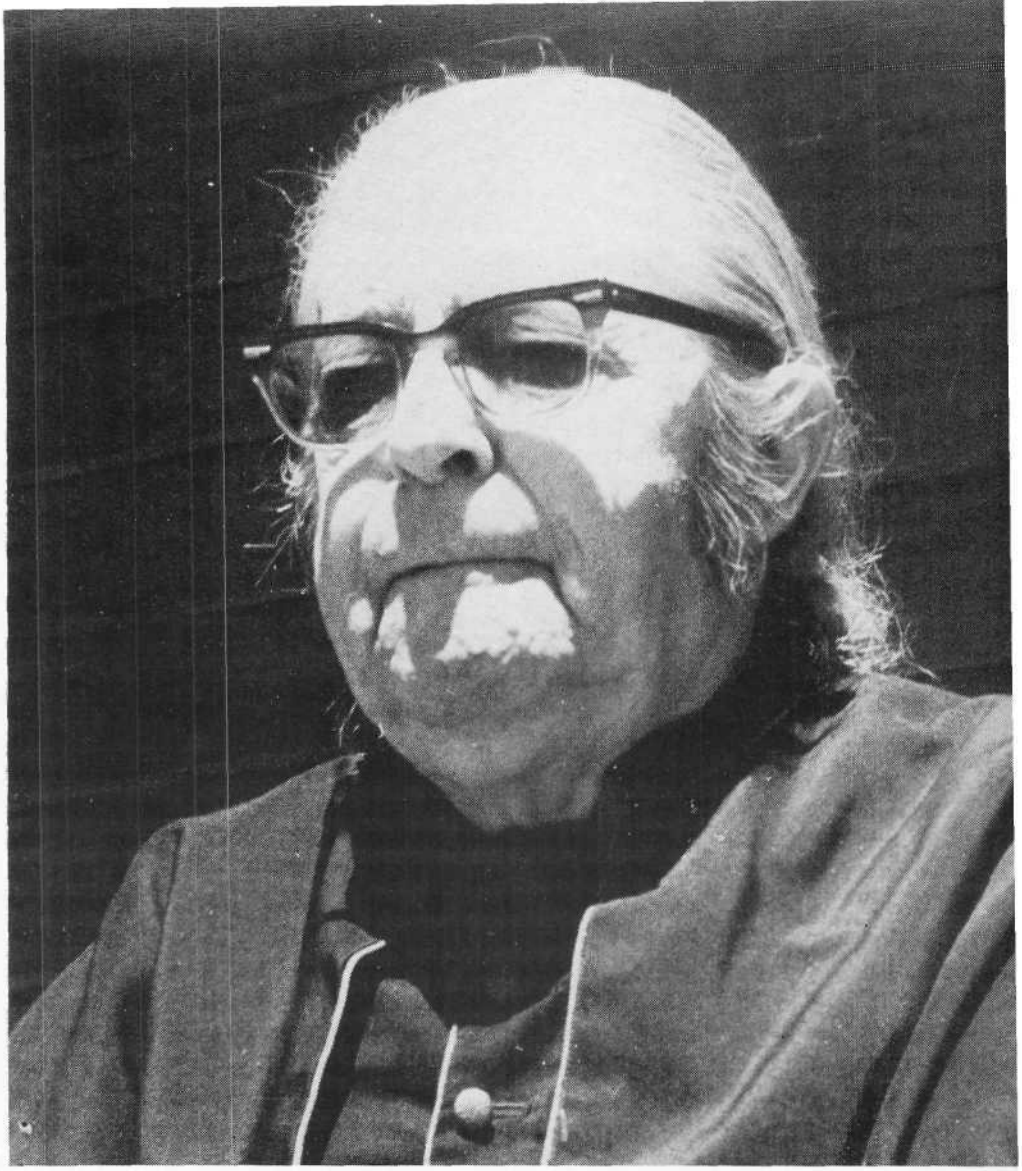
Dedication to a cause—whether it be spiritual, scientific or in other fields of human endeavor—is not unusual. What is unusual is those whose dedication is based on their belief in the dignity and individuality of their fellow man, who see each person as a total entity within himself, yet know they are only minute segments of the universe. They respect the beliefs and faiths of each individual, and do not destroy the individuality of each person by categorically branding them as whites, blacks, Jews, Arabs, Yellows or Indians.

Father Liebler's dedication to the dignity of man is illustrated by the following incident:

When Brother Juniper told Father Liebler about my outburst concerning the sale of donated clothing, the good Father's eyes twinkled. He introduced me to Helen Sturges, who also has dedicated her life to the underprivileged and to helping Father Liebler in his work. She was holding a cigar box which contained small coins, but no bills.

"These people are poor and need help," he explained. "Before the white man came West, their ancestors were a proud and independent people. There was no need for what we call welfare. These men, women and children you see here today are also proud and have dignity. That's why we charge for clothes—they will not take them otherwise—we know the families and how much they can pay."

At that point, an elderly Navajo came by with a pair of nearly new Levis. She looked at Helen Sturges, who smiled and said something in Navajo. A quarter changed hands. Carrying the Levis firmly under her arm and with her head held high, the woman walked out into the courtyard. The barely audible voices of the Navajo women still shopping were drowned out by the shrieks and laughter of the children playing outside.



Father Liebler. Photo by Clyde Deal.

My half-hour stay had extended to four hours. When I reluctlantly said goodbye to Father Liebler, he informed me that he would retire and that a new vicar would arrive. As he told me of his plans, I noticed that Helen Sturges and Brother Juniper turned their heads and looked toward the sandstone bluffs. The clothing sale was over and I followed the Navajo families as they slowly left the area and headed back to their hogans in the colorful, but bleak lands which have been their homes for centuries.

That was in 1962, more than 20 years after Father Liebler had established the first mission, school and medical clinic in the area. Father Liebler's efforts and zeal had borne fruit. Gradually, other religious foundations, state governments and even the Bureau of Indian Affairs in Washington recognized the need of America's native citizens.

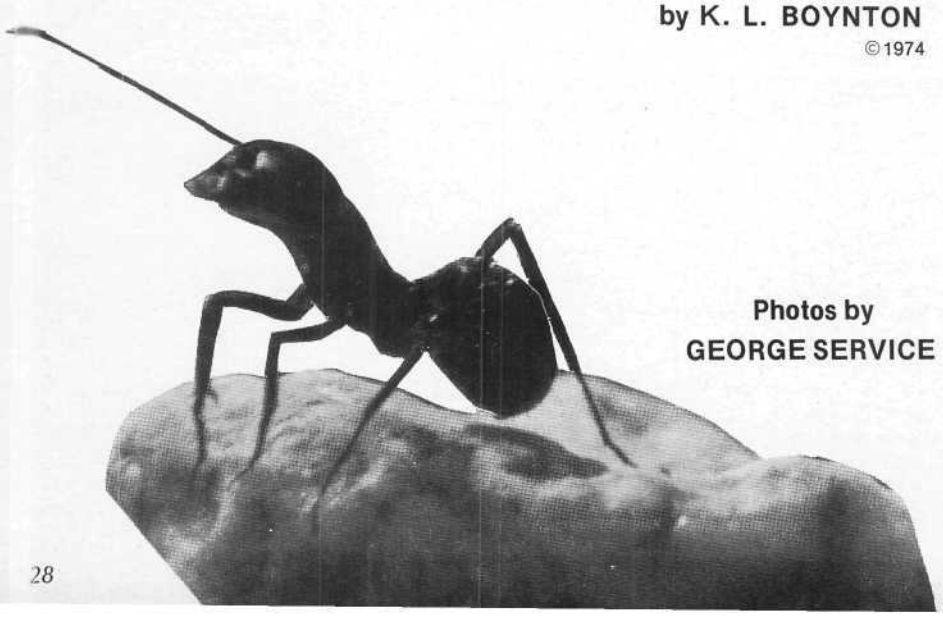
And with this influx of the white man, the Navajos themselves became stronger and the Navajo Tribal Council started a long-range plan to develop their land and establish it as a tourist attraction. Then came the renaissance and Indian crafts were suddenly "discovered" by the white merchants from the east.

The Indian reservations through which Father Liebler first traveled on the back of a pinto today are criss-crossed with paved highways. Horse-drawn carts have been replaced by new pick-up trucks and oil companies are digging into what were once "sacred hunting grounds." Environmentalists and ecologists charge Indian lands of Utah and Arizona are being exploited and that black smoke is destroying the colorful mesas and valleys. Some white and Indian business men call the critics "outside hippies" and "do-gooders" who are not familiar with the economic problems of the land and the people.

