Desert

October, 1981
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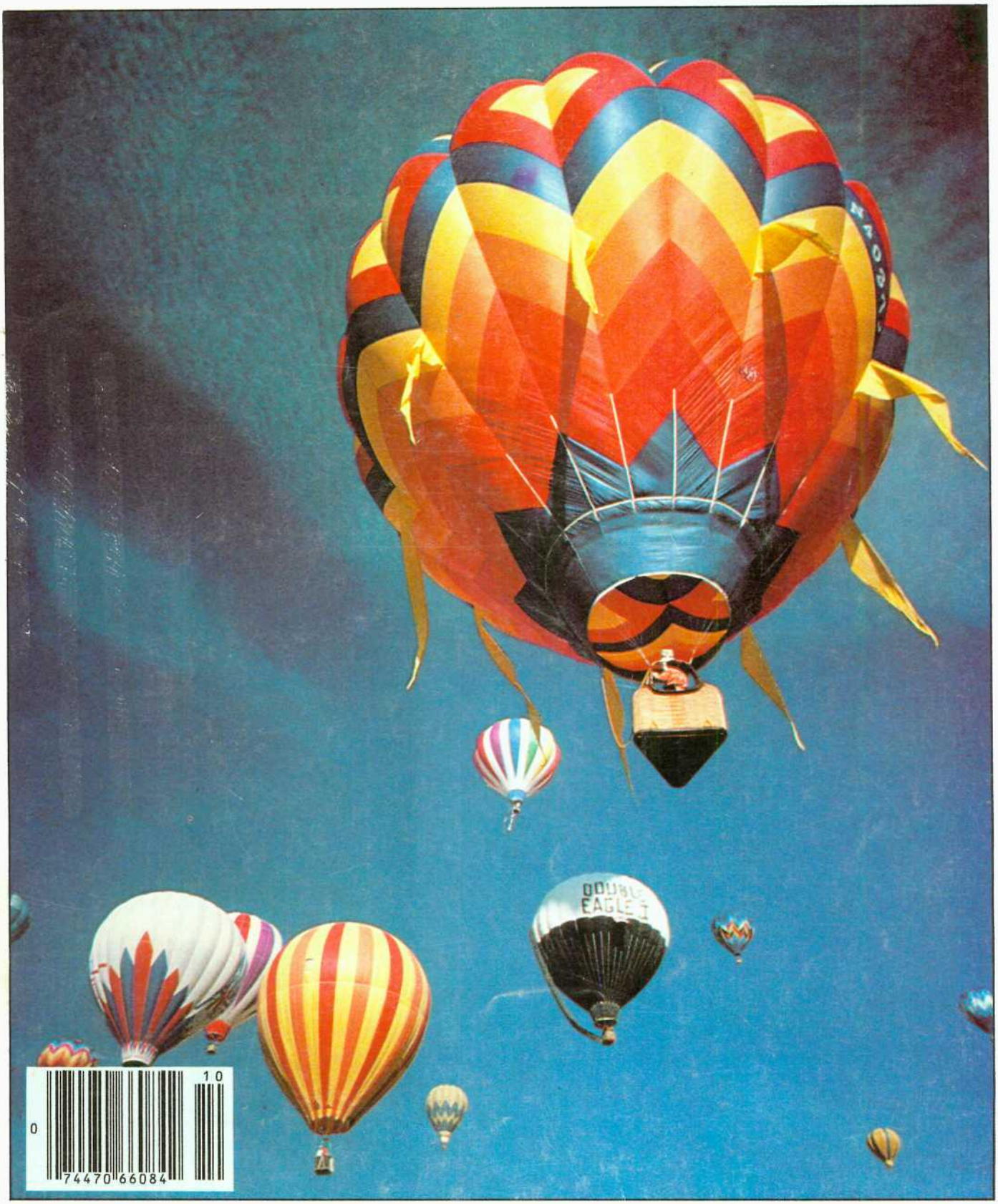

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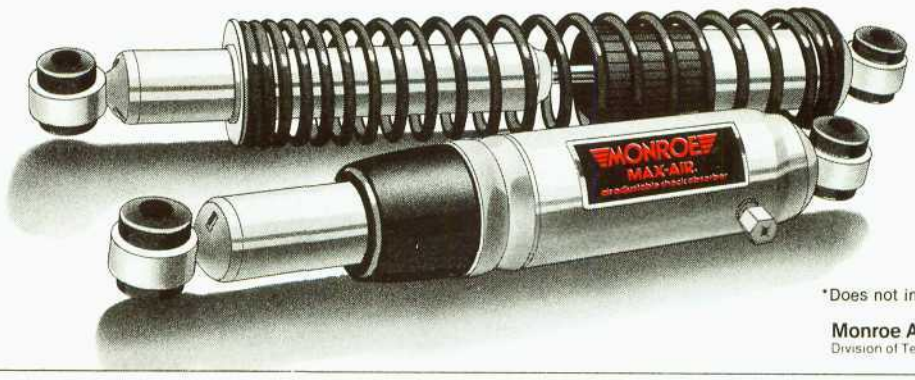

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Monroe Auto Equipment
Division of Tenneco Automotive

VOLUME 44 NUMBER 9 October, 1981

Desert

MAGAZINE OF THE SOUTHWEST

page 22

page 46

Departments

Cover: Quite a spectacle, the Albuquerque International Balloon Fiesta. The Desert *magazine staff will be there. Please join us. Photo by Cradoc Bagshaw.*

EDITORIAL

On The Road Again

ED SEYKOTA

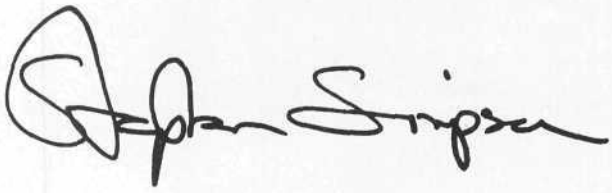
I *am* the *Desert* magazine reader. I do not live daily in the space, the silence and the grandeur of the desert, but I go to it when I can. Perhaps I wouldn't live there even if I could, but I love it.

I am content and entertained by the vicarious experience of the words and photos of others. Then I go out with my camera and journal, and do it one better — for myself.

This month will not be vicarious. This month, the thrills are mine. I will be going to the Albuquerque International Balloon Fiesta to enjoy it, and to promote the magazine. I have heard a lot about the wonder of mass ascensions in the still morning air. I look forward to experiencing that — then I will read *Desert* to see if our writers got that experience across.

I know I will love the gathered hordes of balloons, ground crews and spectators, but that's not what makes me itch. What makes me restless in my chair, and anxious to close the office, is the getting there and the getting back—the moving across the land. I want to be out there again, where the sky is 180 degrees or more of the landscape. I will stop by the road, 40 miles west of Albuquerque, just to watch the sunrise over Sandia Peaks. If I'm lucky, maybe a thunderstorm will chug through and give the sky texture and depth. I don't expect to see anyone in particular, but it will be nice to know that I am in the land that Georgia O'Keefe and Elliot Porter have chosen for their homes.

I have been looking over the maps of the Southwest, and I came across Pie Town and Cheechilgeetho. I know nothing about them, in fact, have never heard of them—and that is as good a reason as any to go there. The great, sweet and fat Pacific will be nowhere in sight, and knowing how cluttered its edges can be, I will be happy to be in the desert. I'll look for you there.



Desert

MAGAZINE OF THE SOUTHWEST

Editor
STEPHEN SIMPSON

Associate Editors
KATHRYN KRAHENBUHL
DIANA COOPER, DIANE HLAVA

Editorial Intern
LIZA KAMPS

Art Director
PEGGY FLETCHER

Associate Art Director
LIZ McDONALD

Design Consultant
THOMAS THREINEN

Advertising Designer
GITTA PFAHL

Subscription Manager
JUDI PERSKY

Contributors:
STELLA HUGHES, KAREN SAUSMAN, SUSAN DURR NIX, DAVID MUENCH, WAYNE P. ARMSTRONG, JEFF GNASS, JAMES R. MITCHELL

Director of Advertising
KEVIN ANDERSEN

Advertising Sales
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Media Consultant
SCOTT CHATFIELD

Circulation Director
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Publisher
JULIE BRAZEAU

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ED SEYKOTA

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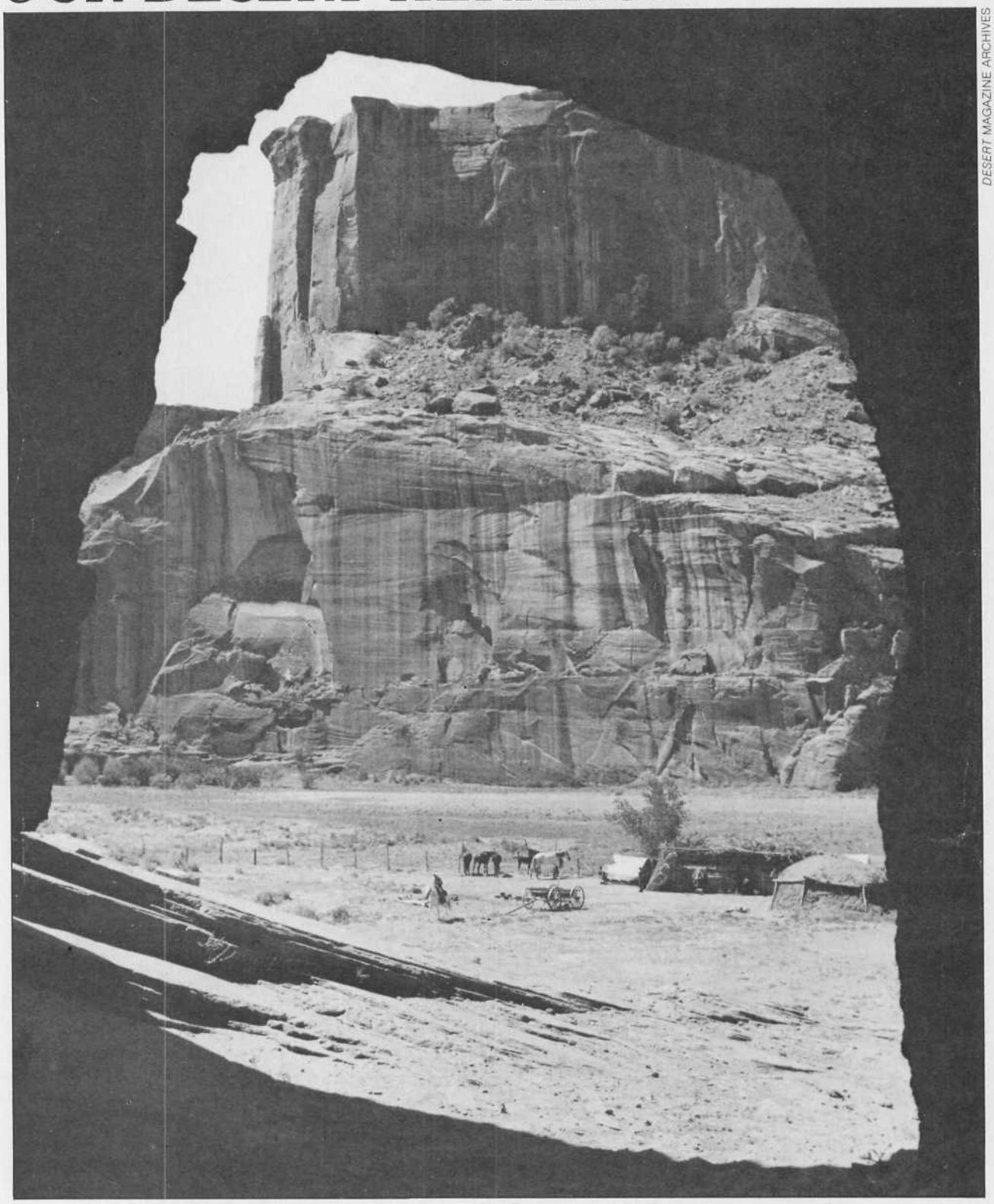
OUR DESERT HERITAGE



DESERT MAGAZINE ARCHIVES

Our archives yield another beauty. Seen through a natural frame, this is Canyon de Chelly, circa 1947. Though 34 years have brought changes (see page 32), the beauty of the canyon remains vivid. If you look closely, you can see the etched, timeworn figures amid the beautiful striping of the rocks.

These are our forefathers and how they lived. They brought us here; forged the path. They lived their lives in the foreground of this immense sandstone sculpture. These crude buildings were their mansions, the horse and wagon were their four-wheel-drive trucks. It was through their dreams that we received our realities.

This 'ranch' is probably gone (if you know its fate, please write to us), but the purpose and spirit that put it there live on; echoed in the splendor of this canyon.

LETTERS

Truth about the Time Machine

The stuff of which legends are made is interesting, to say the least. I refer to your story, *George W. Van Tassel and His Anti-Gravity Time Machine,* in the May, 1981 issue.

While I cannot fault the author, who may well be simply parroting what Van Tassel's followers have related, I do feel that I should relate what I know to be true.

I am referring to just three of many erroneous statements in the article. They are, "No one doubted his (Van Tassel's) claim to have hosted visitors from outer space,"; "The friendship between the two men (Frank Kritzer and Van Tassel) was deep," and "No one except its (the Integratron's) builders has ever been inside."

In 1955, I attended a press junket hosted by Van Tassel at his newly acquired Giant Rock near Landers, California. According to him, visitors from outer space in flying saucers wanted their appearance documented by earthlings at high noon. There were several hundred of us present as the appointed time came and went with no visitation by beings from other worlds. You couldn't have convinced any of that media that George had ever had an encounter of the third kind.

In 1965, while filming and producing episodes of *The Happy Wanderers* and *Roving Kind* (travel television shows), I asked Van Tassel about the origin of Giant Rock's underground room. He took credit for it, but after I produced a copy of *The American Weekly* (1941) which documented Frank Kritzer as a suspected Nazi and creater of the subterranean room, he changed his story and gave Kritzer partial credit. He made it clear that he had never known Kritzer.

On all occasions, including the last one in 1975, 'Doctor' Van Tassel hosted me to a tour of the Integratron's (time-machine) inner workings. Documentation of that was first seen on KMIR-NBC television news in Palm Springs and later picked up by *The Today Show* nationally. Then, as now, the time machine did not function.

My brother Dr. Thomas Wyatt Noonan, a professor at MIT listened to tapes made by myself of Van Tassel explaining how the Integratron would work someday, and he dubbed the theory impossible on the approach taken.

No, the time machine will not work. Whatever the motive (financial gain or sincere effort), it has gone with its creator to the grave.

George Van Tassel opened up to me and my cameras because as he put it, I "was the only member of the press that didn't ridicule him." Over the many years I knew Van Tassel to always be good for a story, a true desert rat and a good friend. When I think about it, that's quite a bit.

Buddy Noonan
Sierra Vista, Arizona

Clarion Comments

I was stunned to read in the July issue that the *Clarion* section was to be eliminated from one of my favorite magazines.

I have boasted to my friends that this was the greatest improvement *Desert* has made under the new ownership. I always turn to this informative and timely section first when I get my copy from the mailbox.

My son who lives in Twain Harte also does the same thing. We both find the mining news most interesting, and the *Clarion* has really become our favorite part of the magazine.

I enjoy *Desert* immensely, but I am sure the majority of your readers would agree with me that the loss of that section can only detract from the enjoyment of this unusual publication.

Please reconsider this decision!

Thomas H. Core
Big Bear City, California

It is my belief that the space allotted to the Clarion *will serve the* Desert *reader better if it is filled with clear first person experiential writing and excellent photographs, rather than newspaper clippings. I welcome suggestions for ways in which we can be of greater service to our readers.*

Sorry to note that you are dropping the *Clarion* section. I think it is very interesting, and provides some different angles on desert news.

Also, I am curious about what you mean by "the celebration of life on the desert." Is it some sort of fiesta or what?

R.S. Lix
Sacramento, California

You bet it's a fiesta — day and night we are blessed with the excellence of the Southwest. I celebrate that!!

Beautiful Human Beings

The photograph of the Indian girl on the cover of your July (1981) issue of *Desert* impressed me more than any picture I have ever seen on the cover of a magazine.

The warmth of the colors and hues are brilliant. Mr. Jacka has caught the gentle strength and beauty of the girl in a most convincing form.

It makes you want to say more than "what a beautiful girl," you want to say, "what a beautiful human being."

Wes Matthews
Glendale, Arizona

Thanks for the Welcome!

Your editorial of self-introduction is refreshing. Please turn out to be as fine a person as you appear to be. We *Desert* readers need you!

Desert magazine has been part of my life for many years, but recently I have felt negative about the editorial tone of the publication, yet I couldn't say concisely why I no longer felt good about the magazine. Some of your published *Letters* (August 1981) bring my vague feelings into focus now. *Desert* has been slanted toward the monied interests, the off-roaders, and other forces of ultimate desert destruction!

It was most gratifying that both you and one, Tom Wright (in August *Letters),* referred kindly to Edward Abbey. MacDonald's *Critique* (??) of Abbey's *Desert Solitaire* was outrageous — far-fetched and out of context. That nearly unglued me; as I, too, am an admirer of Abbey.

You are restoring my faith and in-

terest in *Desert*. If Randall Henderson is truly your model, you must be on the right track. Long may you prosper!!

Anne Lorensen
Los Alamitos, California

Having subscribed to *Desert* for many years and being a former rockhound, at 71 years of age, my desert travel is now mostly done through your splendid magazine.

I look forward each month to the magazine and so much enjoy your articles and pictures of many places that I have visited. I once lived at Desert Center, and worked for the great Steve Ragsdale. I often wondered what had become of him and now know through your articles.

Your change in the August issue is great! More like the issues of former years. Good luck to you in your new job as editor, please keep up the good work.

I really look forward eagerly to each new issue as the desert is one of my great loves. God really knew what He was doing when He created it for *special people.*

Dorothy I. Clark
Monrovia, California

Bear Meets Girl

This letter is to call your attention to the famous shadow on Lone Pine Peak, *Bear Meets Girl on Lone Pine Peak* [June, 1981, page 58]. We are enclosing the postcard the Lone Pine Chamber of Commerce has made. You were lucky to catch this shadow as it is only visible in November and December. Your articles on our area were great — it is a great country.

Elsie L. Ayers
Lone Pine, California

THE LIVING DESERT

by Susan Durr Nix

On the Wing

Wait! In the interest of knowledge, don't swat that fly! Tolerate him long enough to take a good look at his wings, preferably against a window. Wait until he lands—at 200 beats per second, his wings are only a blur in flight. (He'll stop that maddening buzz as soon as his legs make contact with the pane.) Now approach cautiously; hairs on his wings are sensitive to the slightest shift in air currents.

See how nearly transparent they are? Look at the delicate vein pattern; it's the fingerprint of his species. Notice how many more veins run lengthwise than crosswise, and how the leading edge of the wing is braced by clustered, longitudinal veins. Pay attention to the position of the resting wings. Do you see how they overlap over the abdomen and behind the hairy thorax? O.K., now go ahead and swat.

The housefly and his two-winged relatives are nature's most advanced fliers. They have wings that are no more than a network of hollow veins sandwiched between two sheets of plastic wrap. There isn't the slightest suggestion of muscle, certainly not one capable of 200 contractions a second, and no auxiliary structures like feathers. Yet with such inadequate tools, insects have been airborne longer than any other creature—some 300 million years.

Fifty million years before birds were making their first halting takeoffs, insects were colonizing new habitats, finding food, eluding predators, courting mates and signaling each other with four equally developed, independently-powered wings that stuck straight out from the thorax. They shimmered through the sunlight using direct flight muscles, housed inside the thorax, that alternately pushed and pulled on the fore and hind wings. It was a simple, effective system that survives today in the ancient dragonfly family. It might have served more insects if the challenge of new, airborne predators and competitors hadn't necessitated modifications for faster, more efficient flight.

Karen Sausman

This dragonfly exhibits the complicated network of flight apparatus.

The only other creatures capable of true flight—birds and later, bats—invaded insect airspace with fundamentally different kinds of wings. Whereas insects grew new structures to take to the air, birds and bats followed the evolutionary course of modifying existing limbs. Bat wings are nothing more than elastic membrane stretched between elongated fingers of a hand, much like our own. Bird wings depend for support on their forearms, fused wrists and hand bones, which are attached to powerful muscles. Except for size, the common fried chicken wing is typical bird equipment.

Sired by scaly reptiles an estimated 180 million years ago, birds emphasized buoyancy, strength, balance and sleekness in their evolution. These traits were further enhanced by the development of a new structural material: the feather. Light but strong, feathers streamline, insulate, waterproof, camouflage and decorate their owners. They combine rigidity with flexibility; unlike bat membrane and insect cuticle, they are versatile, readily repaired and

replaceable.

Without the complex organization of feathers and the long, stiff, quill-like tail and wing feathers, birds would be clumsy fliers at best. The long, hollow central shaft projects hundreds of parallel barbs that mesh together into webs or vanes. The web on one side of the shaft is always broader than the other, making feathers asymmetrical. The narrow side, like the reinforced edge of the insect's wing, takes most of the punishment in flight. The barbs are held together by projecting, overlapping barbules. In turn, each barbule has minute hooks that interlock with surprising strength. As a result, single feathers do not readily split apart to allow air through, and when they do, they easily zip back together. Further control is exerted by other hooks that link groups of feathers together, and by individual muscles at the base of each shaft. These muscles move the feathers together and apart for gliding, soaring and flapping flight.

Dragonflies have the most completely developed flight muscles of any insect group, and consequently, had sufficient agility and power to survive unchanged, while evolutionary pressures drastically altered their contemporaries. Speed, deception, avoidance and resistance were the basic adaptive alternatives for other insects. Nature innovated a wide variety of body and wing shapes, and experimented endlessly with size and function. Wings hardened into protective armor, fanned out, folded under, puckered into accordion pleats, shrank, atrophied, frayed, faded, colored and otherwise changed beyond recognition. Amid the chaos were strong trends away from the elaborate cross-veining typical of dragonfly wings, and toward a convergent or overlapping configuration, as in the wings of a butterfly.

Overlapping reduced two pairs of wings to a single, far more efficient flight unit. More advanced insects exploited this advantage by developing mechanisms to link the trailing edge of the fore wing to the leading edge of the hind wing. Some work like velcro (moths), other actually hook (butterflies) or zip (wasps and bees). Concurrently, the direct muscles inside the thorax were replaced by complex, indirect ones that automatically synchronized wingbeats for greater flight control.

The speed and coordination of the housefly was impossible, however, without an altogether new power source. The answer was resilin—the most elastic substance ever produced by living organisms. Resilin powers the buzzers and whiners, the insects whose wings beat so rapidly they hum through the air. Contracting and relaxing almost simultaneously inside the thorax, resilin produces a mosquito wingbeat frequency of 600 per second and an incredible rate of 1000 per second in some midges.