Continued on Page 40

Of Ants and Plants and Man

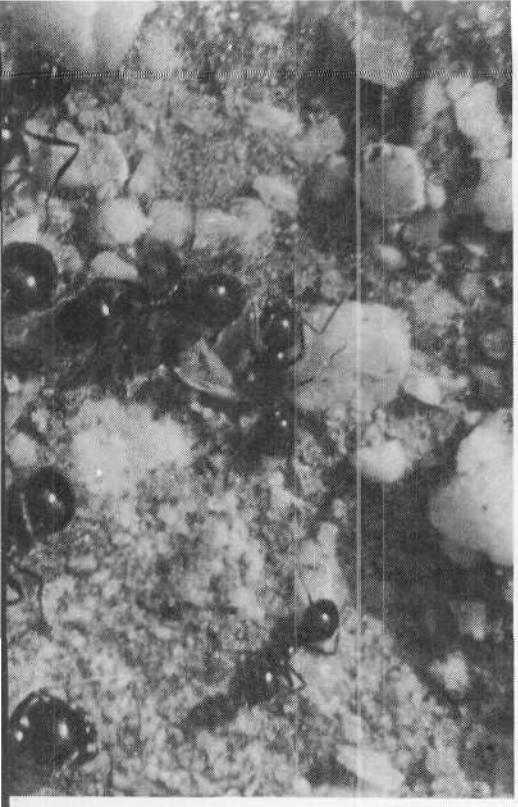
by K. L. BOYNTON



Photos by GEORGE SERVICE

THROUGHOUT THE ages, ants and their penchant for hard work have been cited as shining examples of industry and diligence and young sluggards among the human race exhorted to model their future conduct after them. Why ants have this imbred passion for hard labor and human beings by and large a seemingly inbred desire to avoid it, nobody knows. Maybe this difference can be laid to the fact that some half billion years ago, the insect tribe took off on one line of evolution and man's ancient ancestors went another route so divergent as to make a mutual understanding of the other fellow's behavior forever impossible.

As everybody knows, ants live in colonies centered about a queen who, having left her home colony and mated only once, founded a new one of her own. What all this enterprise nets her is a long lifetime of hard work devoted 100 percent to laying eggs. Now the catch here is that while one egg may look like another, each hatching larva has its future role in the colony determined for it. And what that career will be depends on the amount and kind of food it receives while in this helpless grub-like state. Some larvae develop into females, others into males. When these reach maturity they leave the colony at swarming time and mate perhaps with each other, but more likely with ants of the same species from other swarming col-



A small bread crumb causes a flurry of activity when dropped near an anthill.

onies. The females, now queens, will found new colonies; the males, their roles finished, die.

By far the greatest number of larvae, however, turn out to be neuter ants, whose lives are just one big binge of hard work. They handle all the nest chores of caring for the queen, stowing the eggs in special cells and nursemaiding the developing youngsters. They form the labor gangs, doing all the pick and shovel work of excavating the vast labyrinth of tunnels and chambers that make up the colony's homesite. They trudge out to forage for food, lug it home and prepare it for storage and eating. They keep the colony spic and span, and in times of danger rush to its defense. It obviously doesn't pay to develop into a worker ant, not that the individual has any choice in the matter, the rigid differentiation of roles being quite inflexible.

Granting that devotion to toil is a laudable trait, it would still seem that going at it in a desert may be carrying things too far. Yet, ants are busy working even at Badwater, in Death Valley, California, one of the hottest spots on earth.

Desert ants are mostly harvesters by trade, gatherers of seeds they store in underground granaries. As seed eaters, they compete with local rodents for what the desert has to offer. In turn, the plants that produce the seeds compete with ants and rodents alike, since their survival as a species depends on enough seeds escaping being eaten to germinate in time and produce more plants.

Not that this competition is anything new. All this has been going on for ages, and somehow all parties manage to stay in business under extremely severe conditions. Thus scientists, who like to ponder on such matters, have a fine big problem to wrestle with. First of all, how are ants, plants and rodents adapted within themselves to live in the desert? Then, what is their relationship to each other when they coexist under such circumstances? And finally, what effect does all this have on the place where they live?

Ecologist Lloyd Tevis, Jr., greatly impressed with the success of harvester ant operations, set about finding what the story was as far as they and the plants were concerned. For a study area, he selected a particularly barren region between Indio and Palm Springs, California, which at its best is so hot and dry that only a few stunted creosote and saltbush can make it there. Yet, in certain years, given rainfall at the right season, this apparently sterile area is known to burst into bloom when annual plants, appearing as if by magic, carpet the desert with color.

Of the several species of harvesters working the area, Tevis picked out a little shiny black number *Veromessor pergandei* by name, a close relative, by the way, of the Old World ants busy in King Solomon's day. Twenty colonies of these, whose underground abodes are characterized topside by large craters surrounded by trash piles of discarded seed husks, were on the receiving end of an entire year's intensive study. Some mighty interesting facts were discovered.

Now being cold-blooded animals, ants are unable to keep their body temperature stable within themselves, and not having any special physiological adaptations to desert conditions to help them, they are at the mercy of temperatures around them. Stiff with cold at 40 F., they are still wobbly and uncertain even at 50 F. They can't stand high temperature, a few seconds exposure on a hot surface of 122 F. being fatal. They therefore cope with desert temperature extremes by avoiding them.

First of all, they put their living quarters underground—deep, deep down, as Tevis found the hard way. Attempting to map the layout of a colony, he shoveled and dug and never did reach the main granaries and chambers although he was already 11 feet down when forced to quit

This anthill plainly shows the discarded seed hulls and chaff at the mound site.

due to the unstable shifting sand.

Putting in appearance above ground only at favorable times is the second way the ants handle the temperature problem. But this cuts their food foraging time, since the desert's surface may be below freezing in winter, or zoom up to 158 F. or higher at noon on a summer's day. Hence, the food detail schedule, it seems, goes something like this:

Spring and fall, when the sun begins to warm the sand, the workers appear at the entrance hole, stagger around warming themselves until, when the ground temperature is over 55 F., the big trek can start. Streaming out by the hundreds, the ants march off in a line across the desert, following a scent trail laid down the previous day. Food is generally to be had within 130 feet of the colony, so the first ants to pick up their cargo head for home, forming a second marching column as they go. The warming day speeds up the tempo, the ants rushing along the outgoing route and hustling back with their burdens along the return track—two big streams of ant traffic moving in opposite directions. Then, when the sand hits about 90 F., all foragers head for home, empty-handed or not, the stragglers hot-footing it to make it to the entrance before collapsing with the heat. Later in the afternoon, from about 3:30 to 5:30, another trek takes place. Wintertimes hunting is possible only from about 10 A.M. to 2 P.M. Summertimes, although the workers are out before sunrise, they must quit by 8 A.M. for the day, because the hammering heat keeps the sand hot until after dark.

Viewing his parched study area where a major drought had been in progress for 12 years, Tevis wondered what on earth the ants were finding to eat. So for an hour a day he captured homeward-bound foragers in a spoon and hijacked their loads. To his surprise, he saw that the ants were indeed finding a wide variety of seeds: sand verbena, hoary saltbush, pincushion, forget-me-not, spectacle pod, little trumpet, storksbill, desert gold, creosote bush, white mallow, blazing star, brown-eyed primrose, comb-bur and woolly plantain. But a few ants, looking just as busy, were in fact carrying junk: grains of sand, mica, charcoal, feces of rodents and bats, bits of defunct insects, such inedible trophies regularly showing up on the trash dumps.

Seeds of the comb-bur and woolly plantain made up some nine-tenths of the seed take. Both plants are small and not much to look at compared to the more showy desert flowers, yet it was their seeds occurring in abundance that kept the ant larders stocked during the long drought when no annual flowers bloomed.

Then, in January, the rains came.

Even an old desert hand like Tevis was astonished to see the myriads of seedlings that popped up everywhere—some 800 per square meter, by actual count. They were just about as thick in the foraging range of the colonies as beyond, due probably to the mixing and scattering of seeds by the desert winds. Nor, as the seedlings grew, was there a short supply of old seeds, those not buried and hence not sprouting still being available on the surface. So the cargo hauling went right on, the ants weaving their way through the forest of growing annuals towering over their heads.

When seed ripening time came in April, the ants shifted their foraging activities upstairs. Swarming all over the plants, they helped themselves directly.

The old standbys of plantain and comb-bur were ignored as the ants chose their favorites: brown-eyed primrose, white mallow, blazing star. Now the seed capsule of the blazing is a narrow tube with an opening at the end which tended to make things interesting since to get a seed each ant had to go in head first and then back out. The next ant in line naturally tried to shove in too soon, and hence each blazing star plant was the daily scene of a subway rush hour in miniature.

By the middle of April, the new seeds were mostly on the ground. So were the ants, and Tevis set about finding what effect they would have on this new crop.

He set up a system of counting each seed-carting ant that reached home. As expected, the number was small in the cool of the early morning, and increased steadily as the ants became more active with the warming temperatures to a top rate of 325 ants per five minutes. Then, when the sand got too hot, work ceased abruptly. Based on these figures, the average number of seeds collected by a colony in a day turned out to be about 7,000. Since there were six colonies per acre, some 42,000 seeds would be subtracted in a day, 1,260,000 in a month, and something like 15 million seeds per acre per year.