Among the buzzers and whiners, the true flies took the evolution of wing overlap and hook-up to its logical conclusion: they lost their hind wings altogether. In return, they not only gained the most dynamic wing, but the greatest maneuverability to be found in the animal world. The hind wing stubs, or halteres, function as automatic stabilizers—they maintain a fly's equilibrium, come hell or fly swatter.

Flight depends on a wing design that compensates for gravity and drag, and takes advantage of lift and thrust to move *up*. It's a problem that has obsessed mankind for thousands of years, yet for all our technical prowess, we are still neophytes in the air. Next to an eagle's wing, our most advanced aeroplane is unsophisticated; compared to a housefly, we have barely left the ground. That we did so at all is a tribute to our own evolutionary progress. We developed mind, not wings.

Susan Durr Nix is Development Coordinator at the Living Desert Reserve, a 1,000-acre desert interpretation and conservation facility in Palm Desert, California. She shares her enthusiasm for the natural world not only in articles and publications, but in educational programs for visitors to the reserve.

by Stella Hughes

Delicious Game Birds

City dwellers tend to think of hunting wild game as something their ancestors did a long time ago—for food, because bringing home meat for the pot was essential; or for sport, because there wasn't a heck of a lot of anything else to do for amusement. Today, more men and women are taking to the field during hunting season than ever before. Like our ancestors, they intend to eat what they bag, and if they bag more than they can eat, they share their bounty with friends and neighbors.

The season on game birds opens with a bang. Grouse, partridge, quail, pigeons, doves, ducks, geese and wild turkey may end up in your kitchen without a formal introduction. One of the most frustrating days of my life was spent trying to pluck three wild geese, given to me by a friend on his way home from the hill. I thought that by scalding the geese, their feathers would slip off by handfuls, exactly like the rooster I had dressed for last Sunday's dinner. Was I ever wrong! The unwritten law among hunters, "Them that shoots 'em, dresses 'em," was broken by my former friend. Broken also were the mandatory rules of gutting game birds on the spot, and taking care in keeping the fowls cool.

Besides ruining my day, all three geese were soured by the time I'd finished plucking them, and were a total waste.

Game birds offer a wide variety of delicious wild meat. Wild turkey, that have been feeding on acorns and piñon nuts, head the list, in my estimation. A young turkey, roasted in the usual way, and stuffed with sausage dressing makes the domestic turkey seem bland and flavorless in comparison.

Stephen Simpson

Liza Kamps, our Editorial Intern, with her Twice-Cooked Quail.

Quail seem to be plentiful almost everywhere in the Southwest, and hunters agree that the quail may be either plucked or skinned. Most maintain that it's worth the trouble of plucking and singeing them to conserve the extra bit of flavor and moisture the skin affords.

There are several ways to prepare quail or other game birds: breaded with cornmeal; browned and braised; roasted with sausage stuffing; casseroles with vegetables and mushrooms in white wine; and southern fried.

Twice-Cooked Quail

12 to 14 quail, dressed
1 large onion, chopped
2 tart apples, cored and chopped (do not peel)
12 to 14 bacon slices
1 cup dry white wine
1½-inch-thick slice of onion
1 bay leaf
salt and pepper

Stuff birds loosely with a mixture of chopped onion and apple, lightly salted. Fasten body cavities with thread or toothpick. Sprinkle with salt and pepper and then wrap each bird in a slice of bacon. Place the birds on a grill, and cook over charcoal or hardwood coals for 30 minutes, turning frequently. Remove birds to a baking pan or casserole dish. Add wine, onion slice and bay leaf. Bake at 300 degrees for 45 minutes, basting frequently with pan juices. Serve with wild rice or spoon bread. Serves about six, depending on the size of the quail.

Barbecue Quail

To barbecue quail, wrap each bird in a slice of bacon or thinly sliced salt pork. Season with salt, pepper and oregano. Brush birds with olive oil. Place birds on grill over medium hot coals and turn frequently. Baste occasionally with a mixture of water, salt, lemon juice and butter. Have ready a mixture of cracker crumbs and Cream of Wheat: If you sprinkle this over the birds, it will adhere to the skin and keep the meat from drying out.

Dutch Oven Quail

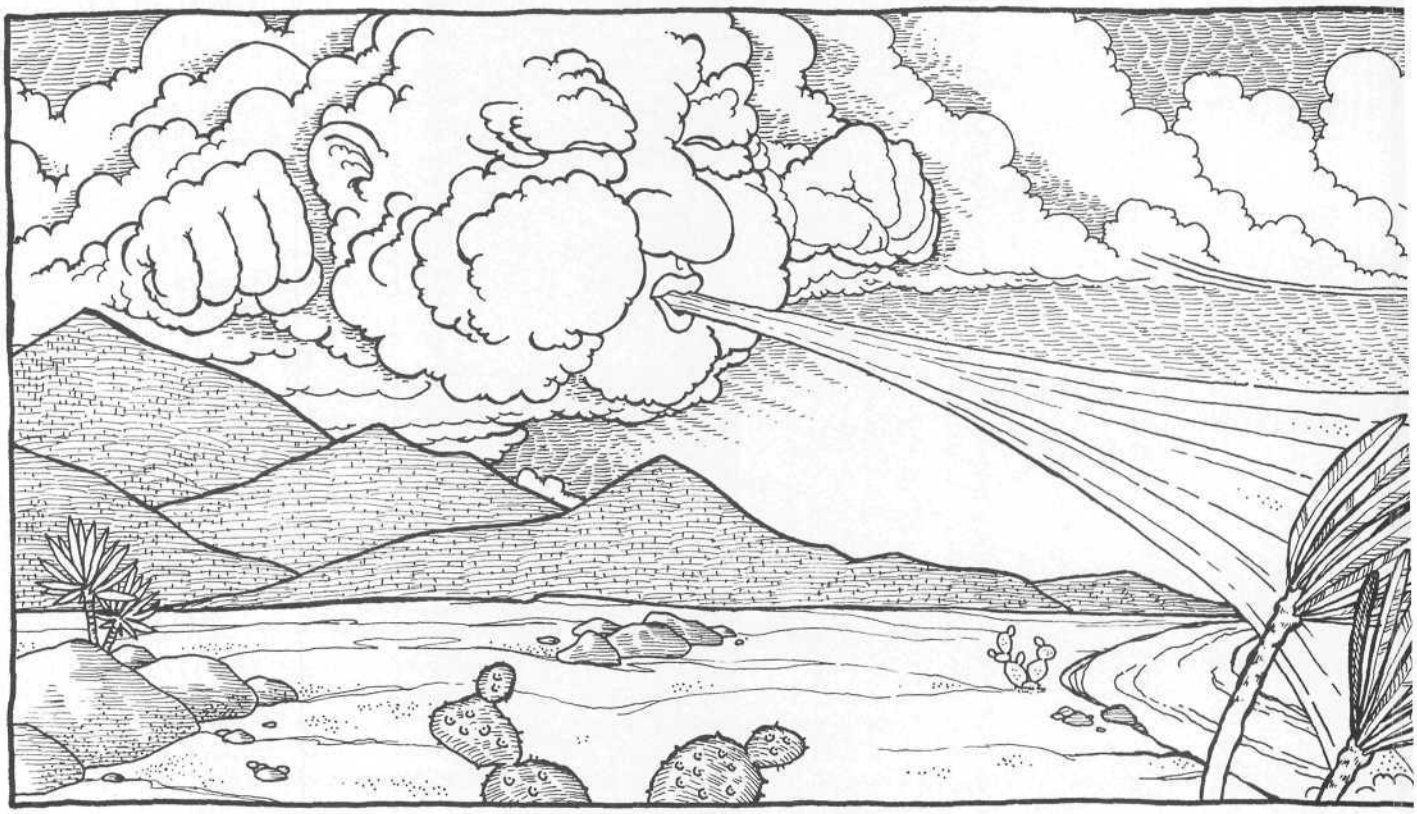
Preparing game birds in a heavy Dutch oven is like cooking a pot roast. Small game birds, like quail or doves, should be cooked whole. Larger birds, such as grouse, pheasants and prairie chickens should be split down the middle. Season and fry in Dutch oven in oil or butter, then add wine and cook over low heat. Allow 1 cup of wine for 8 servings of meat, keeping in mind that each pound of unboned bird makes 1 to 1½ servings. Add other liquids; lemon juice, tomato sauce, bouillon or whatever appeals to your taste: about ½ cup for each pound of bird. Cover and cook slowly for about 2 hours.

Creamed Casserole

This is a way to utilize the finest meat from a game bird; the breast. To figure the amount of meat needed: Three breasts from sage chicken, grouse or pheasant makes 6 servings. Split the breast in two, remove the bone, and cut each half in two. If using quail or doves, remove the bone, and leave in one piece. Slice the breast meat about ½-inch thick. Fry until brown in ½ cup butter and oil mixed, taking care not to burn the oil while cooking. Place breasts in baking dish. In the remaining oil, simmer ½-cup Madeira wine and 1 can of mushrooms for 5 minutes. Heat 1 cup cream and add. Bring mixture to a boil, pour over breasts, and bake 15 to 20 minutes more.

Stella Hughes has written articles for many western magazines, and is a regular contributor to Desert *magazine. She lives 46 miles from Clifton, Arizona, near Eagle Creek. She learned how to camp-cook many years ago, out of self-defense, and many of her experiences have been related in her book,* Chuck Wagon Cookin'.

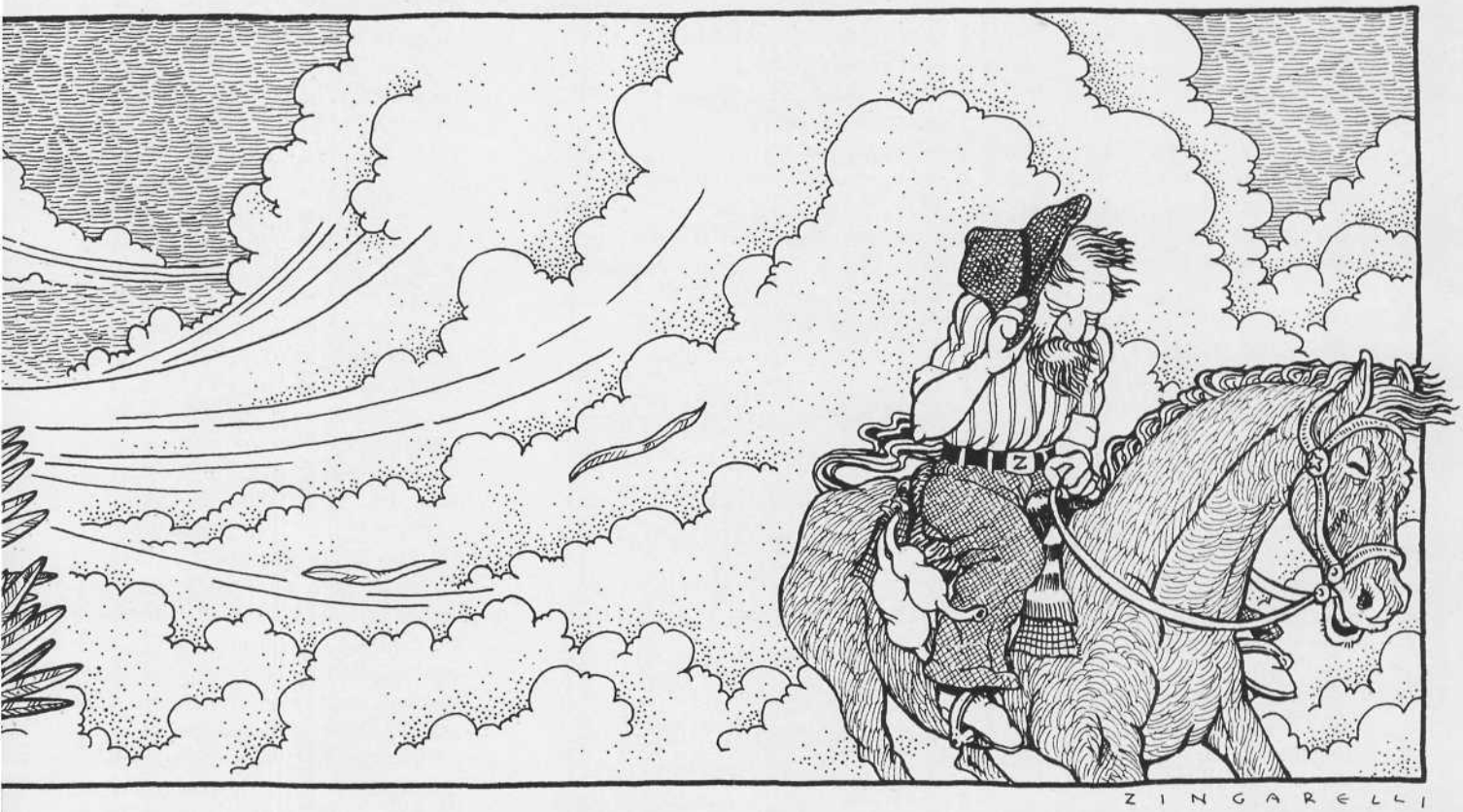
They call the Wind,



The notoriety of a Santa Ana wind was difficult to hide. Despite the creative journalism and expansive talk of early Southern California papers and leaders the legend of the devil wind continued to spread.

by Joe Blackstock

Santa Ana



The inhabitants of Pasadena, California must have been a bit confused when they opened their newspapers one December morning in 1891.

Their city and many parts of Southern California lay covered in debris after a strong Santa Ana wind blew down buildings, denuded trees of their fruit, and piled sand and dirt everywhere. The Pasadena *Star,* however, had a quite different version.

The event had been a disaster for everyone, but especially for land developers and Chamber of Commerce leaders then engaged in a world-wide campaign of promoting turn-of-the-century California as a West Coast paradise. That day the paper did everything in its printed power to undo the damage.

In an article about the windstorm, the paper noted it really wasn't *that* strong at all, but the damage was "because the character of our buildings is not such as to resist such a strong blow." In the same article, the writer praised the wind's assistance to growers—it had knocked off only the defective fruit from San Gabriel Valley trees.

This bit of journalistic creativity came in a different era, when promoters jealously protected the good name of California. To say anything detrimental to the rest of the world, even if true, was a heresy not to be tolerated.

The Santa Ana wind recognizes no boundary or economic motive. When the strong winter wind blows dirt and leaves all over Southern California, the best intentions of men, even armed with typewriters and imagination, cannot stop it.

But men have tried...

Of all the Santa Ana wind's attributes, the most galling to those in what is now Orange County, has been its name. The exact origin is unclear, but most informed sources agree the name likely comes from Santa Ana Canyon, through which the wind often strongly blows between Corona and Orange County.

As early as the 1860s, there are references to the name "Santa Ana" for the wind, but that notoriety has never set well among residents of that city.

Problems first began in the 1880s when Los Angeles newspapers, showing their regional leanings, published accounts of the damage caused by the Santa Anas to Orange County territory, often taunting their neighbors by gloating how their own area was relatively free of such zephyrs.

These stories only served to anger the equally provincial Santa Ana editor James Alonzo Waite, who struck back with articles about the damage caused by the Santa Ana in Los Angeles. "Properly, they are Riverside Winds," he concluded in one article, "and if the truth really be told, Los Angeles suffers

1880s: Los Angeles newspapers published accounts of the damaging Santa Anas in the Orange County area—gloating how *they* were relatively free of such zephyrs.

more from them than we do."

These battles over custody of the wind made Orange County officials all the more sensitive when a 1901 Associated Press story from Santa Ana told the nation of a particular windstorm that hit the area just after Christmas.

A man named Ott, a renowned prankster, was serving as telegraph operator in Santa Ana that windy night. Bored with the lack of activity, he tapped out a dispatch to the Associated Press about the Santa Ana wind howling outside. The more he wrote, the better it got.

"In this city, the sand blew in from the desert in pillars reaching as high as 30 feet...," he wrote. Ott described, with considerable embellishment, railroad near-accidents, devastated orchards and the houses and public utilities damaged. In summary, he estimated damage at a mere $3,000 (another blow to the city's pride).

When the story was published in Los Angeles newspapers the next day, Santa Ana residents were livid with rage. More than 200 community members held a stormy meeting, passing a resolution demanding retractions for the slander perpetrated upon their city. They issued a dispatch of their own explaining the incident and telling the real story—as they saw it.

As for Ott, he was escorted to the train depot, according to one account, and unceremoniously put on the next train out of town.

After this blow to their civic esteem, Orange County people began a sustained campaign to disassociate the wind from their area. Writer Terry Stephenson remembered his days working for Santa Ana and Los Angeles newspapers, when specific instructions were given him never to use the name, Santa Ana, when writing about the wind. Mistakes in this regard were met with stinging rebukes from the Chamber of Commerce.

Other papers got the message, too. "I recall—and vividly, too—a ruling by (our) managing editor, James T. Guthrie, 40 years ago, banning from our news columns... Santa Ana to describe a strong north wind," wrote columnist Earl Buie of the San Bernardino *Sun-Telegram* in 1967. "As I recalled the circumstances, Mr. Guthrie acted after Orange County interests protested the use of the word Santa Ana in referring to the windstorms after a severe storm had received national publicity. It had been described in the news columns everywhere as a Santa Ana."

Santa Ana is by no means the only name given the wind during the last two centuries, beginning with the "nor'easter," described by Richard Henry Dana in 1836 in *Two Years Before the Mast.* But none of the other names has stuck as much as a word that appeared just after the turn of the century: Santana. That name (actually it's the way Santa Ana is pronounced in Spanish) was immediately embraced by Orange County interests as the correct name of the wind.

The Santa Ana wind recognizes no boundary or economic motive. When the strong winter wind blows dirt and leaves all over Southern California, the best intentions of men, even armed with typewriters and imagination, cannot stop it.

Santana, a far more romantic name for the wind, remains in the vocabulary of Southern California even today, though its historical background lies mainly in the imagination of its promoters. Originally, Chamber of Commerce officials spread the story that the wind should be called Santana, which, they said, was an Indian word meaning big wind. A search, however, of all dialects in the Southwest has turned up no such reference.

Another claim is that Santana is derived from the phrase "Satan's wind," while a third meaning sometimes cited is that it was named for Mexican General Santa Anna, whom the source had erroneously believed spent time marching through Southern California.

In spite of their efforts, however, the last hope for the anti-Santa Ana forces was finally lost in the late 1930s when

Santa Ana, Santana, devil wind, Camulos Swell, Sundowner and nor'easter —all names for a wind that sweeps in from the desert and then out to sea.

novelist Raymond Chandler glorified the wind, and its name, in a Philip Marlowe short story, *The Red Wind:*

"There was a desert wind blowing that night. It was one of those hot, dry Santa Anas that comes down through the mountain passes and curls your hair and makes your nerves jump and your skin itch. On nights like that every booze party ends up in a fight. Meek little wives feel the edge of the carving knife and study their husbands' necks. Anything can happen..."

In the last few decades, the regional irritation over the use of the name Santa Ana wind has mellowed. Orange County, like all of Southern California, has grown rapidly in spite of the best work of the Santa Ana wind. The name? Well, you still see an occasional news reference to "devil winds" when some winter Santa Ana whips up a disasterous brush fire. Even Santana hangs on in infrequent mentions by some uninformed newsman or a long-time resident influenced by events of the past.

The names the wind has been given—Santa Ana, Santana, devil wind, Riverside wind, Camulos Swell (Ventura), Sundowner (Santa Barbara), nor'easter —are numerous but they all mean the same thing: the humidity drops, the temperature rises and the smog that settles interminably along the mountains and valleys and even into the deserts, is blown far out to sea.

And, no matter what you call it, nobody complains about that.

Joe Blackstock, 33, is sports editor and outdoor columnist for the San Gabriel Valley Daily Tribune in West Covina, California. He has worked in newspapers for 13 years. He has contributed two previous articles to Desert. *He has a master's degree in American studies from California State University at Los Angeles.*

TRACES IN THE SAND

JEFF GNASS

The wind, grass and shadows leave their own traces in the sand. Photograph taken in White Sands, New Mexico.

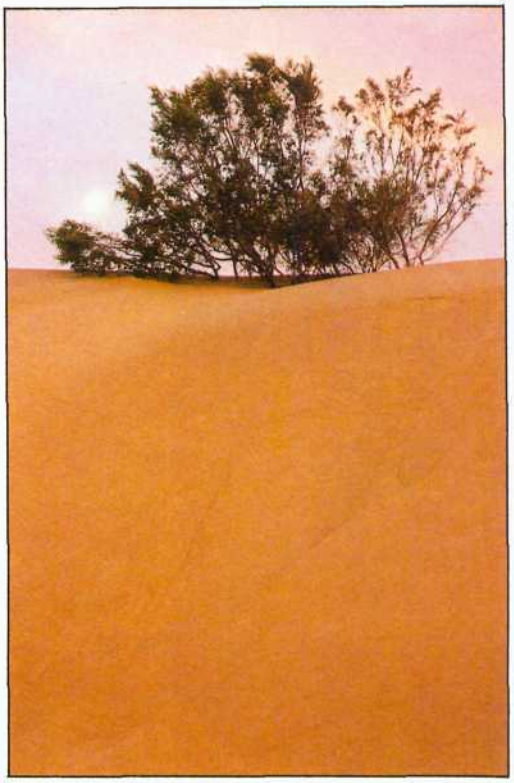
"The What and the Why of Desert Country"

Joseph Wood Krutch

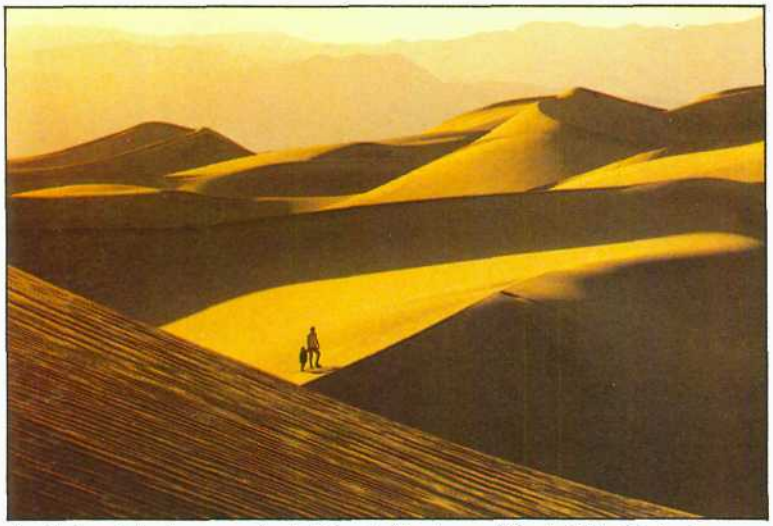
We grow strong against the pressure of a difficulty, and ingenious by solving problems. Individuality and character are developed by challenge. We tend to admire trees, as well as men, who bear the stamp of their successful struggles with a certain amount of adversity. People who have not had too easy a time of it develop flavor. And there is no doubt about the fact that desert life has character. Plants and animals are so obviously and visibly what they are because of the problems they have solved. They are part of some whole. They belong. Animals and plants, as well as men, become especially interesting when they do fit their environment, when to some extent they reveal what their response to it has been. And nowhere more than in the desert do they reveal it.

(excerpted from The Voice of the Desert *© 1955 by Joseph Wood Krutch.)*

Magnificent Scenic Desert Posters



C. *A creosote bush witnesses the dawn, with the moon setting, over the dunes at Death Valley National Monument in California—Jeff Gnass*



A. *Light and shade contrast in the Mesquite flat dunes of Death Valley National Monument in California.—David Muench*

B. *An ocotillo blooms with the Kofa Mountains of Arizona in the background. David Muench*

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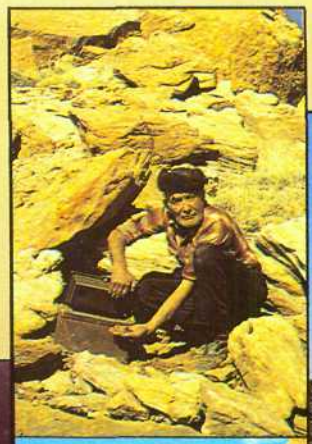
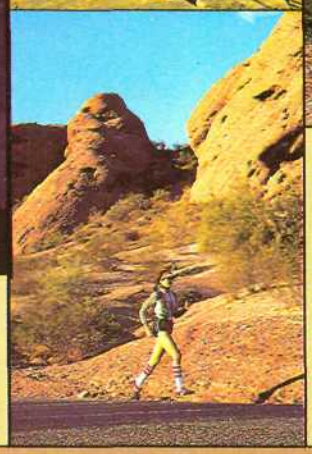


Photos by Alan Benoit



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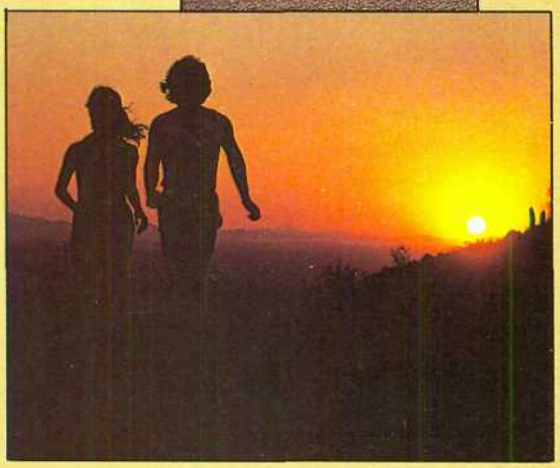

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There under the searing rays of the midday sun, I seek a rendezvous with one of nature's most inspiring phenomena—the desert dust devil.

It's swirling updrafts lift body and soul of man and bird alike.

The Dust Devil: Airy Denizen of the Desert

Some people think I'm crazy, that I'm a glutton for punishment. Perhaps I am. But on the hottest of our hot summer days, when others gingerly retreat to the shelter of their air conditioned habitats, or wistfully slip into the cooling waters of their backyard pools, I pack up my camera and head for the open desert. There under the searing rays of the midday sun, I seek a rendezvous with one of nature's most inspiring phenomena, the desert dust devil.

Born of the battle between sun and sand, the dust devil is a rapidly rotating column of warm boundary-layer air that has wrapped itself around a rising thermal. Providing lift that may propel 1,000-pound glider planes upward at speeds of several hundred to several thousand feet per minute, this fair-weather funnel is actively sought by soaring enthusiasts as a major means of gaining rapid altitude, taking their cue from birds of prey that have exploited its virtues for eons.

Dust devils lift the spirit as well, and have long been objects of fascination for the human mind. Marcus Lucanus recorded that Roman soldiers marveled at them in the Libyan desert. The capitals of columns of the Byzantine Church of Hagia Sophia in Salonika, Greece show acanthus leaves violently twisted about by their actions. Even Aristotle and Pliny spoke at length of their movements and mechanics. But nowhere has the dust devil been more respected and revered than it has by the native inhabitants of the American southwest.

There is a small cave in the eastern face of a 300-yard-long spur of the Castle Mountains, 10 miles west of the village of Santa Rosa, Arizona. This cave is known to the Papagos Indians as the *Whirlwind House* or *Home of the Dust Devil.* In the old days, Wind lived in this cave, from which small dust devils were often seen to emerge. As the little whirlwinds marched down the slope, they would gradually grow in size, finally becoming tall columns that traveled for miles across the desert.

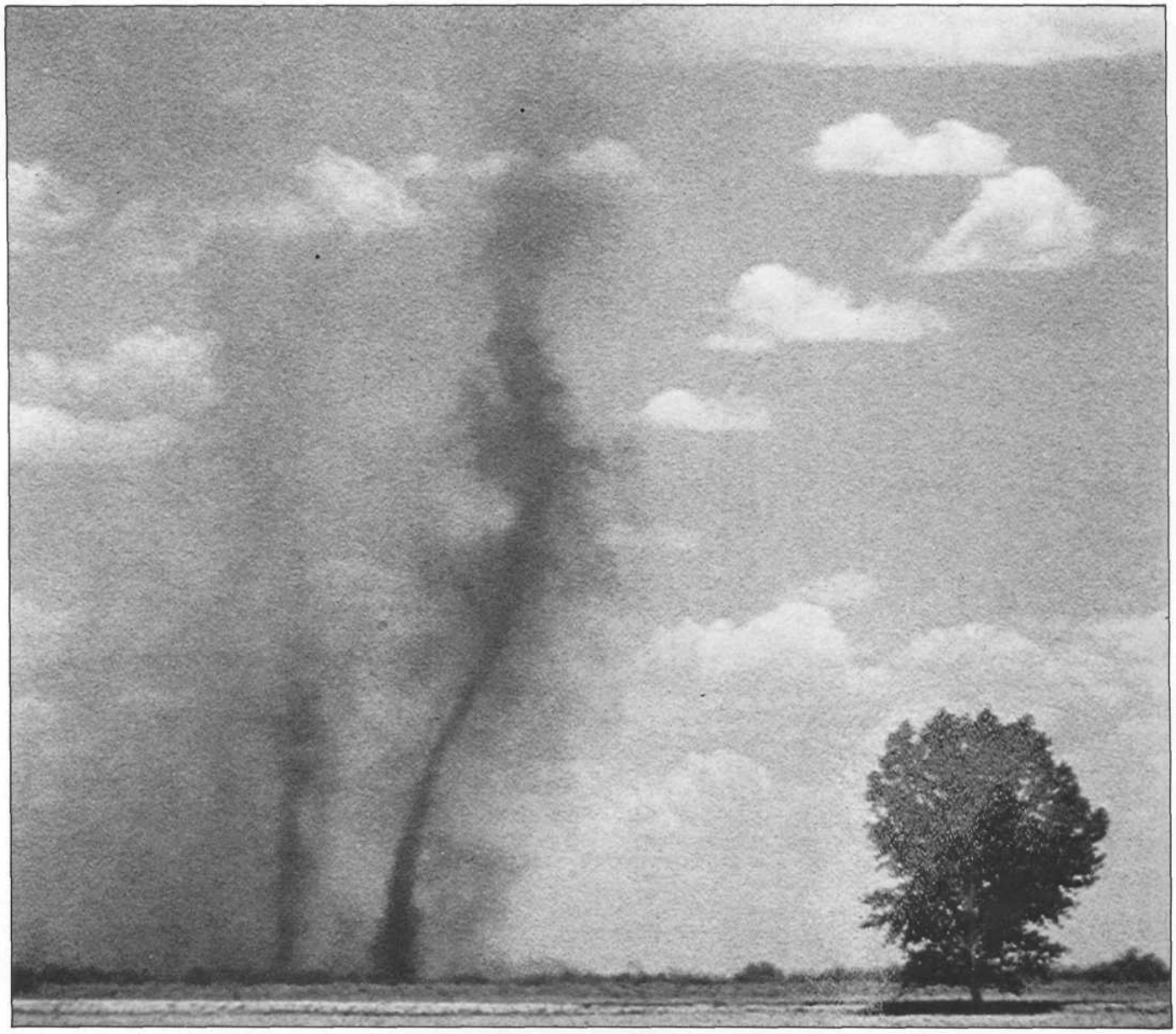
This cave—*Hewultki,* as the Indians called it—was sacred and there was what the Indians called a 'wrong spot' in it, such that if any fire was built upon it, a whirlwind would spring up that would blow your head off.

In 1934, two workmen for an archeological expedition camped in the cave during a rainy spell. Forgetting the warning, they built a fire on the forbidden spot. The result of this transgression was as if dynamite had been put in the fire. Coals were blown all over the cave and their blankets set ablaze. Fortunately, one of the men remembered that a particular stone that lay nearby was supposed to have power to extinguish the fire and stop the whirlwind. Placing the talisman on the fire served this purpose and saved them from a wet retreat.

E.W. Haury, who led the team that conducted the research work at the site, noted that there was a good basis for the Papago's beliefs about the cave. He observed that there were air currents moving through it that would increase in size as they neared its mouth, commenting that "a fire in the 'wrong spot' might easily set up a draft to give the story a basis. The distribution of the wood ash in the inner part of the upper cave is supporting evidence. One area about two meters square was practically ash free, whereas nearby, said to be outside the 'hexed' region, ash was abundant."

Julian D. Hayden, who directed much of the actual digging at the cave, enlarges somewhat upon the phenomenon: "When we started work, tiny whirls of dust would start up in the rear of the cave, increase in size as they approached the mouth of the cave, and by the time they reached the top of the

Text and photography by Dr. Sherwood B. Idso



Idso captures a dust devil in mid-flight.

talus, they were powerful enough to take our wheelbarrows and planking with them. We could watch them for miles in their progress across the desert to the east, rising to several hundred feet."

Even more active in their relationship with dust devils were the Apache Indians, who deliberately created them by setting fire to the spines of large cacti. Nowadays, other large vortices are commonly set in motion very similarly when Indians of the area burn stubble remaining on their fields after harvest. I have observed one such whirlwind that stretched a full mile into the sky and was as wide across as a football field.

These are the exceptions, the anomalies. How does the standard garden variety dust devil form? What are its characteristics? Let us begin an investigation of the first of these questions with a quotation from that most eminent of American thinkers, Benjamin Franklin. Spurred to thought by an observation he made while galloping through a tiny whirlwind of leaves in Maryland, he wrote the following in a letter to a Mr. John Perkins from his residence in Philadelphia on February 4, 1753.

"Whirlwinds generally arise after calms and great heats...Now let us suppose a tract of land...is violently heated, together with the lower region of air in contact with it, so that the said lower air becomes specifically lighter than the superincumbent higher region of the atmosphere...The consequence of this should be, as I imagine, that the heated, lighted air, being pressed on all sides, must ascend, and the heavier descend; and as this rising cannot be in all parts, or the whole area of the tract at once, for that would leave too extensive a vacuum, the rising will begin precisely in that column that happens to be the lightest, or most rarified; and the warm air will flow from all points to this column, where the several currents meeting, and joining to rise, a whirl is naturally formed, in the same manner as a whirl is formed in the tub of water, by the descending fluid flowing from all sides of the tub to the hole in the center.

"And as the several currents arrive at this central rising column with a considerable degree of horizontal motion, they cannot suddenly change it to a vertical motion, therefore...they ascend *by a spiral motion in the same manner as the water* descends *spirally through the hole in the tub before mentioned."*

In concluding his treatise, Franklin ended with a comment that is as well taken today as it was intended then. "If my hypothesis is not the truth itself it is at least as naked: For I have not, with some of our learned moderns, disguised by nonsense in Greek, clothed it in

algebra, or adorned it with fluxions. You have it in *puris naturalibus.*"

Perhaps in the spirit of Franklin I could add just one other simple dust devil analogy to that of his bathtub swirl, and that is the case of the twirling figure skater. As she pulls in her arms and legs to a contracted central position, her rate of rotation greatly increases, due to the principle of conservation of angular momentum. In like manner, so also does the spiraling flow of air increase in rotational speed as it approaches the core of a developing dust devil.

The chief ingredients for a good dust devil, then, are clear skies and bright sun, together with a dry surface that can become very hot. Loose surface dust and debris are helpful to make the dust devil visible; but they are not essential to either its creation or continued existence. Many times my children and I have detected invisible dust devils over soil, encrusted from a previous rain, that allowed no soil particles to become airborn. By injecting colored smoke into their bases, we have artifically illuminated their forms and shown them to be just like their naturally visible brothers.

This brings us to the dust devil's notorious cousin—the tornado. Although the latter term strikes terror into the hearts of many, few people are aware that a strong dust devil can be more powerful than over a quarter of all of the tornadoes that occur in the world. Indeed, they regularly overturn house trailers and there have been reports that they have moved automobiles. One particularly strong dust devil demolished a chapel that was under construction in Tucson, Arizona. The following morning local newspapers had a field day, headlining the story with "Devil Destroys Church!"

The comparison of dust devils to tornadoes goes far beyond that of relative strengths, for they share many other common characteristics. One striking similarity is the existence of small but extremely intense mini-funnels which are often embedded within the flow field of the primary vortex. In tornadoes, these subsidiary swirls are believed to be the cause of most of the damage and the reason why one house will be completely flattened while its next door neighbor is left almost unscathed. One was hit by a *suction vortex,* as the mini-funnels are called, while the other was missed.

Dust devils also mimic tornadoes when they dissipate. Frequently, their funnels will be stretched into very long, narrow, contorted structures called, in the case of tornadoes, rope clouds. Dust devils at this stage may extend a full thousand feet into the air and yet be no wider across than the shoulders of a man. My children have often charged into the bases of such dust devils and greatly hastened their demise. In the case of larger ones, more drastic measures are required. For instance, a dust devil in Mexico once formed over a railroad embankment where it removed approximately a cubic yard of sand every hour for four hours. Its erosive action could not be stopped until a bulldozer was finally driven into it.

For the most part, dust devils are rather innocuous —they do little damage and are an important component of the desert ecosystem.

Since dust devils generally form on fine clear days, while tornadoes are the offspring of inclement weather, there is usually no difficulty in telling them apart. In the environment of the desert, however, this is not always so. Consider the El Mirage Labor Day tornadoes of 1976: About 5:40 p.m., Harry Baldwin was riding the thermals in his sailplane when he spotted what looked like three dust devils. Now this was not unusual, for practically every afternoon during the summer, stable marine air rushes from mountain passes south and west of the El Mirage field; and as it spreads outward, a line of dust devils often marks its leading edge. This time, the vortices formed by the updrafts of warm air were undercut by denser maritime air and given rotary motion by the wind shear. They extended all the way to the base of some rapidly growing thunderheads. Joining forces, these vortices of dust devils soon became transformed into full-fledged tornadoes; obtaining additional energy from the condensation of water vapor. Although no damage was done, an inquisitive pilot in a Super Cub aircraft was almost sucked into the adopted parent cloud as he circled the funnels and encountered lift of almost 6,000 feet per minute.

Similar tornadic dust devils often form at the leading edges of the great haboob duststorms that sweep up the Santa Cruz Valley between Tucson and Phoenix, Arizona. There have been reports of sailplane pilots riding the crest of the updraft that prevails just ahead of these great density currents; but it is risky business. The danger is heightened when such surges of cool, moist air flow across topographic disturbances such as hills or isolated mountains. In such instances, eddies may form in the flow downwind of the disturbance; and if the density current happens to overrun a surface layer of much warmer air, such an eddy can be intensified by the rising of this air. When a vortex reaches from ground to cloud, then you've got real trouble.

For the most part, though, dust devils are rather innocuous. They can be annoying to city dwellers when they breach their backyard sanctuaries, blasting barbecues with sand and grit. There is reason to believe that they may spread the spores of the fungus responsible for the debilitating Valley Fever. But on the whole, they do little damage and are an important component of the desert ecosystem. Great birds waft skyward almost effortlessly upon buoyant updrafts, and those who would like to join their ranks find the dust devil's companionship most helpful. To simply stand beside one, alone, and watch the silent majesty of primeval forces raise up the lifeless dust of the earth into an almost living entity is a thrill that is difficult to describe. Yes, you might say that I am crazy—about the desert!

Sherwood B. Idso is a research physicist with the USDA's Agricultural Research Service at the United States Water Conservation Laboratory in Phoenix, Arizona. He also holds adjunct professorships in the Departments of Geology and Geography at Arizona State University and is founder and President of the Institute for Biospheric Research, Inc. of Tempe, Arizona. He has conducted basic research in a wide variety of environmental areas and has published over 200 articles in professional science journals. Dr. Idso was honored in 1977 to receive the United States' Arthur S. Flemming Award as one of five outstanding scientists under age 40 in the Federal Service.

Hot-Air Hoedown

At Albuquerque's 10th International Balloon Fiesta, the enthusiasm of pioneer balloonists lives on amidst a flourish of color and a rush of air.

Phileas Fogg would be delighted, so would the Montgolfier brothers, P.A. Van Tassel, Joseph Blondin, Roy Stamm and other pioneer balloonists. So, too, are the hundreds of thousands of spectators who attend Albuquerque's annual International Balloon Fiesta. A colorwashed spectacle of propane-fired, hot-air and gas-filled balloons that fill the New Mexico skies for nine days every October, this light-hearted event reaffirms the pleasures of motorless flight and continues Albuquerque's love affair with ballooning.

When Joseph and Jacques Etienne Montgolfier made the first successful balloon flight in 1783, they did not realize that their achievement would provide the impetus for one of the fastest growing sports in the United States in the 1970s and 1980s. Capturing the fancy of daredevils throughout Europe and the United States in the years following the Montgolfiers' first flight, ballooning was confined to those with enough time and money to pursue this eccentric hobby.

Blessed with clear skies and variable winds, Albuquerque is an ideal location for ballooning. As early as 1882, and following in 1907 and 1909, three bold men entertained onlookers with their unfettered flights, establishing Albuquerque's place in the history of ballooning. Ascending for Fourth of July festivities in 1882, P.A. Van Tassel floated to a height of more than 14,000 feet before returning to earth. In 1907, Joseph Blondin provided captive flights to visitors during five days of the New Mexico Territorial Fair. His popular attraction culminated with a free flight that took him 18 miles up the Rio Grande Valley. At the 1909 Territorial Fair, Blondin and Stamm piloted a balloon that traveled more than 90 miles east of Albuquerque—a record distance in 1909—before they descended near the Pedernal Mountains. After this last flight, the popularity of ballooning declined in Albuquerque until the early 1970s.

Interest in ballooning is now, excuse the expression, soaring. Albuquerque is hosting the 10th International Balloon Fiesta, October 3 through 11. A larger launch site than previous years at Cutter Field, near the West Frontage Road of Interstate 25 between Osuna Road and Los Angeles Avenue, will make it possible to launch 1,000 balloons. Since the first balloon association, the Albuquerque Aerostat Ascension Association—AAAA—was formed in 1971, the number of entries increased from 138 to nearly 400 in 1979. Entrants come from all over the United States and from several foreign countries to compete, and in 1980 an estimated 500,000 spectators attended the Fiesta. Open to pilots licensed by the Federal Aviation Administration, the Albuquerque International Balloon Fiesta offers would-be balloonists who are not licensed a taste of the action by allowing them to serve as members of ground crews, chase crews or pack stuffer crews.

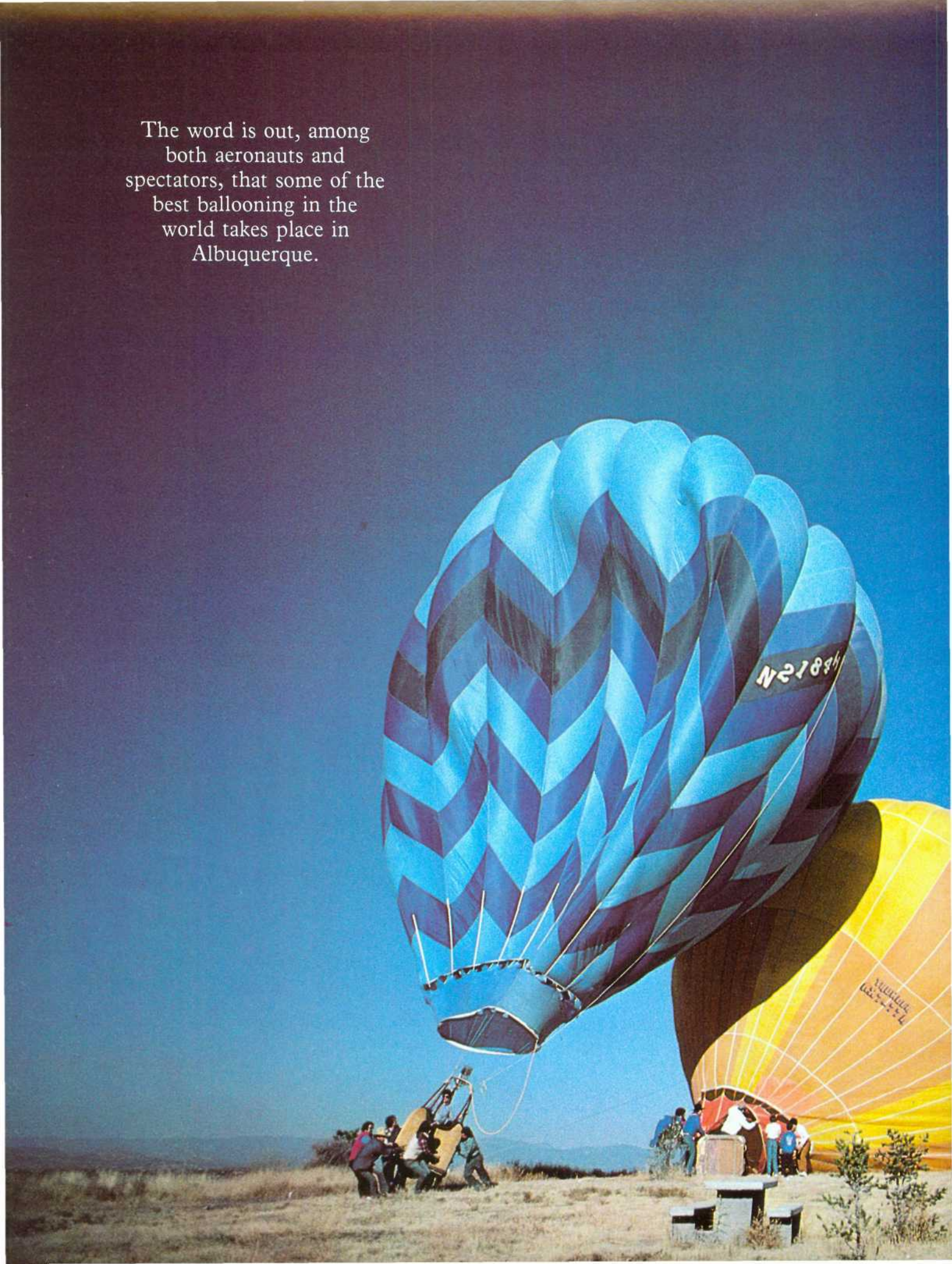
The word is out, among both aeronauts and spectators, that some of the best ballooning in the world takes place in Albuquerque. This year's lift-off is scheduled for the first weekend of the Fiesta, October 3 and 4. Competitive events, such as the popular Roadrunner-Coyote Race, the Marker Drop and Blackjack take place October 5 through 9. The last weekend of the festival, October 10 and 11, there will be another spectator ascent of all 1,000 balloons.