At the same time, what the plants were doing about seed production had to be known. So he counted the seeds on mature plants in sample plots, punched away on his adding machine, and came up with a figure of about one and one-half billion seeds per acre. Compared to the mere 15 million per acre the ants were removing, the plants obviously were doing all right.

All this was under prolonged drought conditions. The ants themselves were less numerous than in favorable years, and hence their food take smaller. The plants were also less numerous due to long drought and to the fact that while it did rain in January, the moisture was insufficient so that the plants matured small and produced fewer seeds—perhaps only five percent of their potential in favorable years. In good times, both sides would do better, yet the proportions would remain about the same.

On the face of it, there seems to be a kind of balance between the seed producers and the seed eaters in the desert that takes into consideration the fat and lean years, a regular phenomenon through the ages. Thus, ant dining does not affect the total supply of seeds much. What may be a long term result is the composition of the vegetation in their area. Since ants do like certain seeds so much, they might have an eventual effect in cutting down the number of these particular plants around to produce seeds. This would work to the advantage of plants such as the comb-bur and woolly plantain, whose seeds ants tend to leave when the others are available.

Anyhow, 15 million seeds per acre carted home per year (and in an off-year at that) is no slouch of a figure, and again testifies to the industry of the ant tribe. A study such as Tevis made, which produced such a wealth of new information under very rugged field conditions and at the cost of hard, hard work, is no slouch of a study, either; and it testifies to the industry of at least one human being. Who knows? Perhaps erring young *Veromessor pergandeis* are now exhorted to model themselves after this fellow's example, who showed himself to be a toiler-deluxe, even by ant standards. □

The Smoki Dancers

by
JOE
KRAUS

ON A SATURDAY, early in August of each year, visitors from near and far journey to Prescott, Arizona. And there they spend the evening gazing spellbound at a most astounding spectacle. They call it the Smoki (pronounced "Smoke-eye") Ceremonials.

This year, the Ceremonials will be held on August 10th, and will include The Aztec Pole dance, The Apache Puberty rites, The Crow Feather dance, in addition to the awe-inspiring Snake Dance.

The traditional dance, using live snakes, is the climax of a giant pageant which has become famous in many parts of the world. Magnificently costumed, dramatically executed in a primitive setting, the show gives to its audiences the sensation of being transported into another world—a mysterious world returned from ages past.

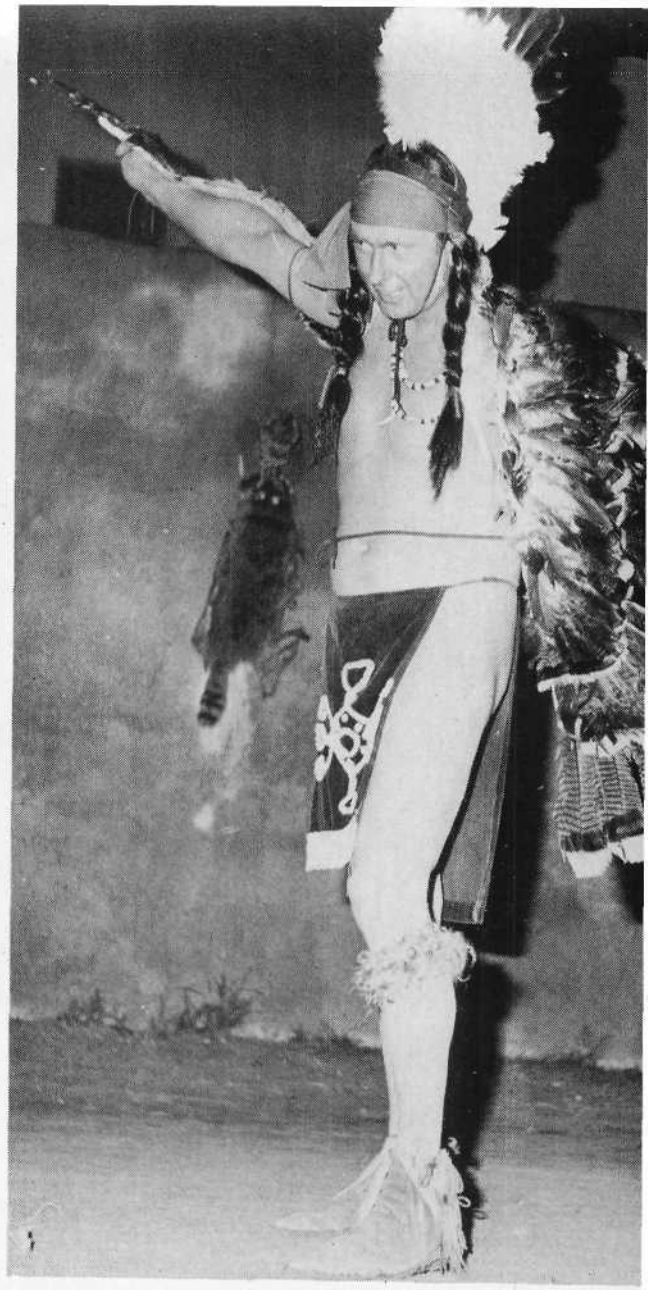
The performers are the Smoki People, the name chosen by the "tribe" of white business and professional men living in the community. And their particular task is to preserve age-old Indian ceremonials and present these ceremonials to the public once a year.

To produce the utmost authenticity, the Smoki People engage in months of preparation for their annual pageant. Costumes, properties, dance steps, make-up and pantomine join together in the production. And all are brought to perfection by the skilled work of the "tribe's" gifted artists.

Every bead and feather, every painted symbol, every gesture has its own significance. And to insure that all is authentic to the last detail, research teams are sent out across the country. Detailed study is made of old reports provided by the United States Bureau of Ethnology. And while a few teams are looking through dusty records kept by the Smithsonian Institution in Washington, D.C., others are contacting the various Indian tribes themselves for detailed information.

The annual pageant is held in the community's famed Yavapai County Fairgrounds where it is reported the world's first rodeo was held. As a permanent addition to the Rodeo grounds, the Smoki People have constructed an authentic Hopi Indian pueblo. Quiet all year, the pueblo is turned into a busy Indian village each August when the production is held.

But visitors, who come many miles to the central Arizona community, discover they must make reservations early. For only one performance is held, during the dark of the moon. And the grandstand seats only about 5,000 persons. Hotels and motels in the town are also booked well in advance. And every year during Smoki, the frontier town in the heart of the state's cattle ranch empire comes alive with activity.

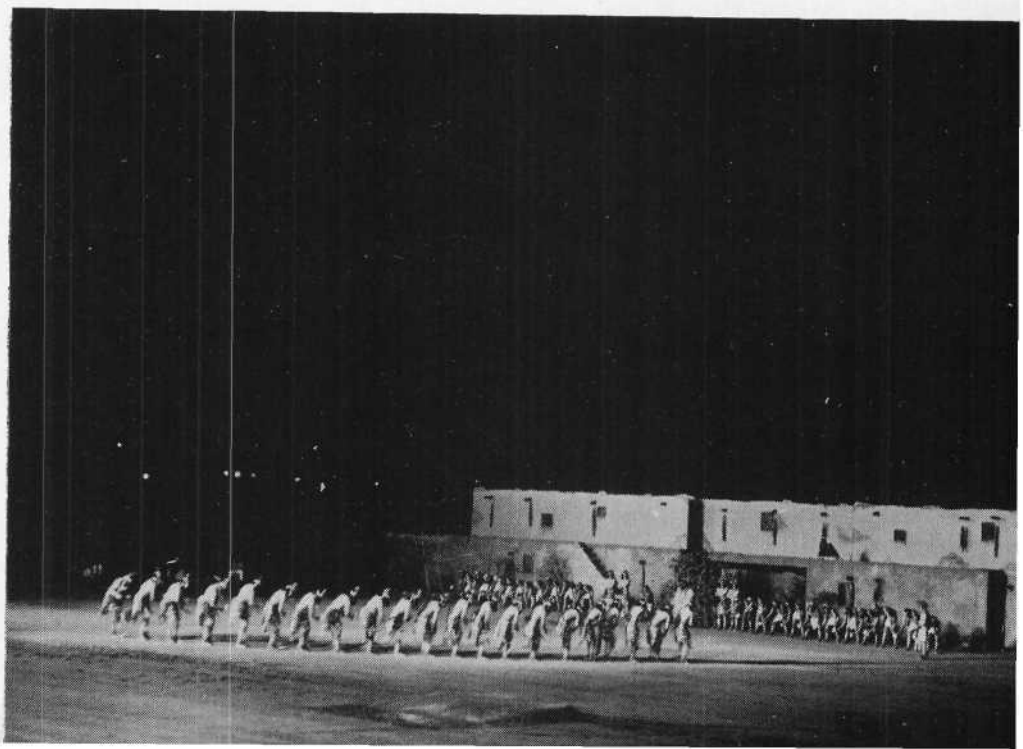


Opposite page: Harmless, but nevertheless fierce looking, bullsnakes have replaced live rattlesnakes in the Smoki duplication of the ancient Hopi Indian ceremony. Above: Smoki snake dancers prepare for part they play in the annual pageant. Right: Smoki eagle dancer. Below: Most impressive of all Smoki ceremonials is the traditional Snake Dance. Held in front of the replica Hopi pueblo, the dance ends each year's performance.