One of the most exciting competitive events, the Roadrunner-Coyote Race,

Launch time is near, and the crowd comes out to witness the ascension.

Text by Diane Williams Hlava Photography by Cradoc Bagshaw

The word is out, among both aeronauts and spectators, that some of the best ballooning in the world takes place in Albuquerque.

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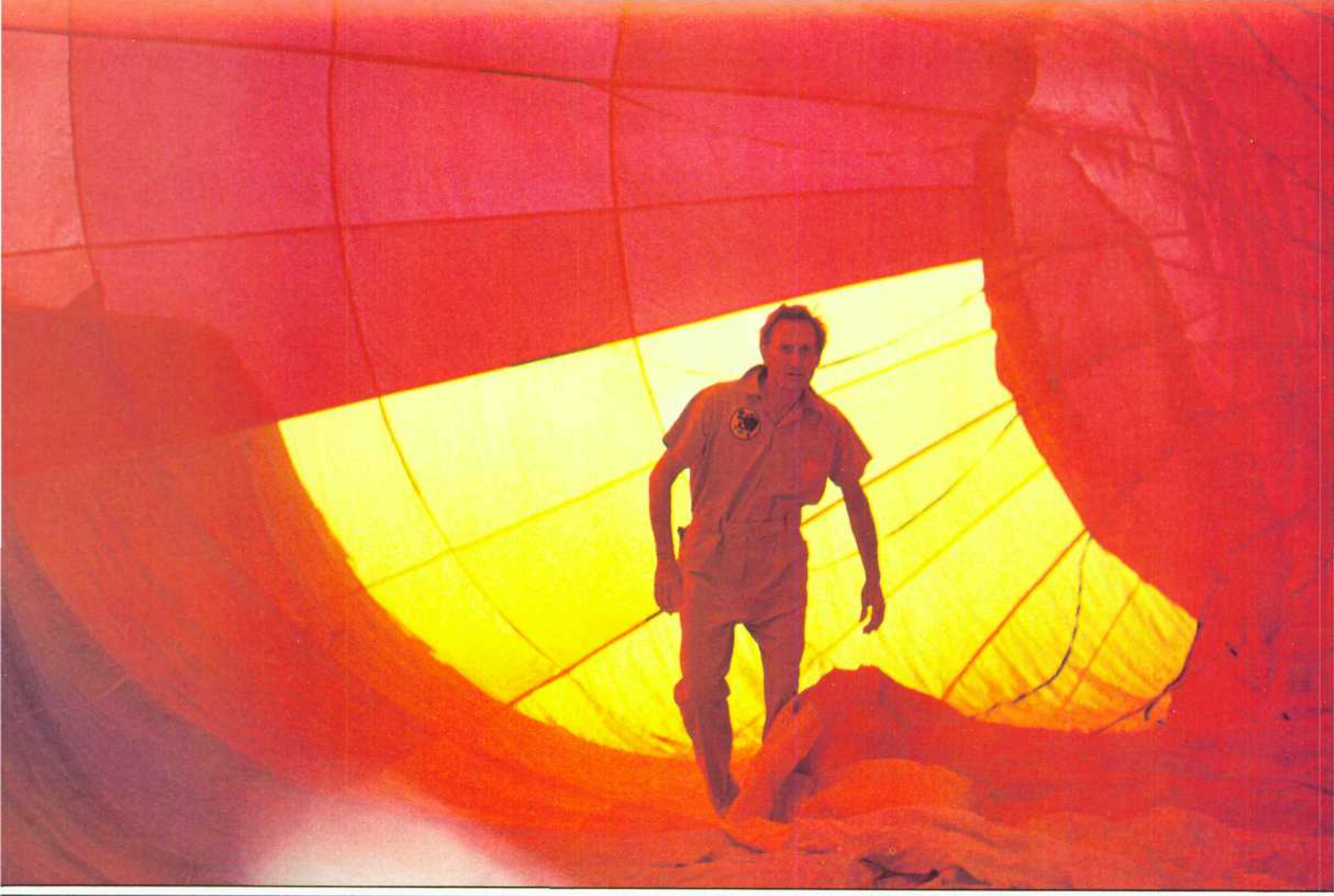


challenges pilots' skill in maneuvering their balloons in unpredictable winds. This race pits the roadrunner balloons against the pursuing coyote balloons.

A colorwashed spectacle of propane-fired, hot-air and gas-filled balloons fill the New Mexico skies.

The roadrunner takes off, flies a distance and lands. The coyotes give chase attempting to land as near to the roadrunner as possible, which is difficult considering that balloons cannot be steered, only maneuvered vertically in the air currents. One of the Fiesta's main attractions, this race has had as many as 10 roadrunners and 600 coyotes participating in a single day. Another event is the Marker Drop. In this competition pilots maneuver their balloons—one at a time—as close to the chosen target as possible and drop their markers. A similar event is a type of Blackjack, or 21, played above a numbered grid. Pilots attempt to drop markers on numbered squares in order to score 21.

Guiding these lighter-than-air, 50 to 60-foot-tall balloons while trying to master these events is not easy. Launching and maneuvering is difficult when winds reach more than 10 miles an hour.

Made of polyester or nylon fabric coated with porosity-reducing polyurethane, most balloons in the Albuquerque Fiesta are the hot-air type: the AX-6 or AX-7 class. The AX-6, a smaller balloon with an air capacity of 56,000 cubic feet, can carry two or three passengers in its gondola; the AX-7 holds 77,000 cubic feet of air and can carry three or four people aloft. When the fabric envelope, as it is called, is filled with propane-heated air that has reached a temperature of 180 to 225 degrees Fahrenheit, the balloon rises. Once aloft, control of the balloon is achieved through finding and riding wind currents at different altitudes. To change course or speed, a pilot must change altitude to find a current blowing in the direction he wishes to go. A balloon will stay airborne as long as the air inside the envelope remains warm enough to support the weight of the balloon; usually one to two hours. Twenty to 40 gallons of propane fuel, carried on board in tanks, is used to warm the air during flight. Fuel used in-flight generally runs about $15 an hour.

Another type of balloon uses lighter-than-air gas to ascend and fly. When inflated with helium or hydrogen, gas-filled balloons stay up longer than the hot-air type. The cost of fuel is high, however, which limits their practicality. Depending on the size of the balloon and the type of gas used, it is not unusual for the cost to range between $2,000 and $4,000 per flight.

A third kind of balloon, designed and tested in Albuquerque, is called the Sunstat. It is solar-powered and has flown for more than four hours on a test flight. If the technology needed to make use of the sun to heat the air in the envelope is perfected, ballooning will become even more popular than it is today. Albuquerque's balloonists will be staunch supporters of solar-powered flight.

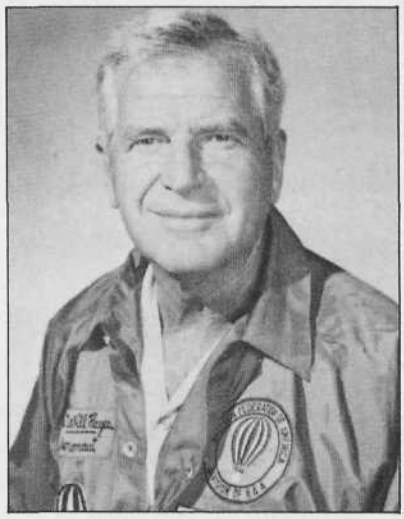
For more information about the Fiesta, contact the Albuquerque International Balloon Fiesta, P.O. Box 8486, Albuquerque, NM 87198, (505) 256-9401. Please join us.

A Los Angeles-based-writer, Diane Williams Hlava frequently reports on Southwestern lifestyles and events. Her appreciation for the skies of New Mexico and their colorful balloons, from a confirmed ground-dweller's viewpoint, motivated this report.

Preceding Pages: *Ground crews hold the balloons down as they ready for flight.* Top Left: *Balloons from the inside out. Here, a crew member inside the envelope.* Bottom Left: *A ground crew member monitors the forcing of warmed air into the envelope during final preparation.*

Balloon Bible

Dr. Will Hayes



"The Balloon Digest *was developed by balloonists and for balloonists, for the advancement of the sport we all love."*

Dr. Will Hayes, Author

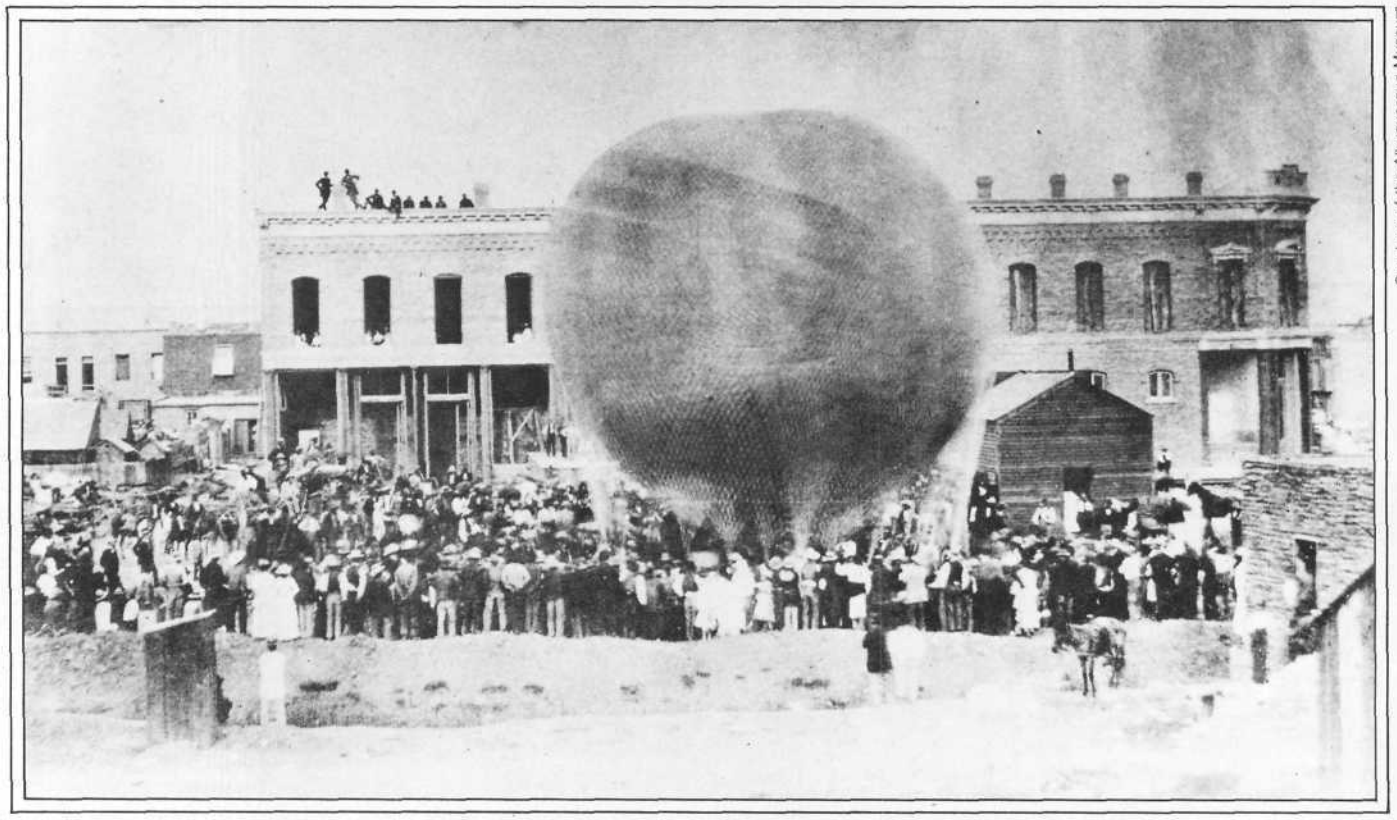
In 1973, Dr. Will Hayes was asked by the Federal Aviation Administration to organize and direct a balloon seminar, in which regulations and procedures could be discussed, and balloon flying skills updated. The seminar was a resounding success. Out of it came the *Balloon Digest.* "It's used throughout the world as an instructional manual in balloon schools," says Hayes. "Since there is no other book of a similar nature, this is probably why."

The *Digest* covers practically everything, including ballooning history, flight theory and practice, weather signs, safety, repair procedures, certification and terminology. Hayes acknowledges the help he received from the experts, but he is eminently qualified. He holds balloon, glider and fixed-wing ratings with the FAA, has been flying since 1945 and has recorded more than 1,000 accident-free hours. He is contributing editor for *Flight Handbook,* FAA Accident Prevention Counselor, Chairman of the liaison committee of the Balloon Federation of America and Safety Chairman of the Soaring Society of America. The list goes on and on.

Balloon Digest is available by writing to P.O. Box 6006, Santa Barbara, CA 93111, or calling (805) 967-2222.

An historical account of the first lighter-than-air flights in the Southwest.

Albuquerque's First Balloon Ascensions



Courtesy of the Albuquerque Museum

June 3, 1882, P.A. Van Tassel makes Albuquerque's first balloon ascension in a balloon filled with coal gas.

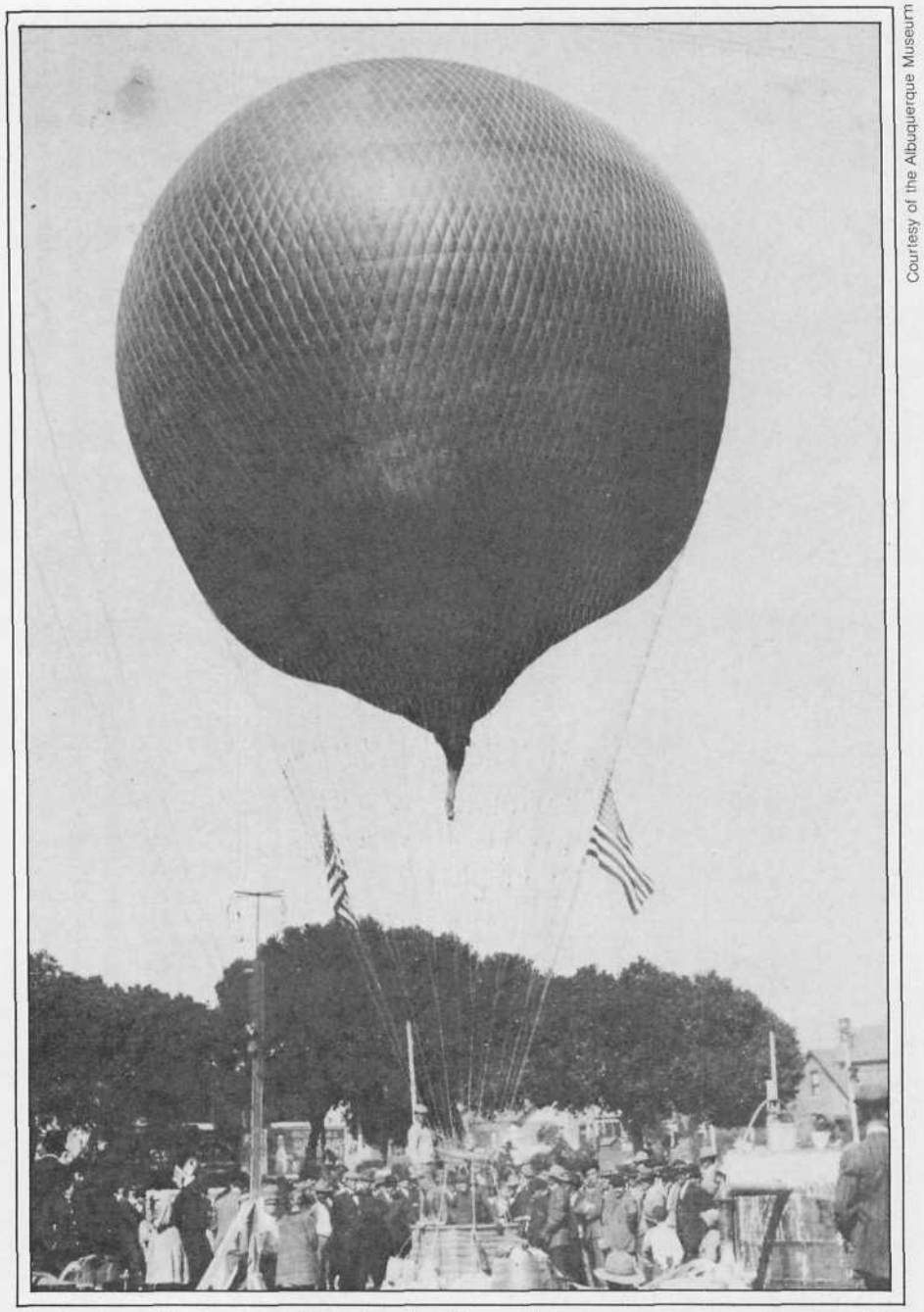
The colorful Balloon Fiestas and internationally acclaimed voyages of the Double Eagle II and Kittyhawk have made Albuquerque famous as a center for the sport of ballooning. However, few realize that the city had a reputation for sponsoring lighter-than-air flight as early as the 1880s. Three daring free ascensions in 1882, 1907 and 1909 by local residents aroused interest and excitement among southwesterners, and impressed a President.

In June of 1882, local papers began to carry ads for Fourth of July festivities including a baseball game, horse races, foot races and a balloon ascension. "Professor" P.A. Van Tassel, a bartender in a local saloon, had purchased a 30,000-cubic-foot balloon called the *City of Albuquerque,* which could allegedly lift three-quarters of a ton, from "Professor" F.F. Martin of San Francisco. He intended to make a free flight with a newspaper reporter "under the direct patronage of the people of Albuquerque" to entertain the public.

"My entire voyage extended only 18 miles up the Rio Grande Valley, but this short jump was punctuated by 8 attempts at murder."
Joseph Blondin, 1907

About 5 p.m. on July 3rd, Van Tassel brought his balloon to a vacant lot near the city illuminating gas plant on Second Street between Railroad (now Central) and Gold Avenues. He hooked the envelope up to a special line and began to fill the bag with a coal gas, a

By Byron A. Johnson, Curator of History, and Robert K. Danner, Photo Archivist, both of The Albuquerque Museum.



Courtesy of the Albuquerque Museum

October 19, 1909, Stamm and Blondin using the remaining hydrogen gas to make a free flight. Here, they pause for a final portrait.

mixture of hydrogen, methane and carbon dioxide produced by burning coal in a low oxygen environment. It was normally used for indoor lighting and has a low-to-medium lifting power. Van Tassel expected the inflation of the bag to take only a few hours, so he advertised the ascension for 10 a.m. the following morning.

Several thousand people gathered near the site at the appointed time, severely taxing the 10 peace officers detailed to keep them away from the flammable balloon. The envelope was a long way from being filled due to the pre-Fourth celebrations in nearby saloons which kept the gaslights burning all night, drawing heavily on the supply of gas needed for inflation. Hours came and went, and soon after 2 p.m. the onlookers lost interest and boarded horsedrawn streetcars for Old Town to take in other events at the Territorial Fairgrounds.

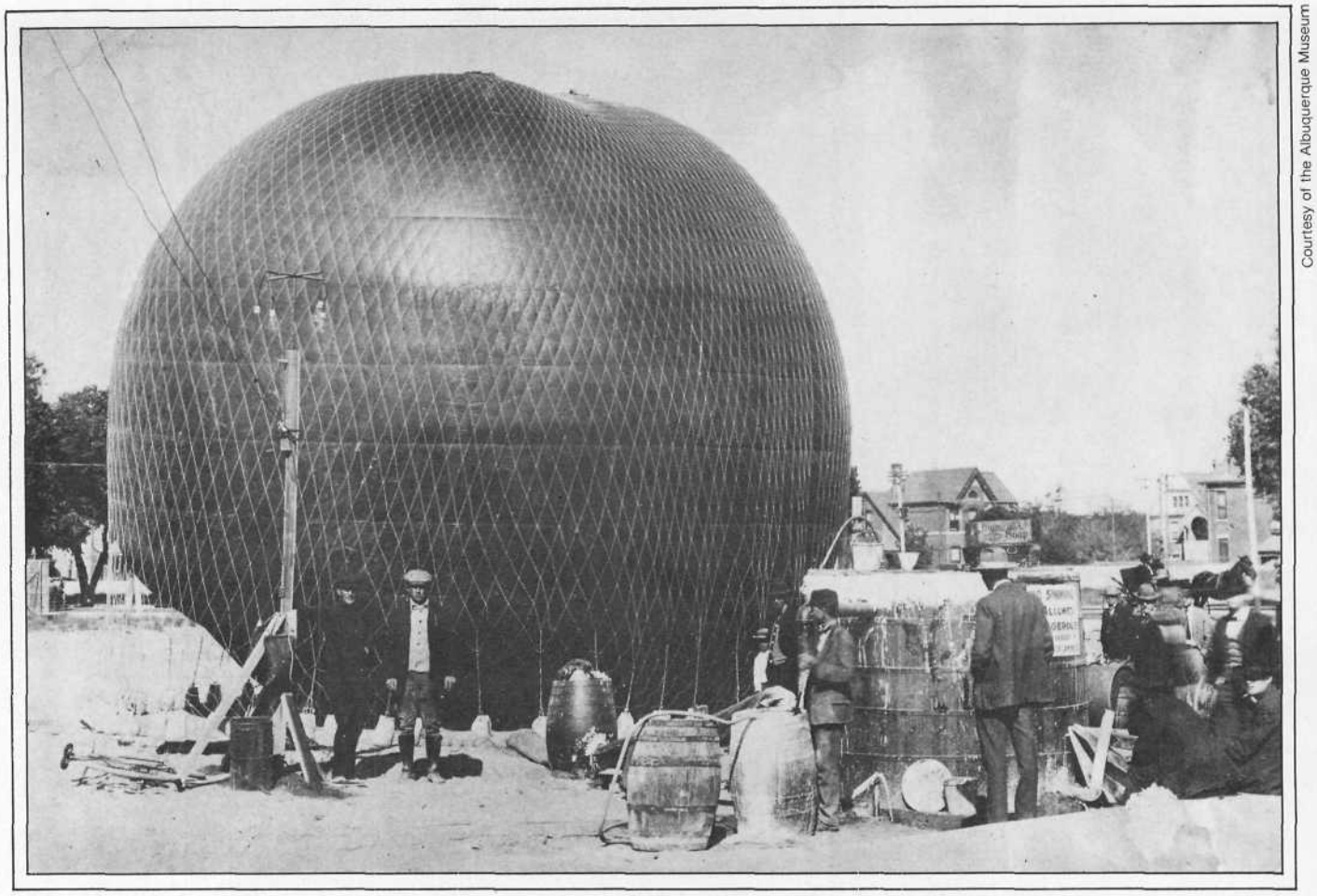
Shortly after 5:30 p.m. word was telephoned to the fairgrounds and an announcement was made that the ascension would take place at 6:15 p.m. Most of the crowd reboarded the streetcars and headed for New Albuquerque. William B. Lyon, a young doctor with an office near the ascension site, described the events in a letter to his fiance:

Finally everything was arranged and the renowned Professor Van Tassel, who ordinarily is a whiskey slinger in one of the musical palaces under my window, stepped in the basket and after one false start, cut the ropes that held him down, and the immense dome softly and easily mounted into the air... Higher and higher it went, the Professor industriously waving the flag of his country and scattering advertisements. I wonder if there ever was a balloon or balloonist that went up without waving the conventional flag.

After the gas was shut off, Van Tassel attempted to lift off with J. Moore, an Albuquerque *Morning Journal* reporter. The envelope was only two-thirds full of gas, but it would not lift with the combined weight, so Moore reluctantly left the basket. Van Tassel pared his ballast to 45 pounds, but still the balloon would not rise. He finally emptied one of the ballast bags over the side, inadvertently striking a spectator who later filed a claim, and the balloon rose. Another paper, *The Evening Review,* recorded the pilot's own description of the flight:

"As I neared the earth I threw out my anchor, which caught in a ditch and held the balloon settled, and I got out with everything in good order."
P.A. Van Tassel, 1882

After rising above the housetops, the balloon rose rapidly, taking a southerly course, and the people faded away until they seemed one black mass of humanity. The balloon continued its course until it hung over the Rio Grande river, which appeared like a tiny silver thread. An altitude of 11,000 feet above sea level had been reached. The airship then remained stationary for a few minutes until it struck a current of air that bore it rapidly toward the west end (Old Town). After traveling in that direction two miles, I thought I would go up higher and emptied the contents of one bag of ballast over the side; in a few moments the barometer registered 14,207 feet high... I was just over the fairgrounds then, as the balloon began going down rapidly I shut the valve, but had to throw out my coat, basket of lunch, bottles of water, etc., to keep from going down too fast. As I neared the earth I threw out my anchor which caught in a ditch and held the balloon settled, and I



Courtesy of the Albuquerque Museum

Roy Stamm and Joseph Blondin's balloon, Albuquerque, *being filled for captive flights in October of 1909. To the right is their hydrogen generator.*

got out with everything in good order.

Albuquerque's first balloon flight ended unceremoniously in a cornfield in back of the fairgrounds, near present-day Rio Grande Boulevard and Central Avenue. By 9 p.m., Van Tassel had loaded his balloon and basket into a wagon and was enjoying the acclaim and hospitality of New Albuquerque, this time from the front side of a bar.

The next attempt at ballooning took place during the New Mexico Territorial Fair of 1907. Joseph Blondin, a 28-year-old musician turned aeronaut, convinced officials that what the fair needed was a balloon in which captive rides could be given followed by a free flight. Roy A. Stamm, fair secretary, convinced the board to front money for the ascensions, and to loan Blondin an obsolete sprinkler wagon to use as a makeshift hydrogen generating plant. Stamm was to regret his support of the scheme.

From October 7 through 11, Blondin struggled to make his generator turn out enough hydrogen to fill the envelope, but the leaky sprinkler wagon was not up to the task. In an effort to salvage a respectable free flight from the debacle, Colonel A.P. Hunter of the visiting Fifth Cavalry was asked to detail 25 of his men to walk the balloon to the city illuminating gas plant near the railroad yards, to be filled with coal gas. Although the bag was not buoyant enough for flight, it was inflated to the point where transport was difficult. The soldiers walked the balloon to the gas plant. The wind rose several times to a level which made it seem as though the balloon would "carry a select group of soldiers into McKinley County," and when they reached the railroad yards, the men had to clear a path by muscling boxcars out of the way. Disgruntled Santa Fe Railroad employees refused to help.

"A few more strides through the air and we were down. By the time I had deflated the bag, some of my erstwhile would-be assassins drove up, very excited, and somewhat abashed to find a man already in charge of the animal they thought they had shot down."
Joseph Blondin, 1907

Once at the gas plant, the balloon was hooked up to a "booster" and filled with coal gas. The next morning at 11:55 a.m., Blondin cast off with a mere 20 pounds of sand ballast, and the balloon rose sluggishly. The intrepid pilot later described his flight for the *Aero Digest* of May, 1930:

A native rancher over whose place I was slowly drifting, ran into his house and reappeared with a rifle, which barked and spat a ring of smoke straight up at me. My precious twenty pounds of ballast on which I had been counting for safe landing had to be dropped then and there. The entire voyage extended only eighteen miles up the Rio Grande Valley, but this short jump was punctuated by eight attempts at murder. I don't blame those natives; they never before had seen a balloon and possibly had never heard of one. Their

perfectly natural reaction against the unknown was to consider it an enemy.

Sunset brought my balloon down with a rush, to a landing over which I had no control and no defense, except the good fortune of a flat unobstructed mesa-land to receive us... A few more strides through the air and we were down, finally, without any damage to myself or the basket. By the time I had deflated the bag some of my erstwhile would-be assassins drove up, very excited, and somewhat abashed to find a man already in charge of the animal they thought they had shot down. They were very friendly now and assisted me to get back to Albuquerque, to drive the last few blocks to a most exciting and enthusiastic reception.

Blondin spent three hours in the air, followed a course parallel with Fourth Street to the Corrales Bridge, and descended on the mesa four miles northwest of the present village of Corrales. Chagrined over his part in the affair, Stamm, the fair secretary, bought and stored the silk balloon and wicker basket. He did not dream that two years later he and his balloon would be called upon to save the honor of Albuquerque.

When the 29th Territorial Fair was organized in 1909, arrangements were made with Charles Stroebel for a small exhibition dirigible and pilot to fly during the exposition. Stroebel owned a small fleet of barnstorming airships, each powered by a bicycle connected to a propeller underneath the gas bag. President Taft was scheduled to arrive in Albuquerque sometime during the fair, and local people looked forward to impressing him with their modern flair.

However, a few days before the fair opened, Stroebel wired the authorities that his only dirigible capable of lifting off at Albuquerque's 5,000-foot altitude had crashed. Faced with the prospect of acute embarrassment when President Taft arrived, the fair committee wired Roy Stamm, then out of town on business, "For Albuquerque's sake, Stamm, get up your balloon."

Stamm dusted off his balloon and basket, and contacted Blondin to help him prepare it for captive and free flights. To avoid any further disappointment, the men kept quiet about the plan until the balloon was hauled to a vacant lot at Sixth Street and Central Avenue. Blondin supervised the construction of a hydrogen generator, consisting of a large wooden tank in which sulphuric acid was mixed with iron filings to form hydrogen, and the resulting gas washed in a spray of cold water and lime. When a water-seal threatened to give way at one point, Stamm threw himself on the tank and was sent several feet in the air on a geyser of water and sulphuric acid. Fortunately he was not hurt, and investigators found that he made the mistake of pumping water into sulphuric acid, instead of the reverse.

After 26 to 30 hours, enough hydrogen was pumped into the envelope to insure success, so newspapers broke the story that captive ascensions would soon be available at one dollar for a 15 minute ride. A steam windlass was connected to the basket with a 1,200-foot-long, one-inch-thick rope.

During the next few days, the pilots carried scores of passengers, though few wanted to stay up longer than 10 minutes at 500 feet, and most came down slightly "white around the gills." President Taft did see the balloon from the window of his railroad car and allegedly congratulated Stamm and Blondin on the endeavor. Albuquerque's honor was preserved.

The following day Blondin and Stamm prepared the balloon for the free flight by packing provisions including food for a long voyage, two desert water bags, a small camera with universal focus, a Thermos bottle, small electric flashlight, six-shooter, sheath knife to cut the ropes in case of emergency, statometer to judge whether the balloon was rising or falling, aneroid barometer to determine the altitude, a thermometer, a compass and two United States flags. The balloon was named the *Albuquerque.*

The Stamm family has wisely preserved the log of the flight and several of the photographs taken from the ground during the ascension. On the morning of the ascension, the envelope showed less than two-thirds full of gas. As there was no sulphuric acid to make more, it was necessary to leave coats and some provisions behind. They intended to carry 400 pounds of ballast, but only 100 pounds made it on board. The camera (unfortunately), revolver and some food were also discarded.

At 10:55 a.m. on October the 19th, the balloon lifted off from Sixth and Central, and headed directly toward neighboring high voltage power lines for the electric trolley car system. Stamm quickly emptied some of the precious ballast, they cleared the lines, and the wind blew them in a northwesterly course over Old Town. After 10 minutes, a southeasterly breeze picked up, which drove the balloon toward Tijeras Canyon.

The balloon managed to clear the tops of the mountains by 1,000 feet and crossed over into the Estancia Valley. They hit an altitude of 12,792 feet and sighted Chilili, Moriarty and Estancia. The flight ended at 1:25 p.m. at the base of the Pedernal Mountains, 10 miles southeast of Clines Corners and over 90 miles from Albuquerque. Cowboys from the McGillvray ranch welcomed the balloonists on their descent, and they arrived back in town the following day. Blondin duly recorded affadavits from McGillvray ranch employees and Albuquerque residents, and submitted them to the Aero Club of America for verification.

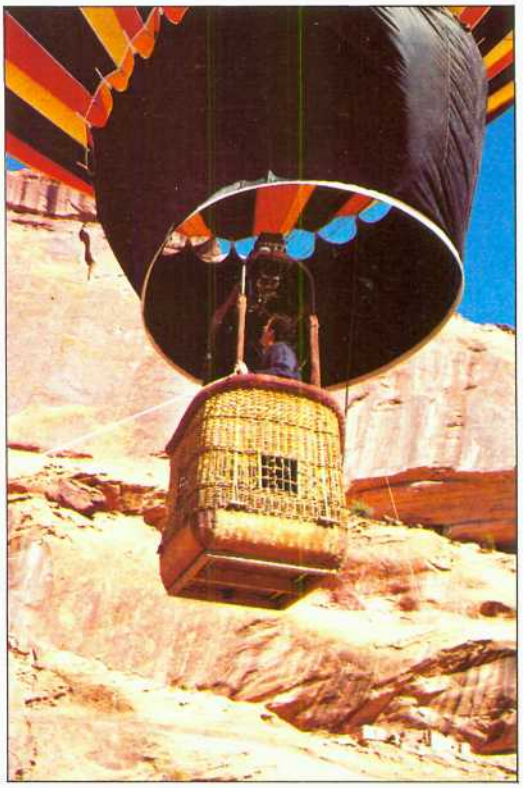
From then on, few balloon flights were made in the city, perhaps because it seemed that Blondin and Stamm's record would never be broken. A few traveling companies passed through with parachute drops from balloons, but the Wright brothers flight in 1903 focused all attention upon heavier-than-air flight. Stamm went on to become a prosperous business man and writer on early Albuquerque, and Blondin became an airplane engineer and builder of the none-too-popular Blondin Mallard airplane. It was to be more than 50 years before ballooning was again popular in Albuquerque, this time with safer and more colorful hot-air balloons.

Bob Danner is a graduate of Bradley University in Peoria, Illinois, and has been involved with photography his entire life. He is currently Photo-archivist/Photographer for the Albuquerque Museum, and co-author of Old Town, Albuquerque, New Mexico: A Guide to its History and Architecture *and* Early Albuquerque—1870-1918.

Byron A. Johnson is Curator of History with the Albuquerque Museum, a division of the Cultural Services Department of the City of Albuquerque. He is a graduate of the University of Arizona and Texas Tech University. He is co-author of two books for the Albuquerque Museum: Old Town, Albuquerque, New Mexico: A Guide to its History and Architecture *and* Early Albuquerque—1870-1918.

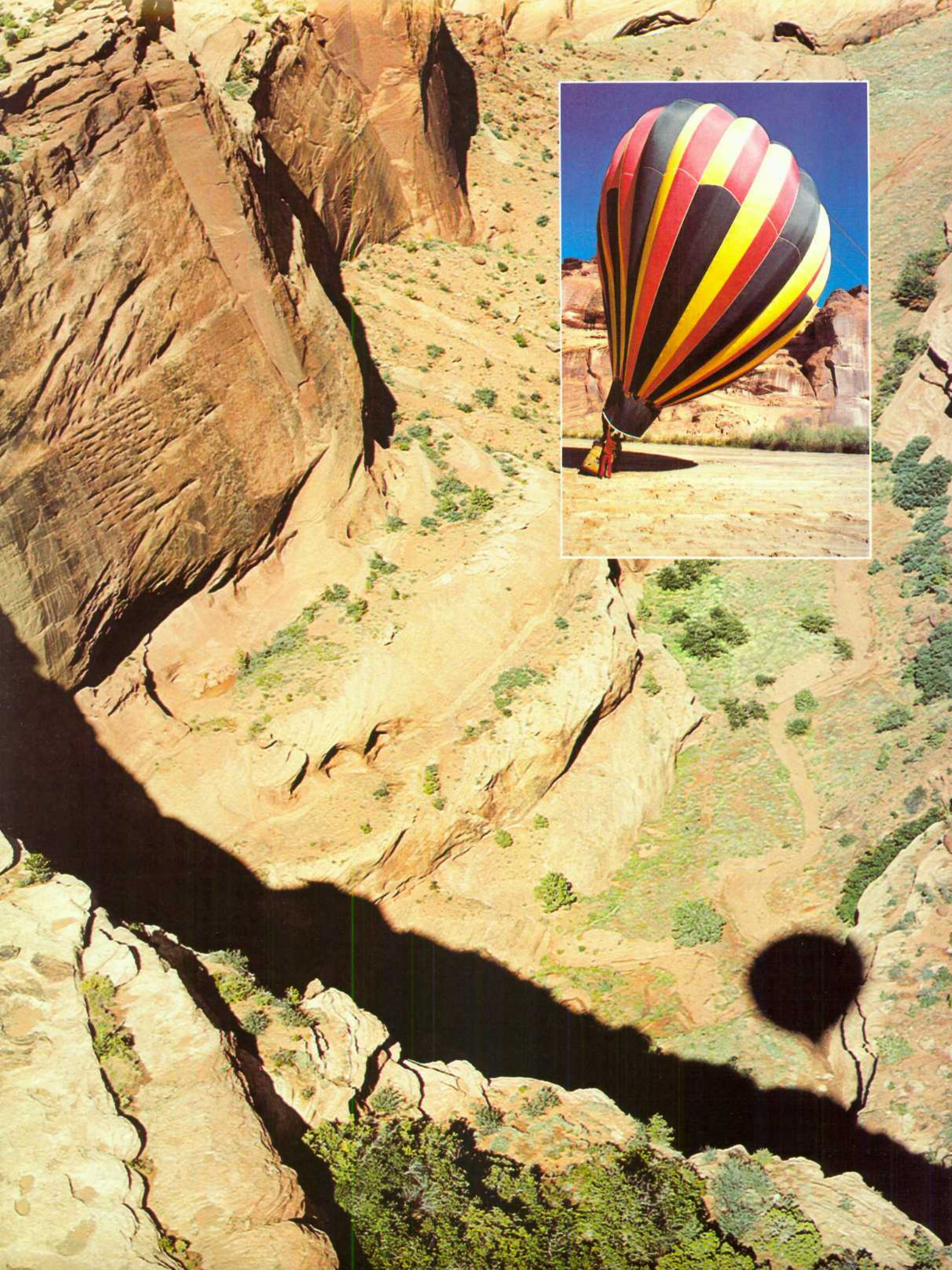
A silent flight through Canyon de Chelly, a sandstone masterpiece of time.

Ballooning



Canyon de Chelly

Text by Virginia Greene
Photography by Alan Benoit



On Tuesday night, the cold front moved in, chasing summer's thrush from distant peaks, and coyotes graphed a song of mournful harmony beyond the canyon rim.

On Wednesday morning, light snow freckled the land as clouds thundered low and fast across the high plateau. Ice-decorated piñon and juniper and rows of cottonwoods, recently turned golden by capricious temperatures, stood leaf-heavy in the early-morning quiet.

Fall had come to Canyon de Chelly (d'Shay). With it was the silence of anticipation, of change. It was that silence that occurs when man watches and listens, then internalizes what he sees and hears. Gravel crunches underfoot and is loud to the senses. A jay settles on a branch of piñon, snow sifts to the ground and the blur is brilliant, even against a backdrop of pale skies.

We had arrived two days ago, fresh from the city, spirits high, ready for something new. The change had occurred as subtly and quietly as snow had fallen during the night. We could blame it on any number of things: the long drive, the different altitude, the experience of being among strangers on the Navajo Indian reservation. We recognized a hard reality, an elusive mystique which seems to permeate some places remote on the southwestern landscape.

Canyon de Chelly is such a place. It moves in a cycle of seasons. Its ponderous silences and immutable tranquility contain both the peace and the violence found in such cycles.

We had been here before, to this great slash deep in the earth of the Defiance Mesa in eastern Arizona, had toured the canyon, and read its history. A few months earlier, Roland LaFont, dispenser of western hospitality at Justin's historical Thunderbird Lodge and Trading Post in Chinle, had casually suggested a hot-air balloon ride through the canyon sometime. It was October and we had returned to accept the offer—not as casually as it had been extended.

Cast on the canyon, far below, the balloon's shadow. Inset: The Sheepherder *being inflated on the canyon floor.*

The balloon, an AX-7 Raven, became a dash of color against the gray morning as it was unpacked and stretched out near the canyon rim at Spider Rock Overlook, almost 22 miles from the mouth. Red, yellow and black folds of nylon lay across the dun-colored sandstone, awaiting the wind. The men talked quietly as they worked, quickly attaching lines, the propane burners, the brown wicker basket.

Six stories of 20th-Century multicolored ingenuity was rapidly unfolding on a lip of earth overlooking one of North America's oldest sites of continuing civilization.

Rosetta LaFont spoke of her life in this place, of her grandparents' small farm on the canyon floor, and of events which punctuated 2,000 years of Indian history in Canyon de Chelly.

We walked to the rim, skirting cholla and prickly pear encircled by narrow rims of snow. Dried rabbitbrush left a dull residue on our boots.

It was 6 a.m. and the winds were calm—perfect for flying, Roland said. Behind us, the great balloon was taking embryonic shape. As we watched, 22,000-BTU dual propane burners, loaded with 40 gallons of fuel good for a little over three hours aloft, filled the *Sheepherder* (our balloon) closer to its 77,500-cubic-foot capacity. Six stories of 20th-Century multicolored ingenuity was rapidly unfolding on a lip of earth overlooking one of North America's oldest sites of continuing civilization.

The comparison between the ancient and the modern was striking. It seemed fitting to experience the great canyon from *Sheepherder's* swaying basket, for the silence of the canyon is perpetuated by the silence of balloon-flying. The sense of privacy inherent in this place demands not to be violated.

Fifteen minutes was enough time to fill the balloon. Prevailing winds from the east caught us and we were moved into an inner world of dramatic history and archeological speculation, of modern peoples guided through their daily lives by shamans and ancient ritual, of art treasures and adobe walls of sandstone, masterpieces thousands of years old.

Canyon de Chelly may be thought of as a towering sandstone art gallery crammed with some of man's most precious masterpieces. Call it a Louvre of the high plateau. Call it a living museum of farmers and silver craftsmen living in the shadow of the Anasazi—the ancient ones—guarding the old ways and the old secrets. They carry on a culture in the small but overwhelmingly beautiful canyon where the legendary Spider Woman crouches high astride her red spire 800 feet above the canyon floor, and primroses grow in the fine sand of the riverbed.

The canyon itself is a work of art, with vermillion monoliths of wind-sculpted rock and sheer walls brushed with surrealistic streaks of desert patina. Painted in a burst of colors bellowing copper and gold, all the reds and the tender blaze of pinks ranging to orange; the titian landscape subtly changes with the shadows each day.

Carved by winds, eroded by ancient seas, polished by windblown sands, the canyon walls house gigantic caves which supported human life and an on-going culture before AD 200. The ruins, well preserved in the dry, desert-like climate, are there. Huge rock and adobe pueblos, dwarfed by the massive concave cliffs above and below them, bring both reality and mystique to the silence of the inner canyon. Pictographs and petroglyphs decorate the red walls with larger-than-life-sized figures, giving mute testimony to the complex lives of those ancient ones.

Below, on the canyon floor, modern Navajos tend their sheep, weave their rugs, pound their silver into shapes imitating the figures on the walls above them. During winter months, the canyon is deserted by its human inhabitants who move to the upper levels of the plateau where wood is plentiful, leaving the summer hogans and garden plots until the following

year. Once again the spirits of the past may claim their place.

Rosetta had talked about those ancient ancestors who had a genius for building straight walls without instruments, for hewing wood with nothing but a stone tool; for plastering walls of kivas with as many as six coats, finishing with turquoise; for weaving fine cloth of feather, fiber and fur with bone needles; for making pottery of simple beauty, shaping it with deft, brown hands. She spoke of beads and ornaments of shell and turquoise mosaic made with only the crudest of stone knives and drills.

Sheepherder moved slowly past Spider Rock and Speaking Rock. About 1,000 feet below are several small Navajo structures; other ruins of prehistoric times are located across the canyon in alcoves and on ledges. On the horizon is the prominent peak of Black Rock, a volcanic plug serving as a surprising landmark on the flat plateau.

We swung west, past Sliding Rock Ruin, pointing silently to old hogans, an occasional horse, an occasional flap of huge wings catching the currents above. The silence was complete. Alan Benoit's camera made a smooth "click," and our few murmured words were hollow in the cold morning.

The sound of bells drew our attention to the canyon floor where deep shadows lay across the sands, stretched before the day's light which struggled through clouds thinning beyond the Chuska Mountains in the east.

"Sheep. Over there. See?"

They had moved out of shadow, a small white band of sheep and goats, clinging to an indiscernable path cut into the sheer wall of rock, and made their way slowly toward the rim. The herder's rattle—pebbles shaken in an old aluminum can—was a dry counterpoint against the flat tinkle of sheep bells.