The Smoki Dance Ceremonials are supplemented by street dances and an outdoor art festival which completely fills the one-block park-like Courthouse Plaza. The town also sponsors downtown song fests and outdoor square dancing which are always well attended.

Months before the pageant, however, the townspeople start gathering together the stars of the show—large area bullsnakes. Captured for the one performance only, the snakes are highly regarded and well kept during their stay with the Smoki People. When the annual performance is completed, the snakes are taken, again unharmed, and released in the general area in which they were found.

To get everyone involved, contests are held and prizes awarded those who capture the largest bullsnake. Several area



Young "Indian" braves gain real talent from months of practice for the hoop dance.

service stations serve as snake depots where the snakes are brought each year. Here the snakes stay until the Smoki appointed keeper gathers them together prior to the dance.

The Smoki People, who are doctors and lawyers, store keepers and bankers rehearse for their dance in the evenings after work. Regular practices begin in May for one night a week. In July, five nights each week are devoted to the practice sessions.

And while the "braves" go over the various dance steps, the "squaws" weave the costumes and handcraft the various decorations and tools needed in the ceremonials. Even the youngsters get into the act, helping where they can. On the night of the performance, the white families become "Indian" families at the Pueblo, setting the stage for the dances. And all are in full, authentic costumes.

Not a small part of the ceremonials are the Smoki People who specialize in the ancient art of Indian sand painting. Also researched for detail, the paintings are formed in a large setting before the audience. And holding to traditional Indian custom, the mystic symbols are thoroughly covered before the dances begin.

As the ceremonies open, it is the sand paintings that start to take shape as life in the Indian pueblo becomes a busy scene of people and activity. Many "squaws" are preparing food for hungry "braves" and "papooses" who move among the evergreen trees and lean-tos. Tantalizing fragrances combine with the pulsating rhythm of tom-toms to create an unforgettable atmosphere.

As twilight falls, the dancing begins, each rite seeming more beautiful, more awe-inspiring than the others. Every year new dances are selected, new costumes and properties added so that those attending never see a repetition of the same performance. Only the Snake Dance is repeated year after year, always the climax to the annual event.

Faithful portrayals of the prayers and thanksgiving of ancient peoples included a recent ceremonial, The Minataree Green Corn Dance. In brilliant contrast to the sedate rituals of the corn dancers of many tribes, the Green Corn Dance of the Minatarees is a rousing drama. It is a dance for seasoned men whose moccasined feet are versatile and whose athletic bodies are toughened for the test. The dance is a full-lunged shout of exhaltation when, at long last, the luscious ears are ripe for eating.

Another typical Smoki performance is the Aztec Sacrificial Ceremony. Here a young Aztec warrior is chosen as a symbol of incarnation of the Aztec God Tezcatlipoca. Living as a resplendent king till the festival day arrives, he is then sacrificed at the hands of the Temple Priests.

In recent performance, the Smoki People also presented a Navajo Healing Ceremonial. With the use of water from a fire truck and colored lights, the Smoki People created a man-made rainbow. Symbolic of the "bridge" between the heavens and earth, the rainbow simulated this bridge creating the path for the healing powers of the gods.

Most popular, however is the annual Smoki Snake Dance. Here the Smoki honor their "little brothers." The Indians believe that the snake is closely related to the spirits and as such the snakes play a big part in the ceremonies. Smoki "braves," holding the snake's tail in one hand and the back of the snake's neck in their mouth, dance in unison around the Plaza and in front of the Kisi.

For this most solemn of all dances, the Smoki People in the Pueblos cease all activity. And then as the long snake-like column of braves dance, a tom tom beats softly in the background. With their free hand, the Smoki "braves" shake an Indian rattle, mysticizing their "little brothers."

The Smoki "braves" are careful not to harm their adopted friends during the ceremony. For following the conclusion of the dance, the snakes are carried to the four winds and released so that they may carry prayers for rain back to the gods.

Writing on how it all got started, a yellowed newspaper clipping quotes the late Prescott Historian Sharlot M. Hall: "I don't know as Prescott was really much smaller," she said, "but it seemed the scene resembled a basket picnic down in the back pasture by the creek. Likely Prescott will never have another day quite like this one—when the Smoki was born."

Mrs. Hall explained that the event got started in 1921 as part of a "wild west" show. The original show included covered wagon chases and settler massacres in addition to the Indian dancing. The show supplemented the town's annual rodeo. Since that time, the "wild west" show has been dropped for an expanded Frontier Days celebration held each Fourth of July weekend. The Indian dancing section has since evolved into the annual Smoki pageant which is now held in August of each year.

"In the original show, folks tried to look better and more realistic than their neighbors," Mrs. Hall said. "And with the dramatic ability which many of the early Smoki men had, it was easy to see that a real spectacle was being developed."

There are only a couple of the original members of Smoki left. One of them is Gail Gardner who said that success of the show resulted in its repetition in 1922. "After the second show, something of the fascination of the dancers got into the men," Gardner said. "And it was in 1923 that the Smoki organization was formed. We decided to see if we could present a few of the dances that were in danger of being lost. That is the ideal that we have preserved throughout the years of growth."

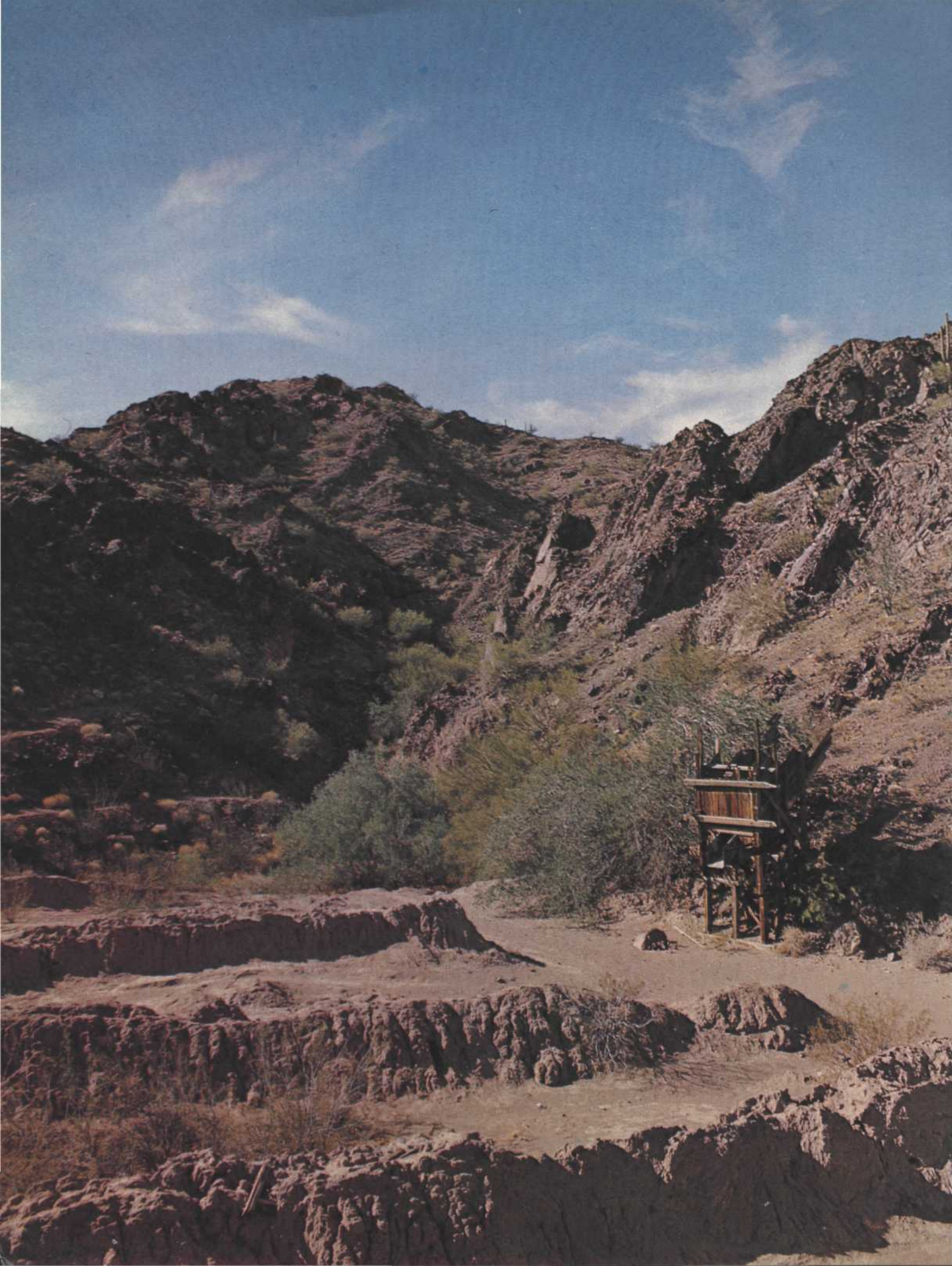
With Gardner in the original group, was the late Dr. Ralph Roper who once told a Rotary Club gathering that dancing has been a part of all civilization, including the most primitive. "The American Indians have numerous dances, all of them spectacular," he told the Rotarians. "But it was the Hopi snake dance, the most colorful of them all, which inspired the Smoki organization."

The Hopi Indians of Northern Arizona used live rattlesnakes in their secret ceremonials. Dancing in much the same way that the Smoki dancers have duplicated today, the Hopi also held the back of the snake's neck in their mouth and the snake's tail in their outstretched hand. The only major change in the ceremony today is that the Smoki People have substituted the deadly rattlesnakes with harmless, but nevertheless fierce-looking, bull snakes.

This particular dance has taken hold of the impersonators as it had long, long ago taken hold of those who originated and developed it. It has grown in the hearts and minds of these 20th century white men as it has grown in the hearts of the Indian rain priests, who sought to reach the deepest sustaining forces of nature. For by performing the snake dance, the Indians believed the ceremony would insure the continued well-being of their own people.

Although their numbers are few, there are those who have witnessed the original rain ceremonials given by the Indian people to whom they are a birthright. Among them was the late Prescott Historian Sharlot Hall. "I deeply enjoyed the Hopi Indian ceremonials," she once said. "Yet, I have never seen them given with finer dignity and more gripping effect than by the group of men who call themselves the Smoki.

"Although the wild, strange land of barren cliffs and bright-colored sand in which the dances were given by the Indians is weirdly beautiful, it is not more beautiful—not nearly as beautiful—as the natural amphitheater at Prescott, circled by mountains and green forests. □



The King of Arizona

by
DICK BLOOMQUIST

Color photo by EDWARD NEAL

An old ore chute is a solitary reminder of the reign of the King.

SCULPTURED PROMONTORIES stab the sky, fissured cliffs join heaven and earth with their frozen cascades, and jagged canyons probe the citadel's broken outworks. This is the Kofa massif of southwestern Arizona, more a fortress than a range of mountains.

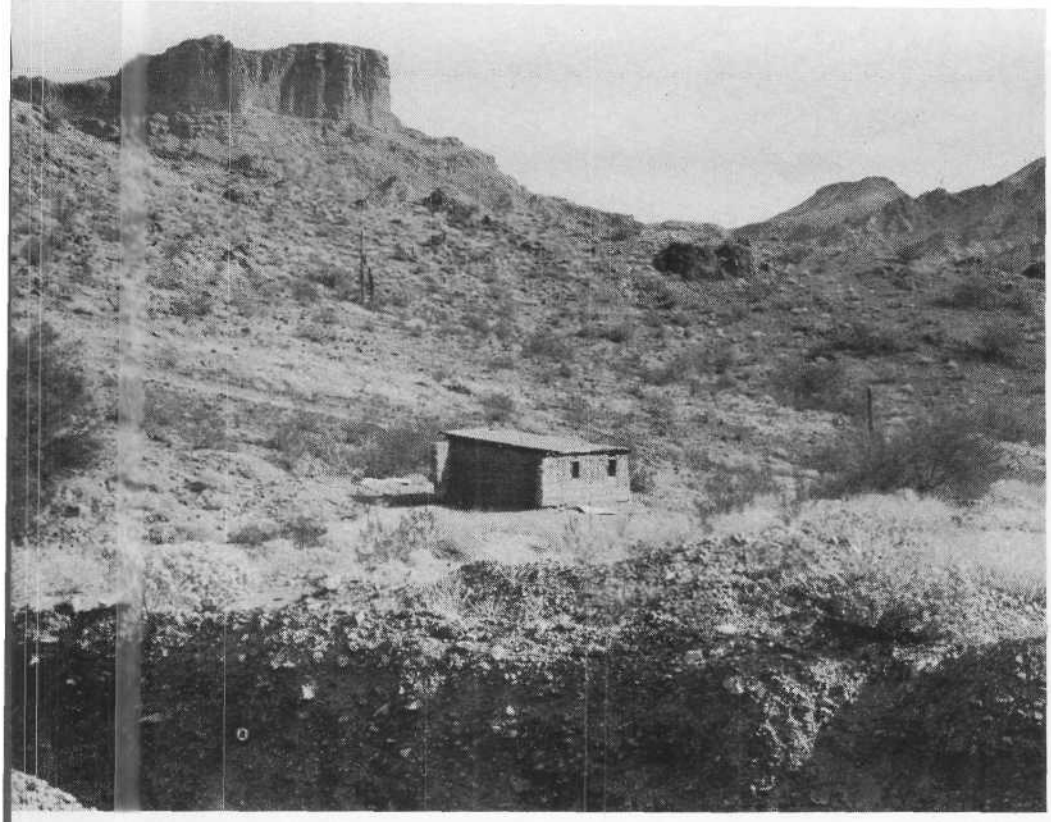
Spurning foothills or gently-curving slopes, the Kofas dominate the desert flatlands with sheer walls and block-like contours reminiscent of the Superstition Mountains, another Arizona range combining awesome bulk with the romance of history and legend. For the Kofas, in addition to harboring native bighorn sheep and the state's lone oasis of wild palms, once housed the King of Arizona, even taking their name, in fact, from their opulent but short-lived guest.

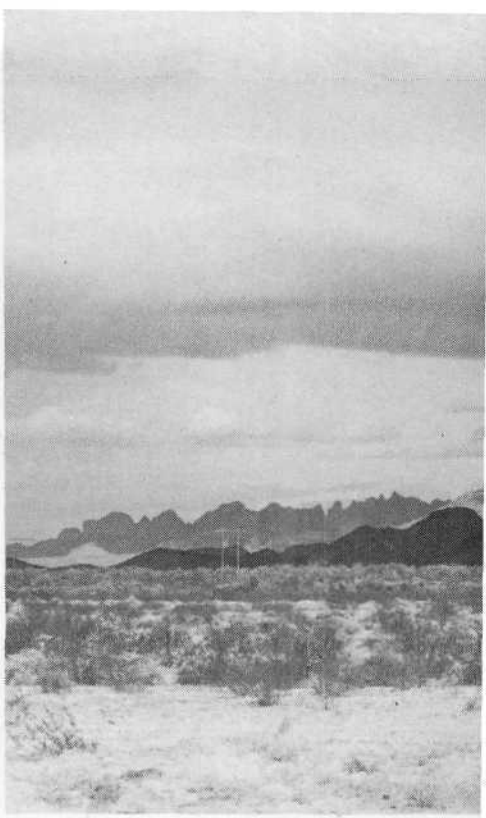
In 1896, Charles Eichelberger found gold in the southern corner of the range, and the King was born! Eichelberger's discovery became the King of Arizona Mine, one of the richest properties in this part of the state, with the abbreviation "Kofa" eventually spreading from the mine to embrace the mountains themselves.

The King of Arizona, nevertheless, was only one bright link in a long chain of mining bonanzas. The neighboring ranges had given up treasure, too. Legend has it that Frenchmen worked the lead-silver deposits of the Castle Dome Mountains, a few miles to the southwest, at some remote date, and in 1862 the Castle Dome mining district was organized. Another tale concerns a lost vein of rich gold ore somewhere in the nearby Little Horn Mountains. Millions in gold came from the Harquahala mines to the northeast, while the Plomosas on the north are pitted with old camps and prospects. Gold mining reached its zenith during the second half of the 19th century and the early years of the 20th, then our changing enconomy dealt it a death blow. The King of Arizona died, too, but his remains, impressive even in decay, still reward the traveler who wishes to pay his respects.

Yuma and Quartzsite are the twin gateways to the Kofa Mountains. The King of Arizona road forks from U.S. Highway 95 some 53 miles north of Yuma or 28 miles south of Quartzsite, and the junction, although not prominently signed, is easily identified. Only one habitation, the Stone Cabin gas station and store, marks the run between these two communities, with a sign opposite the Cabin pointing the way to the North Star, Rob Roy, and the King of Arizona, all between 23 and 25 miles distant.