Six miles down the canyon from our launch at Spider Rock, White House Ruin seemed to melt dramatically into a deep recess in the long, sloping wall of coral-hued sandstone; mute testimony of more than 1,000 souls who made their homes there 800 years ago. Alan photographed what had once been a self-contained community, and we quietly reconstructed the daily lifestyle of those men and women of a few centuries ago. We spoke of the buildings hunched in the caves and under the overhangs and how those ancient folks tilled the small fields, grew their corn, beans, pumpkins and cotton along the narrow fringes of land hugging the cliff-bases next to the flood channel.

Evidence of the past, Indian dwelling set in beneath the cliffs. Inset: Roland LaFont with the Sheepherder.

The canyon itself is a work of art, with vermillion monoliths of wind-sculpted rock and sheer walls brushed with surrealistic streaks of desert patina.

Roland reached a gloved hand and pulled a chain. A great "WHOOSH" roared above us as propane forced more hot air into the multicolored shrouds. Our balloon rose quickly past layer upon layer of rose-hued sandstone buffed and softened by frost and moisture, winds and blowing sand.

We topped the rim and drifted west, again in silence, moving toward Junction Overlook and Tsegi—a deep-carved summer paradise where the clans of Navajos who have used it for generations still come to plant corn, squash, melons and beans in the tiny rincons under the spell of a warm summer sun.

Junction Ruin, nine miles from our departure point at Spider Rock, marks the junction of Canyon del Muerto and Canyon de Chelly. Canyon del Muerto, an important tributary of Canyon de Chelly, houses famous Antelope House Ruins, Mummy Cave, Massacre Cave, and the dramatic Standing Cow Ruin.

We passed above Navajo Fortress and drifted almost a mile toward Tsegi, following the riverbed. Rosetta's grandparents have a hogan at Tsegi where water is brought in precarious ditches to huddled peach orchards and where women sit in the shade to weave blankets after the planting and weeding is done. Scrawny ponies ignore anything beyond their own cropping of coarse grasses, and small children listen for the low growl of tour trucks making the once-daily trip up the canyon toward Spider Rock. The drivers, Navajos in broad-brimmed stetsons, can always be counted on to toss a few Tootsie Pop suckers as the trucks struggle through the deep sand of the riverbed.

The canyon had become more and more shallow as we moved west, the morning sun was full upon us, and we drifted toward the trading post a mile and a half away. Still, the silence prompted by the quiet of the balloon, by the canyon walls that alternately closed in to a few hundred feet, then widened to several hundred yards, remained taut. The whisper of moccasins in the sand is augmented by spirits of the ancient ones who haunt the north walls of sandstone.

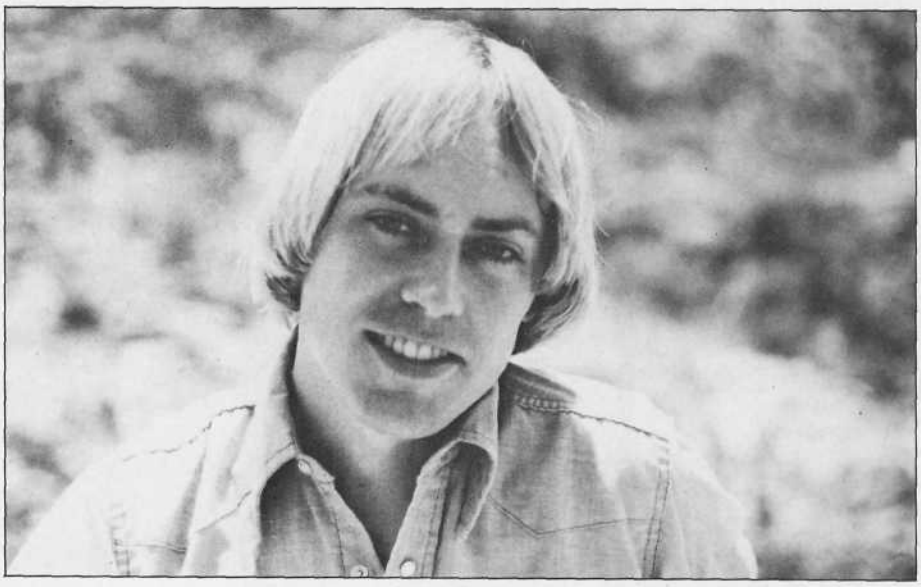
We made a turn over the trading post at the mouth of Canyon de Chelly and began a drift north toward Many Farms, that small community some 10 miles north of Chinle. We would be picked up there.

The Defiance Plateau receded beneath us, the "WHOOSH" of the butane burners sent us higher and Canyon de Chelly was left to twist and flow in its centuries-old patterns. The whisper of moccasins, the smell of sun-warmed peaches, the brilliance of woven wool were once again in the shadow of undisturbed ages.

Virginia Greene, native Arizonan, adopted Californian, has spent much of her lifetime exploring the deserts, mountains, canyonlands and waterways of the Southwest. Three years ago, she marked the last of the English theme papers, turned in the final grade report and moved with her husband from Palm Springs to Pacific Grove, California, where she works as a novelist and free-lance writer.

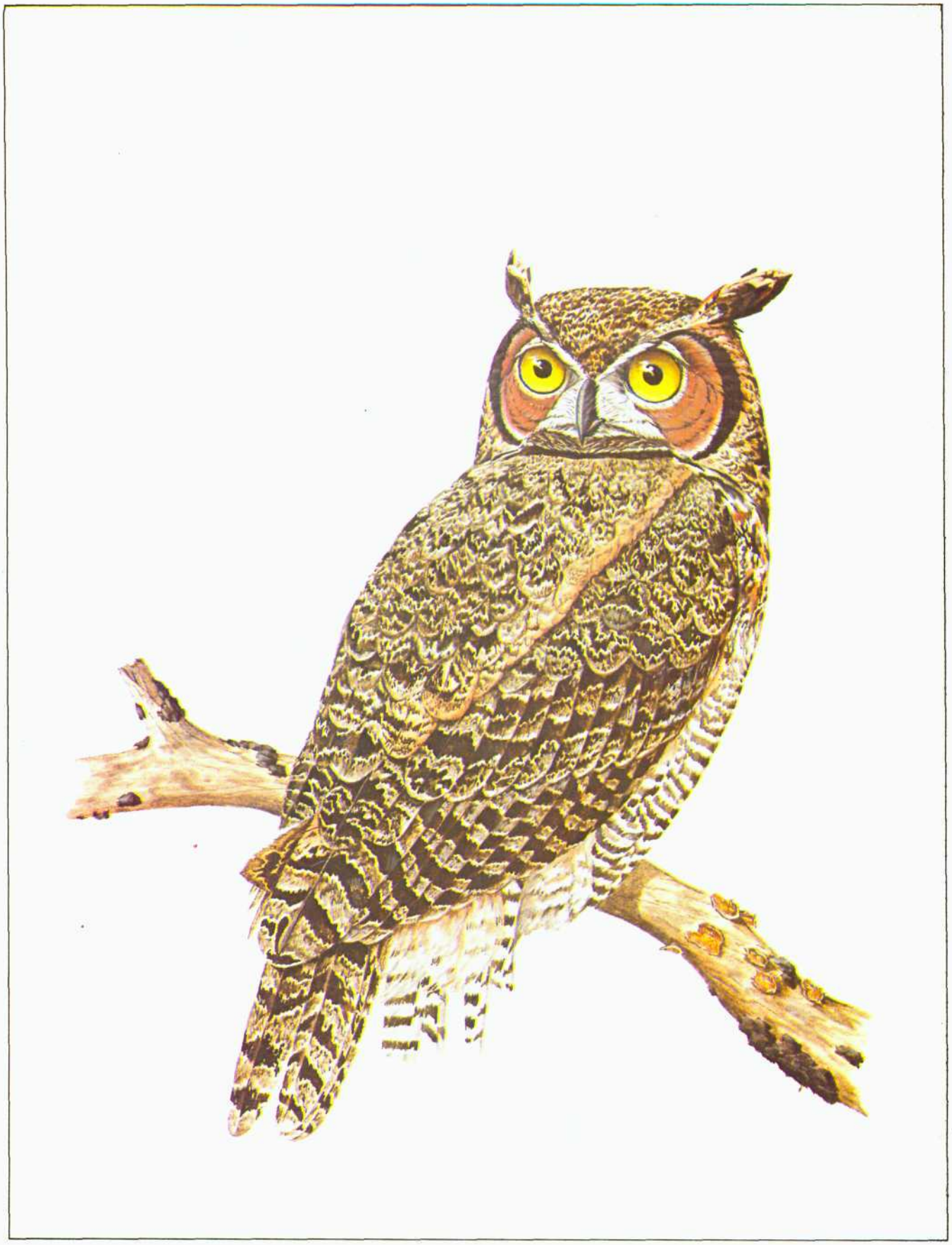
Alan Benoit received his B.F.A. in Photography from Arizona State University. For the last seven years, he has made his home in Tempe, Arizona. His work has been published in Arizona Highways, Desert *magazine and* Rocky Mountain *magazine, as well as other magazines and books.*

Feathers, Flight and Fascination



A wildlife painter considers birds, flight and his work.

Paintings and Essay
By Andrew Steuer

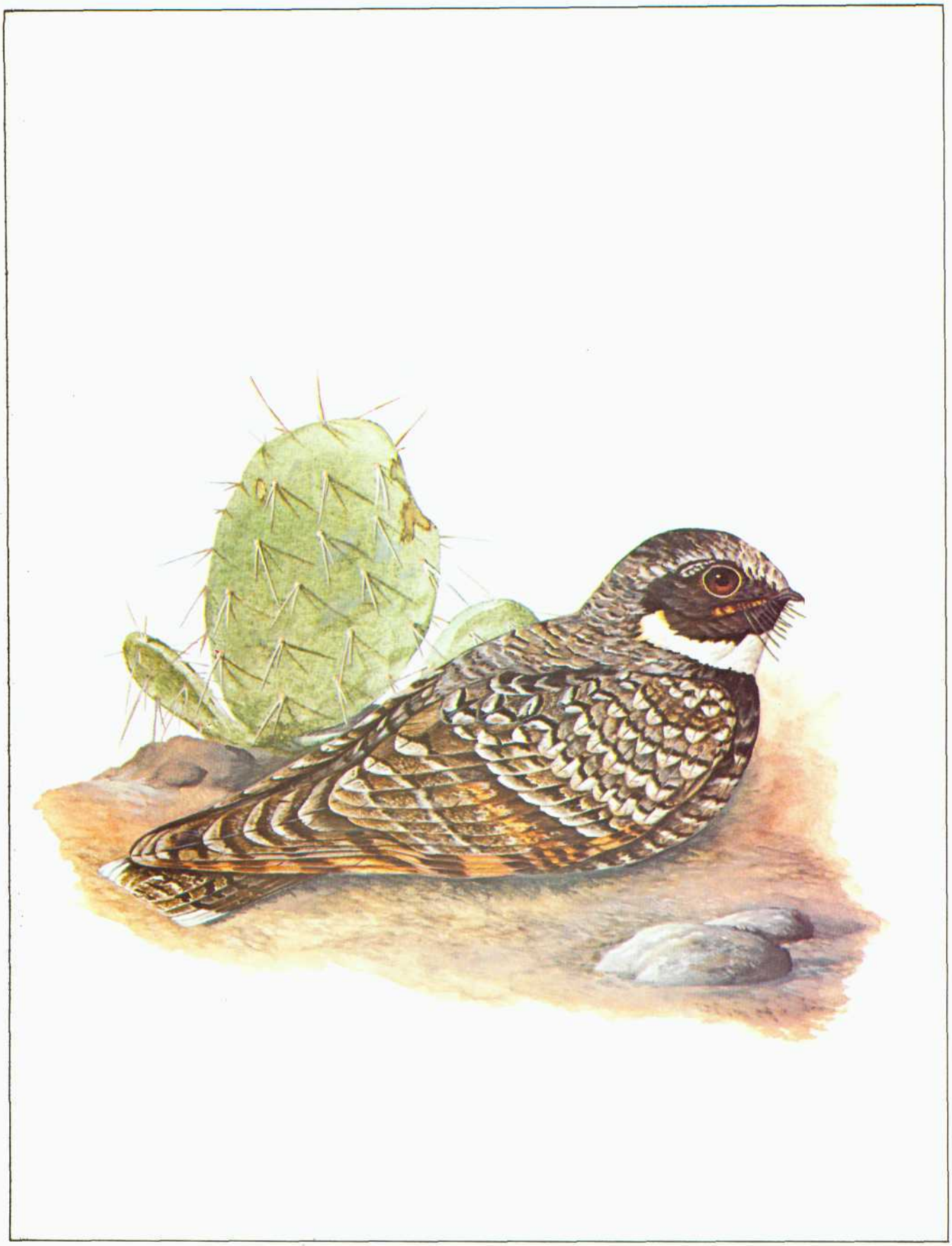


GREAT HORNED OWL (*Bubo virginianus*)

The great horned owl is one of the largest and most powerful winged predators of the desert. This adaptable owl is not restricted to the Southwest: It ranges from the Arctic to the tip of South America. Owls have great night vision and keen hearing—quite unusual in birds—which helps them zero in on their prey in nearly total darkness.

CANYON WREN (*Catherpes mexicanus*)
Wrens are small, dull brown birds. However, with their tails cocked over their backs, their gushing songs and boundless energy, they make up for the lack of color with personality. The canyon wren is well named; it's a common resident of canyons and found only in the West.

ROADRUNNER (*Geococcyx californianus*)
No other bird is so strongly associated with the Southwest as the roadrunner. This eccentric cuckoo spends most of its time on the ground where it runs down prey (lizards, insects and even snakes). The roadrunner is one of our most unique desert dwellers.



POOR-WILL (*Phalaenoptilus nuttallii)*

The tiny beak of the poor-will belies its gaping mouth which serves as an airborne insect trap. Poor-wills hawk flying insects on the wing at night. Their facial bristles help funnel the insects into the mouth. The poor-will rests on the ground by day, concealed by its cryptic pattern. It is the only bird known to hibernate.

I've been painting birds for years, but until now I haven't given much thought as to why. In thinking about my motivation, it occurs to me that many of the things I find compelling about birds lead back to flight.

I hope to communicate the act of experiencing the bird —making *my* encounter the *viewer's* encounter.

The power of flight has captured everyone's imagination, and for someone who has more than a passing interest in wild things, birds provide an endless fascination.

My artistic ability furnishes me with a means to express this fascination. I also hope to communicate the act of experiencing the bird—making *my* encounter the *viewer's* encounter. If a painting succeeds in this respect, it gives me a sense of accomplishment and justifies all the hard work.

To me, painting has an edge over photography in portraying birds. I'm an avid photographer, but I prefer the paintbrush when it comes to rendering wildlife. When I take a landscape photograph, I look for the dramatic moment, the exceptional instant, a fleeting visual event to be frozen on film. My approach to painting is quite different. I strive to invest my cumulative firsthand experience in the subject. The hoped-for result is a kind of visual editorial; a composite of personal encounters which goes beyond the static image.

Why do I paint birds? Birds are active, colorful and endlessly varied. When I'm hiking in the mountains, by the ocean or in the desert, where I live, birds are what I'm most likely to see. During the hot daytime hours, the kangaroo rat, sidewinder and scorpion are waiting for the cooler temperatures and cover of darkness before venturing forth. Most birds however, aside from a few night-timers such as owls, share our waking hours.

The reasons birds are so active, colorful and often the most conspicuous animals we see, brings us back to flight. Birds as a class are geared toward flight, and show the adaptations associated with the demands of flying. The coordination and stamina necessary for flight makes every bird a natural athlete; this along with their high body temperature (usually well over 100 degrees Farenheit) explains why birds are so active. The reason birds are so colorful can also be explained by considering another aid in flying: visual acuity. Birds have sharp eyes, and it's only natural that this emphasis on vision has had its influence on birds' appearances. Most birds are vision-oriented, and visual clues are important in specie recognition and courtship display. Mammals, in contrast, are less colorful. Most mammals are color-blind, relying on keenly developed senses of smell and hearing rather than sharp eyesight. This difference in sensory approaches explains why many mammals are nocturnal, and most birds are diurnal.

The birds in my paintings crouch, perch, sit, walk, run and yes; one's even flying. No matter what they're doing, they have been shaped physically and behaviorally by the rigors of life in the aerial element. I feel that the resulting vitality, beauty and diversity of birds strikes a responsive chord in most of us; portraying these qualities in a painting is the real challenge. If I'm to succeed in making my experience accessible to the viewer, I've got to imbue my subject with not only the attributes of the bird, but with a good measure of my own feelings and enthusiasm.

If I'm to succeed in making my experience accessible to the viewer, I've got to imbue my subject with not only the attributes of the bird, but with a good measure of my own feelings and enthusiasm.

My motivations in painting birds are several: As a painter, birds are colorful and challenging subjects; as an outdoorsman, birds provide a constant source of wonder; and finally aside from all that, I guess I just like the critters.

Andrew Steuer III began drawing and painting birds in grade school, combining an interest in art with that of nature. In 1973 he received a B.A. in Psychology from La Salle College, but his parents gave him a 35 mm camera as a graduation present and he's been pursuing a career in photography ever since. He is self-taught in both art and photography. As an outdoor photographer and wildlife painter, he concentrates mainly on the Southwest. He and his wife, Diane, live in Tucson, Arizona.

Courtesy of San Diego Public Library

ROBERT H. GODDARD,

As a young boy, he dreamed of sending arrows to the moon. Robert Hutchings Goddard's lifetime aspiration and brilliant work has transformed *his* dreams into *our* realities.

Text by William T. Adams

Above: *Goddard (center) and colleagues collected all the pieces after one test flight. Later, this rocket was reassembled and flown.* Right: *Robert Goddard in the laboratory at Roswell, New Mexico, 1936.*

In the desert near Roswell, New Mexico, Robert Hutchings Goddard, together with his wife, Esther and four assistants, set up a rocket research laboratory and launching tower. It was July, 1930. By December of that year, Goddard's unique, liquid-fueled rocket—the only one in the world—had streaked to the amazing height of 2,000 feet and attained a top speed of *500 miles an hour!*

Who was this tall, lanky professor with one lung?

Doctor Goddard was born in 1882 in Worcester, Massachusetts. As a lad, lying on the grass shooting arrows into the air, young Goddard said to his friend, Chester Haynes, "If I could only find a way to give each arrow an extra push as it begins to lose speed, it might go to the moon."

An intense curiosity drove Goddard to investigate all kinds of mechanical and chemical devices. He took apart clocks and his mother's sewing machine, turned the attic of his home into a chemistry laboratory, and nearly blew the roof off trying to make artificial diamonds. His father, who owned a machine tool company, helped him at every step by providing oil paints, drawing materials, tools, machines, a telescope and even a phonograph.

One day Goddard climbed a cherry tree in his grandmother's orchard. The sight of the brilliant autumn sky and the earth's far horizon encouraged him to make a decision from which he never wavered. He would devote his life to the exploration of space. He was seventeen.

A year or so later, Goddard was watching a Fourth of July display of fireworks. Suddenly he thought, "Could rockets be the answer in supplying that extra push?" He began to study everything he could find on rockets. There was precious little.

Goddard graduated from Worcester Polytechnic Institute and received his Masters and Ph.D. degrees in physics from Clark University in Worcester. He was then offered a research fellowship at Princeton in 1912. The long hours he spent in ceaseless study and laboratory work resulted in tuberculosis of both lungs. One lung was removed, and he was given two weeks to live.

Doctor Goddard fought back and survived; but he faced long months in bed. Referring to the meticulous diaries he had kept since he was a boy, his notes and sketches, he completed plans and filed for United States patents on a system to deliver fuel to a rocket's combustion chamber, and exhaust nozzle to handle escaping gases, and his very advanced theories for multi-stage rockets. The patents were granted to him a year later.

By 1914, Goddard was able to return to teaching at Clark University. The following year, he conducted a very significant experiment. By firing a pistol in a vacuum chamber, he proved that a missile could travel in the vacuum of outer space even more easily and faster than it could through the earth's atmosphere. If he could give a rocket that extra push into space, what would keep it from reaching the moon?

Realizing that he needed more money to continue this research and experiments, Goddard wrote his famous report, *A Method of Reaching Extreme Altitudes.* On the basis of this report, he received a grant of $5000 from the Smithsonian Institute.

Then came World War I. Going to work at once for the United States Army Signal Corps, Goddard helped develop a number of military weapons, among them the forerunner of the famed anti-tank bazooka rocket launcher of World War II.

ROCKETMAN OF THE DESERT

After the war and back at Clark University, Goddard updated his report to embrace his new theories of the *step* or *multi-stage* rocket. Upon release by the Smithsonian, this report was seized on by the media which promptly labeled Professor Goddard a moon-struck crackpot whose ideas were nonsense.

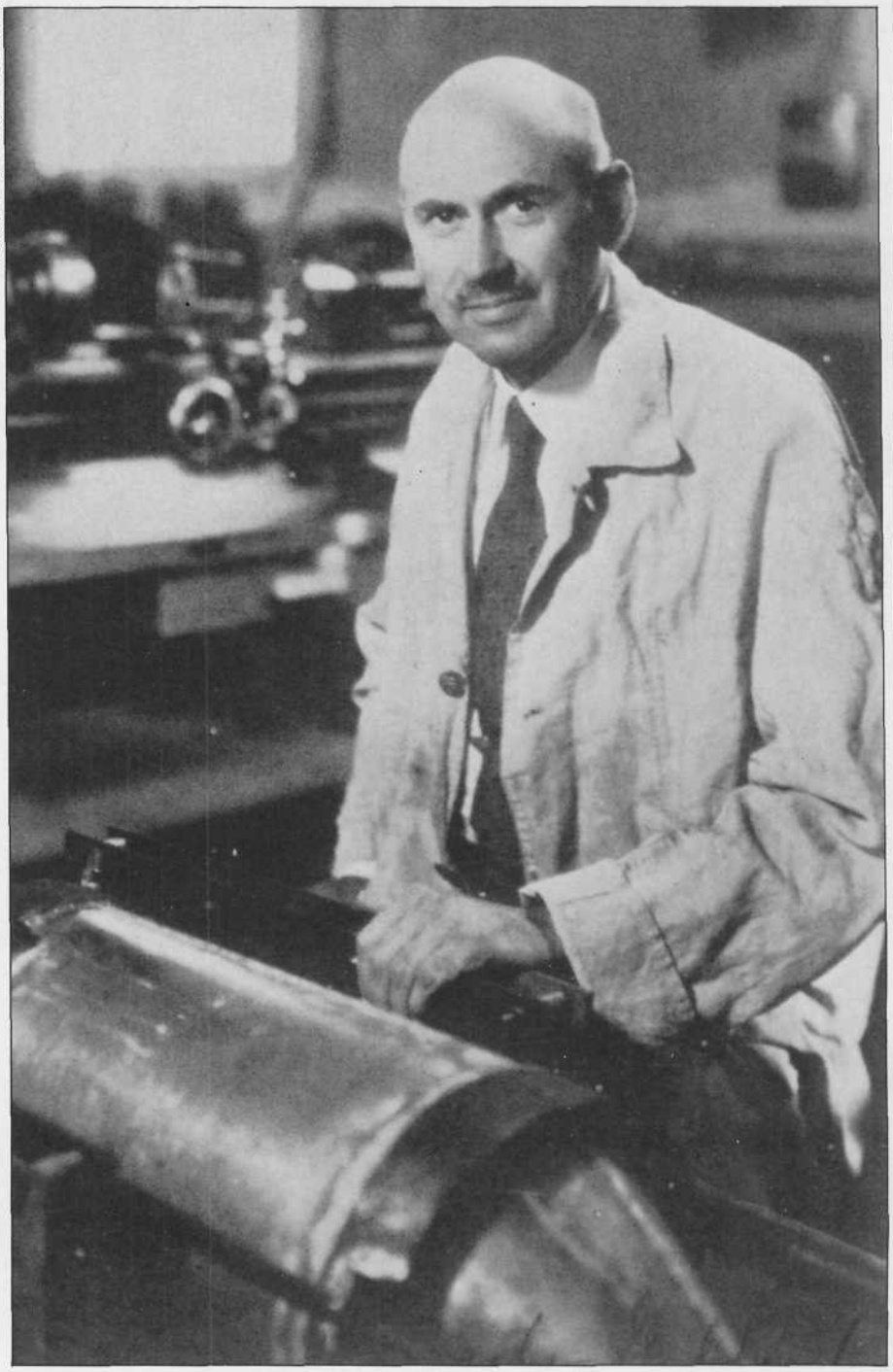
Ignoring these snide innuendos, Goddard continued his work. During the years 1920 to 1926, he accomplished a significant advance in rocketry. Instead of the solid fuel he had always used in his rockets, he now devised a way to combine a mixture of liquid oxygen and gasoline into a powerful but highly explosive liquid fuel.

In order to utilize this new fuel, he designed and built a series of rockets with liquid fuel motors. Each was painstakingly tested in the laboratories at Clark University.

Then it was March 16, 1926—a date which flight experts assert to be as important in the history of flight as December 17, 1903, when the Wright brothers made their initial flight at Kitty Hawk, North Carolina.

On this cold, raw day with snow on the ground, Goddard and his crew launched the world's first liquid-fueled rocket. The flight lasted only three seconds and covered a distance of 184 feet. Yet this launch from a farm in Auburn, Massachusetts, just south of Worcester, forever established the feasibility of the liquid-fueled rocket.

Three years later, on July 17, 1929, a fourth rocket was launched—the first to carry a payload. The nose of the sleek, 11-foot rocket contained a barometer to record atmospheric pressures, a thermometer to register temperatures, and a small camera to photograph the readings on the other two instruments when the rocket reached the zenith of its flight. *Continued on page 62*



Courtesy of San Diego Public Library

A TALE OF TWO BIRDS

The *Gossamer Penguin* and the *Columbia* space shuttle; two very different birds take off in the desert.

I'm not very good at expressing myself in words, so it's difficult to describe the feelings I had when I was at Edwards Air Force Base recently to photograph two very different flying machines.

I have been a freelance photographer for seven years, working for various local and national publications. I never know what an editor is going to ask me to photograph when the phone rings. It has ranged from politicians and sports to machines and landscapes. The constant variety is what keeps me going through the low side of the feast or famine cycles.

In August, 1980, I received a call from a science magazine asking me to photograph the flight of the solar-powered *Gossamer Penguin.* At the time, this was the latest plane to emerge from the dreams of Dr. Paul MacCready, the man from Pasadena who invented the human-powered *Gossamer Condor* and *Gossamer Albatross.* I was glad to get the assignment because I had been inspired by MacCready's earlier achievements: succeeding with human-powered flight where so many others had failed. The planes were beautiful both in flight and on the ground, so I welcomed the opportunity to see one up close. I hoped that I could take pictures that would make others feel about the planes the way I did; that these were beautiful machines, almost flying sculptures.

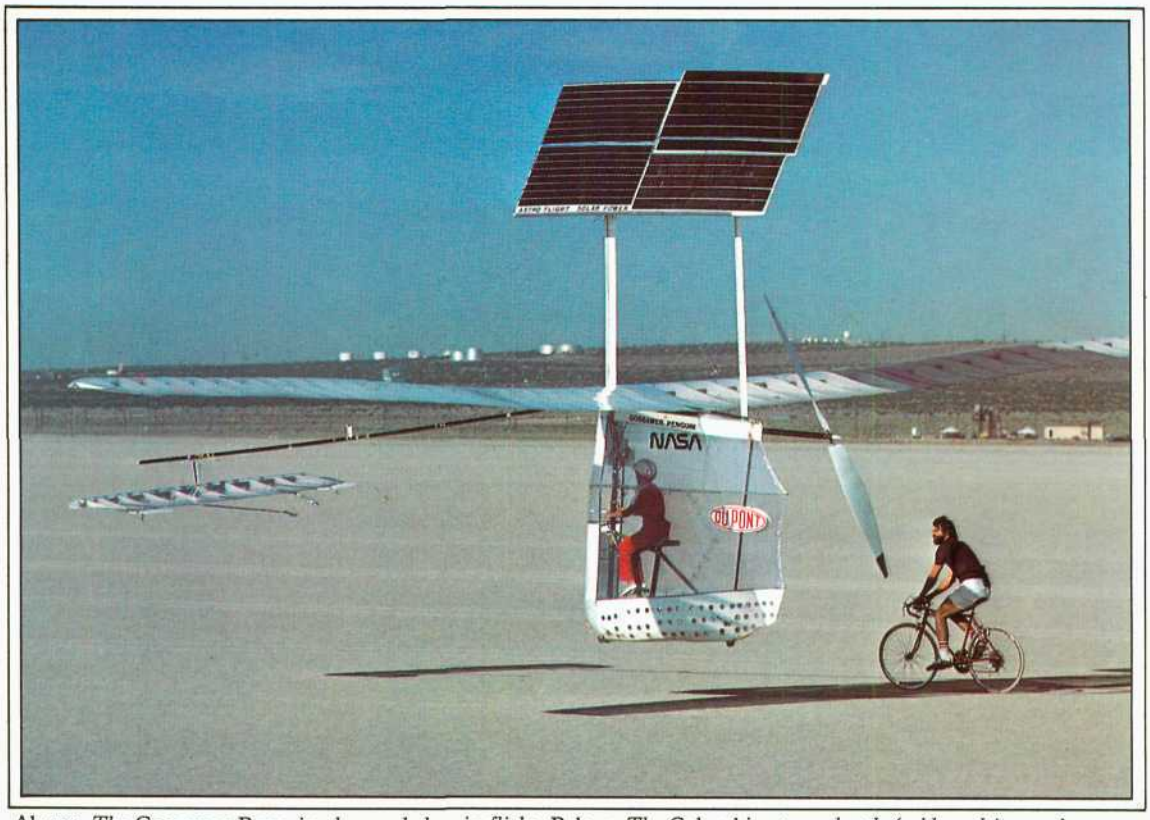
The *Gossamer Penguin* deserves its name: It is light and airy looking with clear plastic wings and body. I thought it looked ungainly with the solar panel stuck on top, by what appeared to be a couple of two-by-fours. The panel rotates so it can be turned to face toward or away from the sun. I wondered if the plane was too top-heavy to fly.

Because the flight was scheduled for 7 a.m. — before the sun got too high, the air too hot and the wind too brisk — I drove up the night before, warming to the job ahead as the day was being warmed by the sunrise across the high desert.

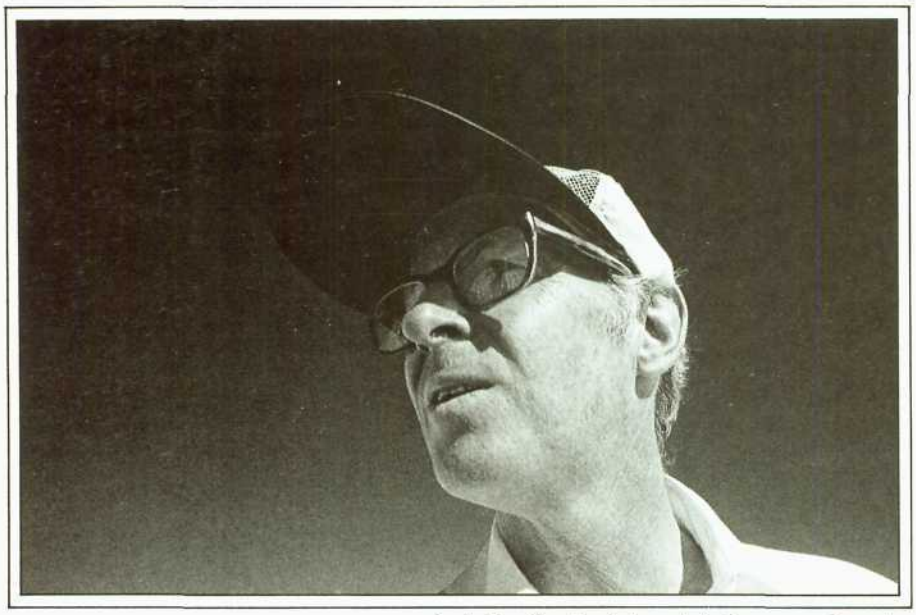
My excitement builds before I begin a job: I don't know what I am going to see when I get there. I have to be prepared for anything. I was carrying several cameras and lenses and a bag full of film. I'm unusually quiet, preparing myself for whatever is ahead, mentally reviewing my equipment and beginning to formulate pictures in my mind as I see the countryside the *Penguin* would be flying through.

The flight was planned by NASA as a

Text and Photography by Robert Burroughs



Above: *The* Gossamer Penguin, *low and slow in flight.* Below: *The* Columbia *space shuttle (a blurred image due to distance and heat), in its first contact with earth.*



Paul MacCready, father of the Gossamer Penguin.

media event, to show the possibilities of solar-powered flight. An assortment of reporters, photographers and television cameramen were gathered in the heat at the edge of Rogers Dry Lake.

I enjoy working in a group like that, meeting friends, being in the crowd and competing for a better shot or a different angle, trying to get the best picture.

The *Penguin* was waiting, tucked into the corner of a huge hangar. I thought Dr. MacCready was like a mother hen, sticking close to his own little bird, fretting over it so no harm could come to it. He and his crew guided it out of the hangar, warning people away from the guy wires holding the wings taut. The solar panel was facing west, away from the rapidly rising sun. The *Penguin* was steadied at the wingtips and hooked to a rope to be towed aloft by a bicycle. I clambered onto a flatbed truck that was to carry reporters and photographers along the route the *Penguin* was flying. At least three dozen of us were crowded onto the right side of the truck; like tourists on an excursion boat, cameras ready.

Janice Brown, the 95-pound pilot.

The solar panel was turned to face the sun, the bike started, the rope stretched and it was up!

The solar panel was turned to face the sun, the bike started, the rope stretched, and it was up! The rope dropped away; Janice Brown, the 95-pound pilot, turned a switch and the small ¼ horsepower motor began to turn the large white propeller. I watched through my camera as she floated along only 10 or 15 feet above the ground: low enough to talk to a bicyclist riding alongside. At one point, she dipped the plane and touched the ground before lifting up again. The *Penguin* was going so slow I almost expected to see the wings fluttering, as if to help keep it aloft.

I almost expected to see the wings fluttering, as if to help keep it aloft.

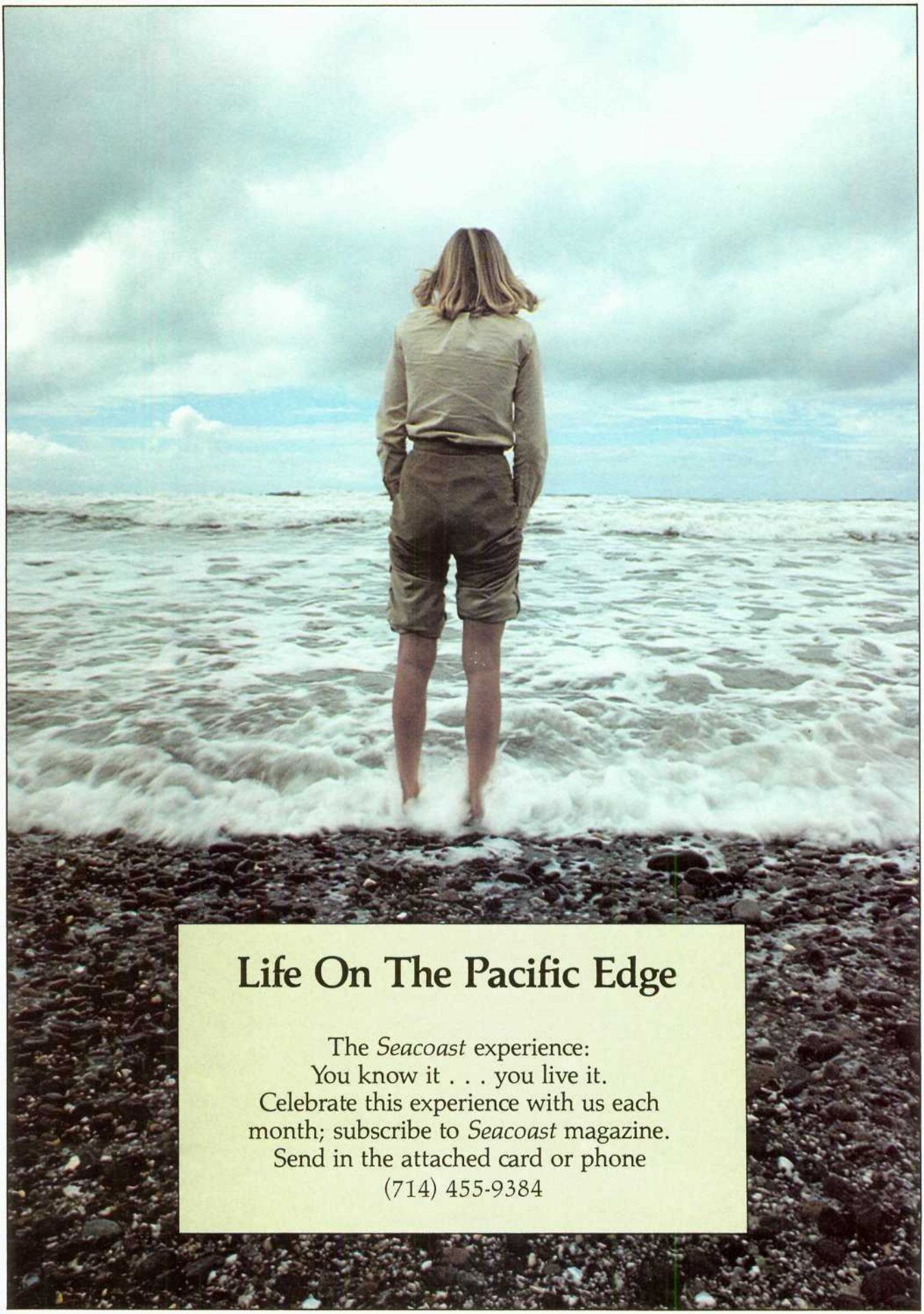
I photographed constantly, not knowing how long the flight would last, hoping to get a sharp picture in the lurching truck.

Two miles later she touched down, skidding to a stop amid the cheers and hugs of the support crew. This was the longest flight of a human-piloted, totally solar-powered airplane.

I felt the distance then that I usually feel at this type of event, wanting to cheer for them, tell them "Good work, guys"; but instead staying back, doing my job, getting the pictures.

The wind was too brisk for another flight; the plane was walked the two miles back to the hangar, dismantled and put into a trailer for the ride home. I rode back on the flatbed truck with MacCready and a couple of other reporters; the rest had opted for an air-conditioned bus. MacCready talked quietly about the project; he didn't make any grandiose statements about the future of solar-powered airplanes. He admitted the purpose of the *Penguin* was to interest the public in the possibilities of alternate energy sources.

My last image was of Paul MacCready standing in the desert, taking a picture of the trailer with his plane safely tucked inside.→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SPACE SHUTTLE LANDING

NASA invited anyone who wanted to come, and they did — by the tens of thousands.

In April of this year, I went back to Edwards, this time to watch the landing of the space shuttle *Columbia.* I didn't have an assignment; I went to see history made, a real spaceship coming back to earth, just like the Tom Swift stories I read as a child.

I liked the similarities between the *Gossamer Penguin* and the *Columbia:* they both make maximum use of technology. One with a minimum of hardware: plastic and wire, a few months of building. The other with a maximum of hardware: exotic metals and tiles, computers and years of work. A spaceship comes back to Earth at the same place the *Penguin* made its longest flight. I'm a child of the space age. I grew up with space flights and moon landings. For me, the chance to be at the shuttle landing was like being present at the Wright Brother's first flight.

While the *Penguin* flight had been a media event, this was a people event. NASA invited anyone who wanted to come, and they did — by the tens of thousands. I did another drive in the night, this time with a couple of friends who shared my enthusiasm and excitement. A corner of Rogers Dry Lake was turned into a huge parking lot with cars in lines a mile or more long, all facing a picket-fence-like barrier that separated us from the actual landing site.

I like photographing in crowds like that. There is so much enthusiasm, small hardships fade away; people become part of a small community.

After parking in the middle of one of the endless rows, I walked off to look at this instant city in the desert. The Air Force had set up a rock disco and a country-western dance floor to entertain the growing crowd. Television cameramen focused on the loudest parties; t-shirt and soft drink sellers cleaned up. The headlights of arriving cars stabbed across the desert long after midnight.

Two of us rolled out our sleeping bags next to the car, the third member of our group slept on top of a garbage dumpster at the edge of the runway; securing us a spot with an unobstructed view.

Everyone awakened at sunrise: That is when the horns started honking. I traipsed over to our dumpster lookout point three hours before the scheduled landing time, setting up tripods, hauling up food and water. Thousands lined the fence, looking like a crowd at the beach except that our shoreline was a shimmering dry lake bed. Flags and telescopes were everywhere: on top of cars and Winnebagos, hung from the antennas, even draping stepladders. One spectator brought his own truck-mounted, high-rise ladder to stretch above everyone else. I sat on my dumpster, photographing the crowds, staring through the wavy air at the hangars and buildings five miles away. It was hot and I was tired, but the anticipation kept me on edge, checking the exposure, making sure the camera had enough film to capture a sequence of the landing.

As the hour for touchdown approached, the crowd surged to the fence, shuttle reports echoed across the desert from the hundreds of radios that had on the same program.

Suddenly two huge sonic booms rolled across us. People shouted, "What was that?" It was the shuttle, too high above us to see, but announcing its descent in a loud voice. Then shouts of "There it is!" My eyes were guided to a tiny white speck high and behind me, near the contrails of the chase planes.

Down it came in a long, slow s-turn, lower and lower, the crowd screaming, "Go,go!"

No contrail streamed after the shuttle; it was in a powerless glide. Down it came in a long, slow s-turn, lower and lower, the crowd screaming, "Go, go!" "All right!" I didn't see it clearly until it was in front of us, three miles away, but plainly visible across the desert. I had a hard time finding it with my telephoto lens, but then I saw it in the viewfinder, jumping about as I tried to hold it steady. "I see it," I called to my friends. It looked so familiar to me. Even though it was what I expected, I was surprised at the quiet satisfaction that welled up in me. "They did it! This thing made it all the way!" It seemed to float slower, the landing gear came down at last, then a trail of white dust appeared as the back wheels touched and rolled across the dirt. The nose wheel touched the ground and the *Columbia* slowed more, disappearing from my sight in the dust and heat waves rising in the morning sun. There was clapping and cheering before the crowd quieted and moved off to their cars; lining up to leave a small piece of history in the desert.

Left: The Columbia *landing brought out energized patriotism, as exhibited by this bystander.*

Robert Burroughs is a freelance photographer who lives in San Diego, California. He normally specializes in people. His work has appeared in the San Diego Reader, Time *magazine and the New York* Times.

CALENDAR

October 1 — October 31

Arizona

Oct. 24-26: The 100th Anniversary of the Gunfight at the O.K. Corral will be celebrated in Tombstone, AZ. Festivities will include re-enactments of the Gunfight by Tombstone's Wild Bunch, along with Gallery of Gunfighters from Amador, California, and a silent bid auction on the 25th for a one-of-a-kind commemorative six-gun. For further information, contact the Tombstone *Epitaph*, at (602) 457-2211.

California

Oct. 2-18: The Fresno Gem and Mineral Society is holding its annual show. Events will include exhibits, demonstrations and dealers. It will be held at the Fresno District Fairgrounds on East Kings Canyon Road at Chance Avenue. Hours are 10 a.m. to 10 p.m. For information, contact Collins Combs, 2028 North Palm, Fresno, CA 93728.

Oct. 3-4: The Prospector's Club of Southern California, Inc. is holding its 14th Annual National Prospector & Treasure Hunters Convention. It will be held at Galileo Hill Park in California City, which is approximately 15 miles northeast of Mojave. The latest in prospecting and treasure hunting equipment will be displayed and demonstrated. Beautiful displays of coins, gold, relics, etc. will be exhibited in the treasure display competition. The event will also feature prominent speakers, championships, activities for the kids and many more opportunities. A great weekend outing for the entire family. Most displays require advance reservations, and the deadline is September 21. For further information, contact Bill Smillie, 10501 Ilona Avenue, Los Angeles, CA 90064.

Oct. 3-4: A nature photography workshop will be conducted by Ernest Wright and Floy Jarzabek. The program consists of lectures, demonstrations, discussions, working field sessions and photo critiques. This session will be held at Jenks Lake in the San Bernardino Mountains. For more information, contact Floy Jarzabek, 3630 Geary Place, Riverside, CA 92501, or call (714) 683-4366.

Oct. 3-4: The East Bay Mineral Society will present their Annual Festival of Gems and Minerals, at the Scottish Rite Temple, 1547 Lakeside Drive, Oakland. The Festival will be open from 10 a.m. to 7 p.m. on Saturday, and 10 a.m. to 5 p.m. on Sunday. There will be displays of hand-crafted jewelry, hand-cut stones and beautiful minerals. There will also be dealers, demonstrators and excellent food. For more information, contact Aileen Durden, 2506 High Street, Oakland, CA 64901.

Oct. 3-4: The Napa Valley Rock & Gem Club, Inc. is holding their show, *Nature's Jewel Box*, at the Napa Town and Country Fairgrounds, 575 Third Street, Napa. The show will include dealers, demonstrations, drawings, hourly door prizes and food. Hours are: Saturday, 10 a.m. to 7 p.m.; Sunday, 10 a.m. to 5 p.m. For more information, contact Steve Bowen, 122 Andrew Road, Vallejo, CA 94590, or call (707) 643-6627.