The route is graded dirt, a pleasant track which strikes eastward toward an outlying spur of the Castle Domes. We quickly cross into the Kofa Game Range, a federal preserve set aside mainly to protect bands of bighorn sheep which roam the highlands. Soon we are threading a pass through low hills—*portezuela* (little door) the Mexicans would call it. Creosote, burrobush, ironwood, palo verde, teddybear cholla and a scattering of giant saguaros crowd the pass, beyond which an immense plain unfolds, bordered on the right by the Castle Dome Mountains and on the left by the craggy rampart of the Kofa massif. It's





clean country, unbroken by fences or power lines; clean air, color, warmth, freedom, beauty and limitless distance are among its qualities.

Our road steers a straight course across this expanse for several miles before veering left at a fork and climbing the gentle bajada at the base of the Kofas. We pass a rusted tank surrounded by some cable and a set of concrete pedestals, then enter the mountains themselves. Almost immediately the road divides again, with the right branch winding toward the King. A short detour in the other direction leads to the mouldering North Star or Polaris Mine, which hangs on a cliffside within sight of the junction.

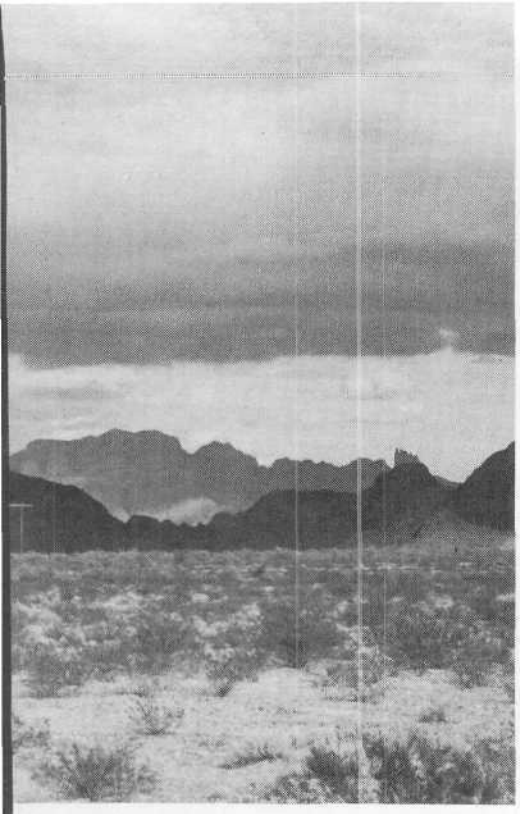
Back in 1906, a Mexican prospector had discovered gold on an andesite headland "under the North Star." From that date until 1911, when the richest ore pinched out, over $1,000,000 in gold, plus small amounts of silver, came up from the catacombs. Some gold remains, but costs are prohibitively high, a story repeated with few exceptions throughout western America.

I have seen photographs of the North Star taken during the early 1950 when its extensive workings stood largely intact. Assay office, mill and post office were recognizable in those days, and records, furnishings and sacks of ore were still on the property. Boilers, pulleys and giant flywheels rested in silence; tanks, separators, even a trestle with rails in place, clung to the volcanic slope. Today, only tailings and debris, along with a modern building below the mine and some small tanks above, distinguish the site.

Taking up the trail to the King of Arizona once again, I skirted the Baker Mine where well kept equipment, a large trailer, and wash swaying on clotheslines indicate at least an intermittently active claim. Half a mile farther long, grey hillside structures identify the apparently deserted Rob Roy. The road quickly drops into a ridge-girt vale overshadowed by a ponderous butte, then bears right at an unmarked junction. Backed against russet cliffs at road's end, an adobe shack, eroded tailing, stone foundations, shafts and adits, and jumbled debris crowd a hidden cove—the reliquary of the mountain king.

Until recently, the King of Arizona, like the North Star, boasted more substantial remains. As late as 1951—perhaps later—a few dilapidated buildings complete with furniture and utensils survived, as did the Gargantuan cyanide vats, but the workings were eventually dismantled and removed for the materials they contained.

The King's dry bones can still hint at his vanished glory, though. Rambling the vast tailings dump is like exploring a clutch of desert badlands, for these weathered piles support no life. Foundations and a cactus garden reveal the location of the mine office, which old photos show as a long, wooden structure jutting out from the hill and shaded by a porch in front. The cactus plants, which betray



the hand of man in their unnatural spacing, are thriving just as they did long ago when noisy movement eddied about them. I came across the skeleton of a safe a few yards below these plantings.

Farther in, a jagged heap of planks and beams may mask the entrance to the main shaft, once 750 feet deep; nearby a slender roadway grooved into the mountainside leads to a rock-walled platform, probably a dock of some kind. I walked to the rear wall of the Kofa's cul-de-sac, where a stout ore chute 25 feet tall reaches skyward beside a giant ironwood tree of equal height. Ruined planking partially plugs a crevice above the chute, and adits dimple the terracotta scarp. Part of the cliff has been reshaped by man to form a small shelf pocked with the scars of mining; a vertical shaft, another adit, a concrete foundation and tank. Miner's flotsam is everywhere on and below the shelf, and I picked my way through boards and beams, rusted metal, mesh and cable on my return to the mouth of the cove.

One building, a two-room adobe with strands of rope embedded in its coarse bricks, stands at the King of Arizona today. This crumbling dwelling, with its slanted roof and wood-frame doors and windows, rises along a wash near the first tailings. In the arroyo's opposite bank, someone carved a tiny dugout, but its roof and sides are now largely open to the elements.

From the adobe I hiked to a wooden headframe, conspicuous on a bordering slope, and peered down the sheer shaft. The tie-studded ore car platform in front of the shaft provided a fine viewpoint from which to survey the Kofa workings and their encircling basin, historically as well as physically. Eichelberger's discovery in '96 was the beginning. Cumbrous wagons carried the ore south across the Gila River to Mohawk until 1899, when a cyanide mill went into operation at the mine itself. The ore, which yielded small quantities of silver along with its gold, ran quite rich on and near the surface, but declined in quality with increasing depth. Finally, in 1911, costs began to exceed profits, and the great Kofa Mine grew silent after having disgorged $3,500,000 in treasure.

Opposite page: This two-room adobe is the only building still standing at Kofa Mine. Above left: Storm clouds over the Kofas. The darker ridge in front is a spur of the Castle Dome Mountains. Above right: A sheer-walled butte and a weathered headframe watch over the King of Arizona.

Now, little more than debris and sallow tailings and the galleries chiseled in living rock recall the King of Arizona's glory years. The King is dead, although some would say he merely sleeps—sleeps against the day when new rumors of gold shall rouse him and the clamor of men and machines shall echo once again through the mountain cove. □

FATHER LIEBLER

Continued from Page 27

This struggle for more power versus more preservation has created an emotional and economic schism within the major Indian tribes of the West, especially the Navajo Tribal Council. Ironically, it has broken down the color barrier. Some white settlers side with the Indians who want to open up their land to outside development, while the older white Indian traders, whose fathers and grandfathers established the trading posts in the late 1800s, support the Indians who want their land left in its primitive state.

These were some of my random thoughts as I made my annual trek into Navajoland last year. Ten years had past since I had last seen Father Liebler. I wondered where he was and what he would have thought of the conflict within his adopted land and people.

I had stopped by the Hopi mesas to buy some pottery and was headed for Goulding's Lodge and Trading Post to visit my friend, John Burden. John and his wife, Loreene, are the amiable hosts and managers of Goulding's, one of the pioneer trading posts and lodges in the heart of Monument Valley.

They are known throughout the world for their informative guided tours into Monument Valley. I arrived late at night and the next day went on a 4WD tour into Mystery Valley with veteran guide, Bernie Maher, who has been part of the Southwest since 1925. (See *Desert*, May 1973.)

The next morning at breakfast I told John I would like to visit an old trading post. He suggested Bernie take me to Oljato, which in Navajo means "Moonlight Water."

On the way we stopped by the modern Seven Day Adventist Hospital which was erected in 1950 on grounds donated by Harry and Mike Goulding, who came to Monument Valley 46 years ago and were good friends of Father Liebler. Now retired, Harry and his wife, "Mike" spend their time promoting a better understanding among the people of the Indian Country.

As we left the hospital I remarked, "If Father Liebler could only see that." Bernie just looked at me and grinned. He then headed for the Oljato Trading Post.

The original building houses the trading post and the goods are still the same. Large sacks of flour and coffee, all types of gear and feed for horses and livestock, bolts of dress material, leather goods, and other ranch items crown the shelves. Wooden boxes containing soft drinks are stacked to the ceiling. Dressed in red and blue velvet skirts, Navajo women, wearing squash blossoms, rings and bracelets worth thousands of dollars on today's market, were carefully selecting fresh fruit and vegetables. It had a good smell inside—it reminded me of the country store when I was a kid in West Virginia.

Outside the trading post, kids were playing and drinking Pepsi-Cola. The men were sitting on wooden benches, talking in the low-keyed Navajo language, waiting patiently for their women inside to finish the shopping. It reminded me of my visit to Father Liebler's mission more than 10 years ago.

Two miles along a dirt road from the trading post, Bernie stopped in front of an elongated building. The portals were built of finely-carved pieces of sandstone and the arches resembled the architecture of ancient Aztec temples.

As I climbed out of the car, I saw a familiar figure. It was Brother Juniper.

"Let's see, it was about 10 years ago, wasn't it?" he inquired. When I complimented him on his memory, he smiled and looked at Bernie. "Well, maybe I had a little prompting from my good friend here—you see he came by earlier to tell us we were having a visitor.

"Yes, Father Liebler is alive and well," he said in a soft voice. "I am sorry to say, however, that the good Father and Helen Sturges are visiting some Navajo families and will not be back until late this evening. Father Liebler asked to be remembered to you."

Looking at this man of God, I remembered when he had turned his head away and looked at the sandstone bluffs when his teacher had told me he was leaving the mission of St. Christopher. Then his eyes were sad and his shoulders were bent. Today, he stood erect and there was pride in his voice as he asked me if I would like to see "their new home."

Adjacent to the building there were wire fences and several young people were planting corn and beets in the fields. The youngsters—in their teens—were wearing worn Levis and T-shirts. Little Navajo children were helping them plant the seeds.

"You must pardon the wire fences," Brother Juniper explained. "We live from the produce of our garden. We are not keeping people out, but it is a protection against the deer and coyotes. Once the plants produce, though, we have a feeding ground for our animal friends.

As we wandered around the grounds, Brother Juniper said that Father Liebler, knowing that someday he would not be physically capable of running the St. Christopher Mission, had decided to build a retreat for laymen and clergy of all faiths and races who wanted to spend a few days, or months in meditation and tilling the soil.

"We have learned so much from the Indians and their love and respect for the land during the past 30 years," he said, "we felt we should share our knowledge with others.

"There is conflict in the outside world, and man must cope with the conflict and strive to solve the problems. But, in doing so, if he will pause and come to a retreat such as ours—even for only a few hours or days—when he goes forth we think he will have a better understanding of the feelings and desires of other individuals."

Brother Juniper explained that Father Liebler, after leaving St. Christopher, had acquired 40 acres of school land for the retreat which is legally designated as the Hat Rock Valley Retreat. The land was acquired in 1966, but it was not until four years later that the chapel was completed.

The sandstone rocks are native, and Navajo and white settlers built the retreat without pay as a tribute to Father Liebler. The original chapel was a hogan, and the new chapel is built in the form of a Kiva, an Indian ceremonial structure. The new chapel and mission is now known as St. Mary of the Moonlight.

Inside the chapel is an altar, constructed of Navajo sandstone. It is a small altar which would be lost in the large church in Old Greenwich, Connecticut. What the people of Old Greenwich today do not know is that the altar in this small chapel in the heart of Navajoland was designed and personally built by an 81-year-young missionary who was once their rector—The Reverend Harold Baxter Liebler. □

Rambling on Rocks

by Glenn and Martha Vargas

Calcite: No. 3 in Hardness

CALCIUM, CARBON and oxygen combine into calcium carbonate ($CaCO_3$) which is the formula of calcite, one of our most common and useful minerals. It is useful not only to man, but nearly all animals and plants. The dependence of living things on calcite makes an interesting story.

First some vital statistics. The hardness of 3 puts it low on the scale, but under many circumstances it exhibits good toughness, thus a relatively high durability. Its specific gravity is low, about 2.75, thus being slightly over two and one-half times as heavy as water. We will refer later to the low specific gravity. Calcite forms crystals in the hexagonal system, and it shows well over 100 variations of this basic form. It has an easy cleavage in three directions that will produce a form looking much like a box that has been distorted by pushing on one corner. This form is known as a rhombohedron.

Calcite has a brother, aragonite, that is also made of calcium carbonate (the mineralogist calls this similarity paramorphism), but hardness, crystal shape and other characters differ. We shall mention aragonite a bit later.

We will start our story of the uses of calcite by discussing the more simple living things, but first we must discuss calcite in relation to water, in which it is slightly soluble. Perhaps we should have said very slightly soluble, but the amount that might be dissolved in a body of water is not as important as the fact that it is easily removed by simple chemistry. It is this easily-precipitated characteristic that living things use.

One of the oldest uses of calcite is to be found in the fossil remains of some early one-celled plants called algae. Large masses of calcite, resembling huge cabbage heads, are to be found in some of the earth's oldest rocks. The masses were built up by the life processes of the algae. Like all plants, they absorbed carbon dioxide to manufacture food for themselves. As these were aquatic plants, they had to get the carbon dioxide from the water. As part of the process, they would cause some of the dissolved calcite to precipitate, or in other words, the algae secreted calcite. Each tiny particle of calcite would lodge among the folds of the mass of algae, and fill the spaces between the individual cells. This turned out to be a great help to the algae; now they had support, and a structure to live in and on. Finally, the individual masses became large and joined their neighbors, creating huge formations that are now called algal limestone.

Limestone is common in other forms, usually in huge layers. Most of these are composed of the tiny skeletons of animals that lived in large bodies of water. Many sea animals are capable of extracting calcite from water, and at the same time secreting a shell surrounding themselves. This is done by one-celled animals, as well as many others up to and including oysters, clams and other sea animals.

The smallest of these animals, known as foraminifera, usually are very numerous in large bodies of water. Their lives are short, and at death, their shells sink to the bottom, eventually building limestone beds. Distributed through this mass of foraminifera skeletons may be larger shells of other sea animals, but the greatest part of most limestone is microscopic shells.

The larger sea animals, during the process of building their shells, take advantage of the paramorphism of calcite and aragonite. Calcite, because of its crystalization, tends to form a tough, but rough shell. This the animal finds excellent to protect him, but uncomfortable to cling to. Usually, the inner shell is composed of aragonite, which forms a smoother surface. One chemical compound, two types of crystalization, equals two different "walls" for the house! This house is (when submerged) only slightly over one and one-half times as heavy as water, thus the animal can easily move it about.

Coral reefs are the result of the secretion of calcite by other types of animals. These reefs surround and protect most tropical oceanic islands.

Calcite is soft, thus shells can be easily be broken down by wave action. The resultant small particles are easier to dissolve, and thus go back into the water, to be re-utilized by animals and plants. It is a continuous cycle.

If we come ashore, we find land animals using calcite. The shells of birds' eggs are calcite. This is obtained from the foods or water that they consume, or as in the case of some birds, by actually eating some type of sea shell. Poultry raisers often feed crushed oyster shells to their laying hens.

The bones of vertebrate animals are made of calcium phosphate, and the calcium portion is usually obtained by eating or drinking something containing calcite. Calcium phosphate is another mineral, apatite, which is the number 5 hardness indicator, so we shall discuss this two issues from now.

Man is a great user of calcite. Many industrial processes call for it in some form, such as lime, which is produced by burning calcite. The most important use is in the manufacture of cement for the making of concrete. Large, pure beds of limestone can become quarries to produce the raw material for cement. There are instances of large beds of sea shells, such as oysters, also being used to make cement.

The limestone (or other raw material) is ground into a very fine powder, mixed with a small amount of other minerals, and then roasted to drive off all water and impurities. The roasting process fuses it so that it must again be ground

Cleavage of Iceland spar calcite showing double refraction.

into a fine powder. In this final form, it has a great affinity for water, and when mixed with it, will solidify into a hard mass.

If limestone has been subjected to metamorphism (extreme geological heat and pressure), it becomes marble. This material has had extensive use as a building material by all human civilizations.

Some hot springs deposit calcite, some of it becoming large formations. They are usually banded in structure and are known as travertine. This is also an important building stone.

Man has found that calcium carbonate is needed by the plants he raises, and thus (in the form of lime) it is used as a fertilizer. The Blue Grass region of Kentucky, noted for its fine race horses, is in a limestone area. It is this abundance of calcite, taken in by the grass, that is said to contribute to the strong bones of these animals.

Pure cyrstalline calcite, when clear and colorless, is commonly known as Iceland spar. In this condition, it readily shows one of calcite's most interesting optical properties. It has the ability to split a single beam of light into two beams. This property is known as birefringence (double refraction) and is used in scientific instruments. Other minerals exhibit birefringence, but calcite splits the beams further apart than most.

During World War II, the famous Norden bombsight was made with calcite prisms that assisted, through birefringence, in sighting on targets. Much of the Iceland spar used for these instruments was mined in an area that is now within Anza-Borrego Desert State Park, in the Southern California desert.

The mineral collector is intrigued by calcite. The many forms of the crystal become a challenge to the collector that wishes to have a complete series. Most collectors will never be able to collect most of the forms of this versatile mineral, but most specimens are very beautiful.

In spite of its low hardness, calcite, in some forms, actually can be used for gemstones. Some of the fine-grained, and thus tough, travertines can be cut into cabochon stones. Many of them have delicate vari-colored, banded patterns. If these stones are set in jewelry that received little wear, they are fairly satisfactory. Most travertines do not take a high polish, however.

Clear calcite is sometimes cut into faceted gems. These are restricted to exhibition stones, but can be especially beautiful. The double refraction adds to the brilliance of the gem. The gem cutter finds that faceting a piece of calcite is a difficult task. The softness, coupled with the three easy cleavages, makes cutting very troublesome. Polishing is difficult also, but persistence will help to create a fine polish. To be able to facet a calcite gem is the mark of a good gem cutter.

Versatile is a good term to describe calcite. It is important to the life processes of most plants and animals. It can be used to fashion a home for the lowly as well as the evolutionally elevated. It also has a place in beauty and aesthetics. □

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Pleased About Poppies . . .

On behalf of the California State Parks Foundation, I want to thank you for the perfectly beautiful poppy photographs which appear in the May issue of *Desert* Magazine, along with the most interesting article on the threat to the California poppy.

I know this article will help immeasurably in alerting people to the need for contributions to the Poppy Park. It could not come at a better time and it explains very clearly why we must all get behind this effort and work hard.

Again, please accept our gratitude for your interest and your very significant contribution toward making the Poppy Park a reality.

ROBERT HOWARD,
Executive Director
California State Parks Foundation
San Francisco, California.

Happy Peglegophile . . .

I am one of those hardy souls that has been following the continuing saga of Black Pegleg Gold on our southern desert since first reading your story in the March, 1965 issue.

I am happy to hear that you are well and that you have decided to write again to those fellow readers who have followed the story with much interest.

I must admit that, although I have pieced-over each clue-filled letter and read between every line, I still don't even know the general area in which to search. But, I am still studying the clues and haven't given up hope of finding the lost (to everyone else) Pegleg Gold.

Please let us know if the hill is yet there and undisturbed as you have left it after each visit.

WES BROWN,
Rancho Mirage, California.

Whoopee! . . .

I have a new person for *Desert Magazine*, that is for a subscription: it is ME. I'm getting tired of going out, about ten days later, and then paying MORE than the REAL subscriber pays.

Bah Humbug.

Send me a three-year subscription.

L. L. PONATH,
Hinkley, California.

Calendar of Events

AUGUST 10 & 11, San Francisco Gem and Mineral Society's 21st annual show, "Golden Gateway to Gems," Hall of Flowers, Golden Gate Park, 9th Ave., and Lincoln Way, San Francisco. Many phases of lapidary art will be featured, both in exhibit cases and in working demonstrations. Outstanding mineral collections will be displayed.

SEPTEMBER 7 & 8, 42nd National Show and Convention of the American Begonia Society, Francisco Torres Convention Center, 6850 El Colegio Rd., Goleta, Calif. Open to public, free admission. Contact: Ethel Arnold, 1734 Pompas Ave., Santa Barbara, Calif. 93101.

SEPTEMBER 14 & 15, El Cajon Valley Gem and Mineral Society, Inc., Show, Parkway Plaza, Fletcher Parkway, El Cajon, Calif. Chairman: Harvey Kline, 935 Taft, El Cajon, Calif 92020.

AUGUST 31-SEPTEMBER 1, Labor Day Weekend. First Annual Four Wheeler Campout in the canyonlands of southeastern Utah, sponsored by the Moab Chamber of Commerce. A two-day overnight safari for four-wheel-drive vehicles and dune buggies. Highway licensed off-road vehicles and advance registration required. For details, write the Moab Chamber of Commerce, Moab, Utah 84532.

SEPTEMBER 18-22, Las Vegas Gem Club's 3rd annual "Spotlight on Gems," in conjunction with the Jaycee's State Fair, Convention Center, 3150 S. Paradise Rd., Las Vegas, Nevada. Dealers, demonstrations, field trip on Saturday. Contact Betty McCreless, 6261 Carey Ave., Las Vegas, Nevada 89110.

SEPTEMBER 21, Third Annual California Searchers Hunt, 1:00, Historic Pena Adobe near Vacaville, Calif. General Hunt, Ladies Hunt, Junior Hunt. All TH'ers welcome. For registration information, contact: Ed Tanner, 415-223-3388.

OCTOBER 5 & 6, Second annual Bisbee Gem and Mineral Show, National Guard Armory, Bisbee, Ariz. Exceptional exhibitions by noted collectors and dealers.

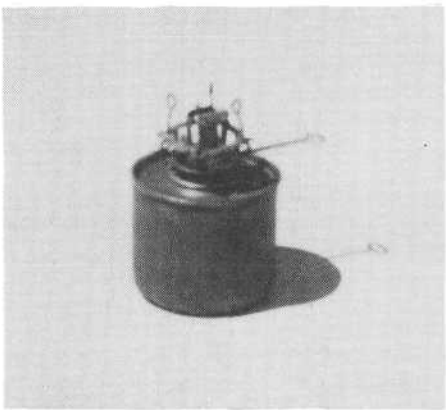
OCTOBER 5 & 6, "Galaxy of Gems and Minerals in Joshualand," sponsored by the Hi-Desert Gem and Mineral Association. Community Center, 57098 29 Palms Hwy., Yucca Valley, Calif. Free admission, camping available. Contact: Una Littlepage, Box 762, Yucca Valley, Calif. 92284.

OCTOBER 12 & 13, "Earth's Treasures" presented by the Nevada County Gem and Mineral Society, National Guard Armory Building, Ridge Rd., and Nevada City Highway, Nevada City, Calif. Admission free, dealers, demonstrations.

OCTOBER 12 & 13, "Desert Gem-O-Rama" sponsored by the Searles Valley Gem and Mineral Society, Trona Recreation Hall, Trona, Calif. Camping space available for $1.00 fee. Dealers, field trips. Admission free. Contact Jenny Langner, Box 966, Trona, Calif. 93462.

OCTOBER 19 & 20, Fallbrook Gem and Mineral Society Show, Fallbrook High School cafeteria on South Mission, Fallbrook, Calif. Dealers. Chairman: Chas. Weber, 714-728-2257.

OCTOBER 26 & 27, Lake Havasu City Gem and Mineral Society's 5th annual show, Smoketree Elementary School, Smoketree Avenue and Pima, Lake Havasu City, Arizona. Dealers space filled. Chairman: Walter Staugaard, Box 2373, Lake Havasu City, AZ 86403.



Lantern Or? . . .

I am enclosing a picture of a lantern base found about half way between Needles, California and Kingman, Arizona, along what appeared to be the original rail line of what is now the Santa Fe or a spur line.

After a careful cleaning the following name is visible: The Adams & Westlake Co. Chicago. Adlake apparently was the brand name used and the patent date is November, 1919. The wick was still in place and overall it is in good condition.

I would be interested to know if I have found a "treasure." Any information readers can provide will be greatly appreciated.

JOHN W. DIXON, JR.
Lake Havasu City, Arizona.

Editor's Note: Let's not burn any midnight oil, but I'm sure one of our readers will have the right answer.

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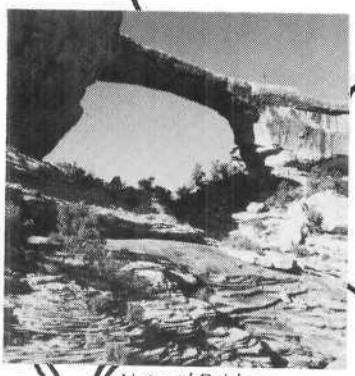

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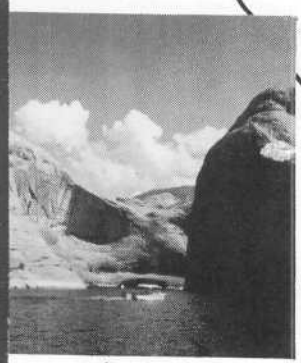

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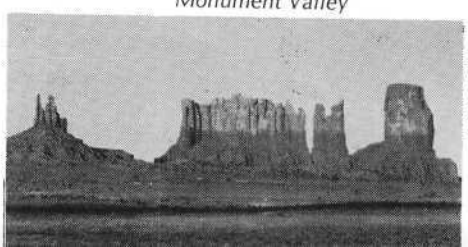

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Map by F. A. Barnes

Stability is more than a word.

Stability or flamboyance. One will survive under stress. For a quarter of a century Silver Streak produced a luxury recreational vehicle aircraft constructed to meet the most rigorous tests of the road. The success is legend. Stability means endurance. In recent indecisive times the Silver Streak name stood strong. Production didn't hesitate, quality never faltered. When you own a Silver Streak travel trailer or motorhome, you have a product that has proved itself for a long time. And it's here to stay. That's stability.

Water-Guard purifier is standard equipment on all models.

Send for literature and location of your nearest dealer.

SILVER STREAK

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