Oct. 10-11: The World-of-Rockhounds is having their annual meeting near Boron, California, at the Security Mine. Starting early Saturday morning, events planned will include general meeting, conducted field trips, informal discussions, an auction and a campfire. For further information, contact Mrs. Roberta Gordon, 11962 Magnolia, Garden Grove, CA 92641, or call (714) 638-8733.

Oct. 17: The Fall Value Desert Plant Sale will be held at the Living Desert Reserve, 47900 South Portola, Palm Desert. Hours are 9 a.m. to 2 p.m. Included in the sale will be sunloving, drought-resistant trees, shrubs, cacti, succulents and ground cover; many of which are difficult or impossible to find in a normal nursery. Fact/care sheets accompany most plants. For more information about this sale, call the Living Desert Reserve at (714) 346-5694.

Oct. 17-18: Fallbrook Gem and Mineral Tourmaline Gemboree at the Fallbrook High School Cafeteria on South Mission Boulevard in Fallbrook. Hours are: Saturday 10 a.m. to 9 p.m.; Sunday 10 a.m. to 5 p.m. For more information, contact Bob Crowell, 3245 Sumac Road, Fallbrook, CA 92028, or call (714) 728-8554.

Oct. 24-25: The San Diego Mineral and Gem Society is sponsoring the San Diego County Rockhound Gemboree at the Scottish Rite Masonic Memorial Center, 1895 Camino Del Rio South, San Diego. Hours are: Saturday, 10 a.m. to 9 p.m.; Sunday, 10 a.m. to 6 p.m. For more information, contact Show Chairman, Bill Tirk, 3944 Aragon Drive, San Diego, CA 92115.

New Mexico

Oct. 3-4: Annual Aspencade Festival and Octoberfest with over 60 Southwest artisans displaying their work; also included will be food booths at Zenith Park, entertainment and a 15-mile guided aspen tour with a naturalist. This will all occur in Cloudcroft, New Mexico. The day's events conclude with an evening dance at the Fire Hall. For more information, contact the Cloudcroft Chamber of Commerce at (505) 682-2733.

Oct. 3-4: The 9th Annual Harvest

Festival at El Rancho de las Golondrinas, an authentic Spanish colonial village and living museum in Santa Fe. Featured will be exhibits, demonstrations, food and entertainment. Admission is $2 for adults; $.50 for children. Hours: 10 a.m. to 4 p.m. For further information, call (505) 471-2261.

Oct. 3-11: 10th Annual International Hot-Air Balloon Fiesta will be held in Albuquerque. More than 400 balloon entrants are expected, and will participate in sunrise mass ascensions. For more information, call (505) 256-9401, and see the feature elsewhere in the magazine.

Oct. 9-11: The 59th Annual '49ers Celebration is being held in Socorro to revive the adventurous spirit of gold rush days. Events will include a chili cookoff, fiddler's contest, games and more, with lots of food. It will be an all-day affair at the New Mexico Institute of Mining and Technology Campus.

Oct. 11-12: 7th Annual Columbus Day celebration will be sponsored by the Colonial Infantry of Albuquerque. Featured will be costumes and armor of 1492 A.D., pageants, music, dancing, speakers and continuous free entertainment from noon to 8 p.m. both days. It will be held at Old Town Plaza in Albuquerque.

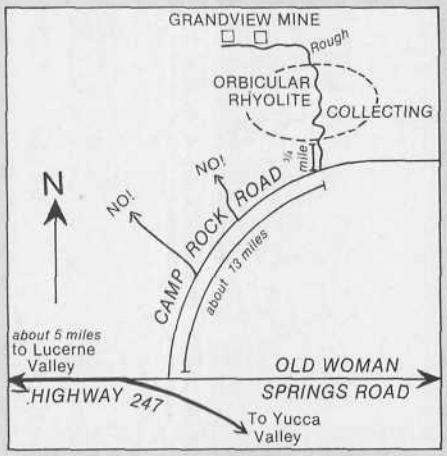
The Desert *Calendar is a service for our readers. We want to let them know what is happening on the desert. If you are having an event, or even a year-round activity, that you think they would like to hear about, let us know. There is no charge for items listed in the Calendar. We only ask that you submit it to us at least two months prior to the event. We (and our readers) want to hear from you.*

THE DESERT ROCKHOUND

by Rick Mitchell

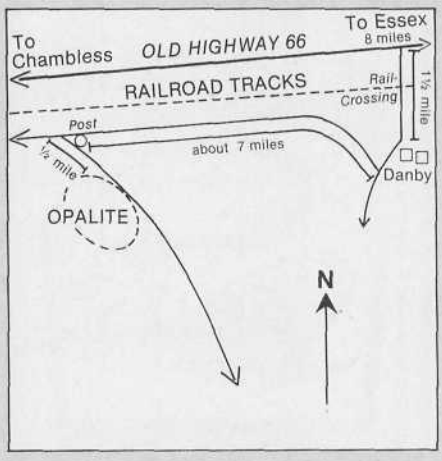
Collecting Sites

Nice orbicular rhyolite can be found throughout the southern slopes of California's Ord Mountains. The unusual spherical and paisley patterns found on this infrequently encountered cutting material make it a prize among rockhounds of theSouthwest. In addition, on some of the nearby mine dumps other minerals can be obtained; these include barite, chalcopyrite, epidote, fluorite, hematite, azurite, chrysocolla, silver and even gold. To get to this interesting desert collecting spot, take Highway 247, east from Lucerne Valley, for approximately five miles. Continue east onto Old Woman Springs Road for a few yards, turning north on Camp Rock Road. Follow this dirt road, bearing to the right, for approximately thirteen miles, then head northwest toward the mountains. The primary collecting area is centered about three-fourths of a mile from the main road. Simply find a good place to pull off and start walking.



Good orbicular rhyolite collecting area on the southern slopes of the Ord Mountains.

The rhyolite can be found in a variety of colors and qualities. Some are cream, with black "eyes", while others are darker. The eyes range in size from very small to nearly one-half inch in diameter. Many are deformed, adding to the uniqueness of this material. Some pieces contain random circles, while others are streaked with bands of small dots and eyes, and produce very nice bookends and cabochons. I am sure you will find this a most productive collecting spot. Remember that it is a desert location and gets quite hot during the summer. I advise this as a fall or spring trip.



Opalite is easily found in this area near Cadiz, California.

Nice transparent opalite can be collected in a concentrated area near the town of Cadiz, California. To get to this well-known location, take old Highway 66 to Chamblass or Danby, and follow the instructions on the accompanying map. The diggings can be seen at the base of the small hill, south of the road that parallels the railroad tracks. They blend in well with the contour of the surrounding terrain, so be observant. There is a road heading to the site, which is about one-half mile off the main dirt road.

Once you get there, pieces of opalite can be found everywhere. A variety of colors and quality can be obtained simply by scratching through the surface soil. If you are more ambitious, or are seeking larger pieces, it is necessary to dig. It takes a pick and shovel, but nice large chunks can be found in a short amount of time.

Equipment

Swest, Inc. 10803 Composite Drive, Dallas, Texas 75220, has introduced a new product that helps eliminate the blackening of skin caused by gold or silver jewelry. It is applied like hand cream, is not sticky or uncomfortable to wear, has no odor, and is called Touche O'Gold.

Swest has also introduced Rey Pearl Cleaner, to be used for cleaning pearls and soft stones. It does not contain any caustic chemicals and is quite effective in restoring original brilliance to these items.

B. Jadow and Sons, Inc. is introducing an ultrasonic cleaner which is a new version of the Mini Ultrasonic. It is called the Vigor Clean N'Brite, measures only 5¼" x 4¼" x 5" and features solid state circuitry. In jewelry cleaning applications it will remove oil, wax, lacquer, glue, paint, polish and other blemishing substances. For more information, write to 53 West 23rd Street, New York, New York 10010.

The Rock Snapper is now available from Paradise Gems, 21724 99th Avenue SE, Snohomish, Washington 98290. This tool is used to make preforms for cabochons. Simply score a slab, place it in the jaws of the Rock Snapper, apply pressure and the slab will be cut at the appropriate spot. It is advertised to be able to trim out a 40 x 30 blank in about thirty seconds, with none of the mess of a trim saw.

A new rock vise for sawing has been developed by Alex W. Sova. It is capable of holding even the most unusually shaped rocks. The 4 Point Sova Rock Vise employs what looks like a bicycle chain to follow the contour of the stone and grip it firmly. It comes in four sizes, allowing rocks from 1-1/8 inches to 7 inches in diameter to be held. The rock vice is fully adjustable, and additional information can be obtained by writing All Ways Sweet, Alex W. Sova, 20030 Anglin Street, Detroit, Michigan 48234.

Schools

The International Faceting School, 5800 West 50th Avenue, Denver, Colorado, offers four courses in faceting. They lead to certificates in Basic, Intermediate, Master and Advanced Master Faceting. The cost ranges from $436 to $4412, which includes equipment and material use. They require from 30 to 150 hours of instruction, depending upon which certificate you seek.

Publications

The Utah Geological and Mineral Survey, 606 Black Hawk Way, Salt Lake City, Utah 84108, offers an excellent 79-page book titled *Rockhound Guide to Mineral and Fossil Localities in Utah, Circular 63.* In this valuable publication, the collecting localities are assembled according to county. A master map, with each site pinpointed, is included with each section. The text gives detailed information about each spot, including travel instructions, what to collect, climate, elevations and needed equipment. This book is a must for any rockhound planning a trip to Utah. It can be ordered through the Survey for only $2.50, plus shipping.

The Bureau of Economic Geology, at the University of Texas, University Station, Box X, Austin, Texas 78712, has a number of booklets of interest to rockhounds heading. for that state. Three such publications are *Texas Rocks and Minerals, Texas Gemstones* and *Texas Fossils.* Each is very well-written and highly recommended, even if you're not planning a trip to Texas in the near future. The information included about fossils and minerals is valuable in itself, with the approximate Texas localities being an additional bonus. *Texas Fossils* (GB-2) costs $1, *Texas Rocks and Minerals* (GB-6) is $2 and *Texas Gemstones* (RI-42) sells for $1. Be sure to include $1 for shipping and handling. I am sure you will find the small cost to obtain these booklets well worth it.

L.J. Ettinger has published a book on gold mining called *The Idaho Prospector's Guide to Gold.* It is 30 pages in length and discusses the state's various gold districts. There are descriptions on where to look for gold, mining techniques, geologic and production background and a good bibliography. It is easy reading and full of valuable information for the Idaho gold seeker. The booklet can be ordered from L.J. Ettinger, P.O. Box 795, Challis, Idaho 83226, and costs $4.95.

Helpful Hints

An excellent way to apply polish to a polishing wheel is to employ an empty hand lotion bottle. Fill it with a half and half mixture of polish and water, shake well and spray onto the disc. This is one of the handiest methods of polish application that I have found, and allows you to apply an even amount of compound over the entire polishing pad.

There is a good way to determine if a stone you have contains a star. Simply put a few drops of Karo syrup on it and the star, if there is one, will easily be seen.

It has been suggested to dip polished silver into a ⅓ lacquer and ⅔ thinner solution to help the polish last for long periods of time and prevent staining of the skin. I have not tried this, but have seen sparkling examples of silver treated in this manner.

Another suggestion that I have received recently is to mix Elmer's Glue with water. Use in a fifty percent dilution to form a protective barrier for fragile fossils. Simply paint the specimen with the glue solution and the fossils will look clean and be protected. If necessary, it can be easily washed off.

If your safety goggles have been scratched or are foggy, use toothpaste as a polish to remove the undesirable blemishes. Place a small amount on a soft cloth and rub. If the scratches aren't too deep, they will be easily removed; the goggles will be good as new.

A method to use for polishing talc is given by the Silvery Colorado River Rock Club. They suggest to start sanding with 200 grit paper, followed by 400 grit, then smoothing with 000 steel wool. After this preparation, heat under a strong light or place in an oven until warm to the touch. Rub the warm talc with clear plastic wax and a beautiful shine will be produced.

Rick Mitchell has been exploring ghost towns and mines and collecting rocks and fossils throughout the Southwest for about 20 years. He has visited hundreds of locations during that time.

Portrait of an Aeronaut

James Michael Caldwell of Aerostatic Rainbow Wagons: Pilot, promoter, innovator and aeronautical enthusiast.

Text by David G. Evans

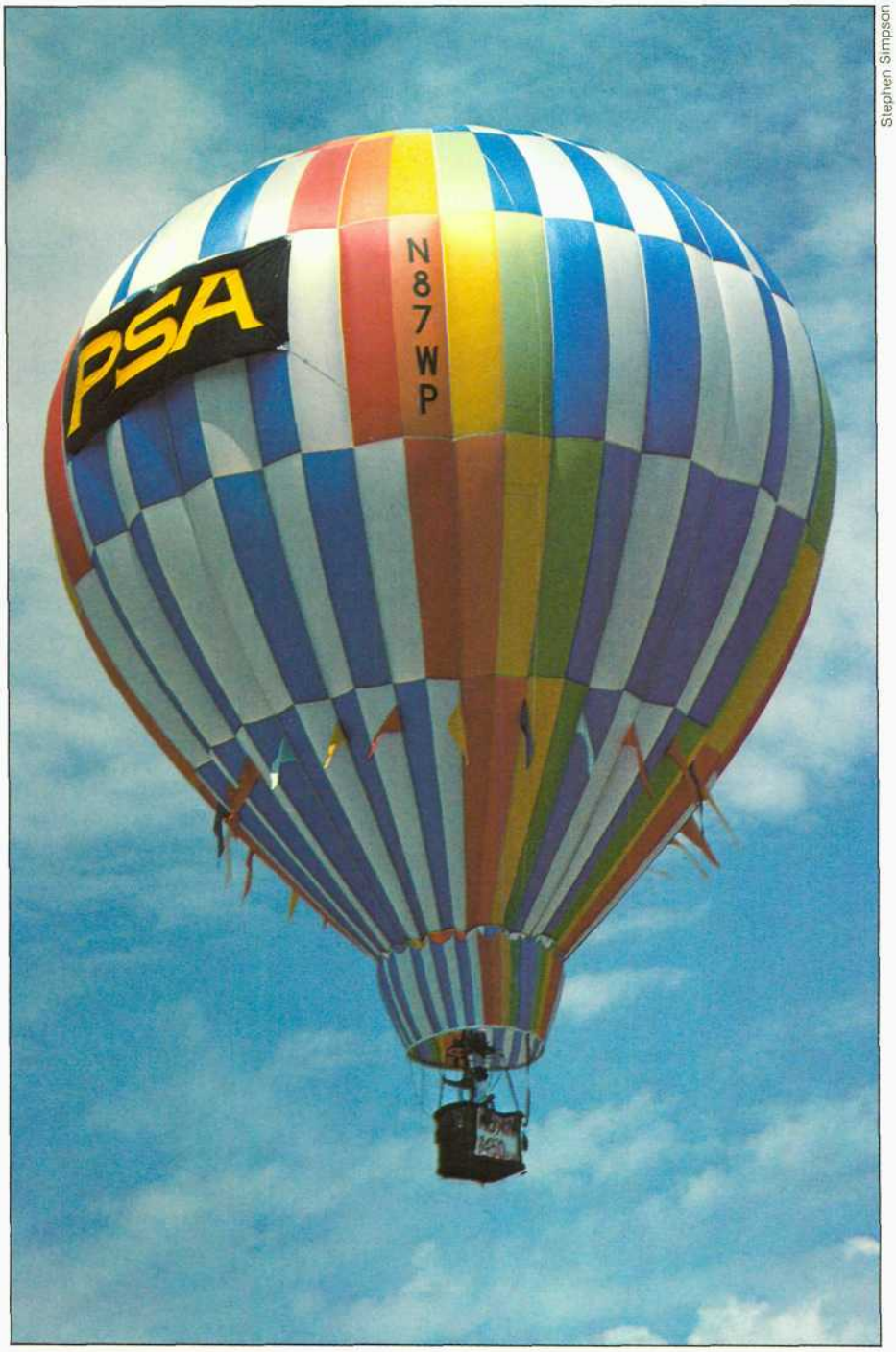
"I started 10 years ago with one sport balloon, a viking suit and a megaphone," admits James Michael Caldwell, manufacturer of commercial hot-air balloons and thermal airships in Elfin Forest, near Escondido, California. Just about every aspect of Caldwell's business is entirely unconventional. When he introduces himself on the phone as "...Mike Caldwell of Aerostatic Rainbow Wagons, purveyor of thermal airships..." he invariably faces a blank silence while the secretary on the other end of the line copes with that data. "What we *are*, here at Aerostatic, is a balloon company, but what we *do* is advertising and promotion." Caldwell is actually selling visual impact, not the experience of ballooning.

"We don't give rides; we're not sport balloonists. When you see San Diego Federal flying, when you see PSA, when you see Sgt. Pepper on TV; you're seeing Aerostatic working." A tethered flight, where the balloon is roped to fixed points and flies 150 feet, moving up and down, elevator-like, is a great way for a five year old to get a first ballooning experience. These performances are the main focus of the type of advertising promotion Caldwell sells: a semi-portable working billboard. Caldwell makes no bones about the economics of the ride situation. "Giving rides is simply not cost-effective any longer. You only reach two people that way. In order to make profits on flights, you have to maximize the potential and reach a whole arena of consumers."

There are some non-technical proficiencies required in hot-air balloon piloting; frankly, these are skills Caldwell excels in. Since between three and six people are usually required for an inflation, organizational diplomacy and the ability to orchestrate the inflation ballet are of prime importance. Caldwell will always ask a prospective crew member/employee, "How much do you weigh? Are you big? We need big guys who are strong and fast and don't ask a lot of dumb questions at the wrong time." If you're getting the sense

Lee L. Waldman

Left: James Michael Caldwell, the Wizard at work. Below Left: Aerostatic expertise; balloons as a method of advertising.



Stephen Simpson

that Caldwell is a big, heavy, intimidating personality, who will railroad the speaker on the other end of the phone if he can't keep up, then you're getting the true picture. Selling hot-air for fun and profit; that's his expertise.

"We've flown in the desert a lot. We've done nature-study photographs on hawks and other wildlife. We've filmed ads where a car or something else is out there with the balloon behind and the desert and wind blowing. We've done aeroballistic studies where the balloon is tethered close to 3,000 feet and we drop test articles as they photograph the flight path. The landscape is not exciting from that altitude, but at dawn, at only 20 feet, the desert is an unbelievably unique place to fly."

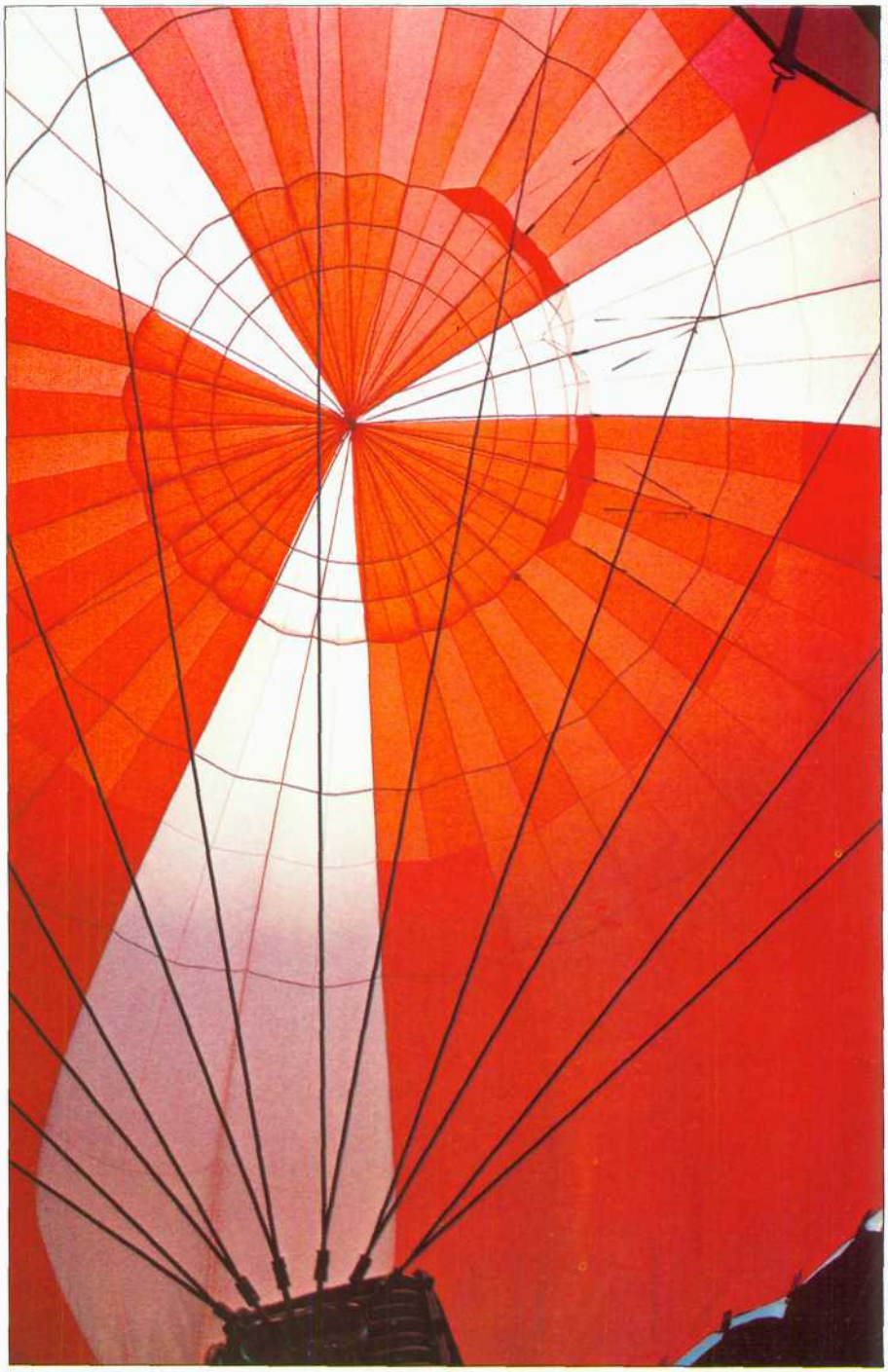
Pilots in the desert can fly for miles only two or three feet above the ground. They do it for the challenge of that kind of craft control and the thrill of movement which only that experience can provide. Tricky thermal currents are less of a problem in the desert than elsewhere; though high winds can heat up an otherwise tame flight to a fevered pitch. Since power lines and population density are practically non-existent in the desert, the real beauty, observed from a slow, low flying balloon, is revealed as you take off before dawn and watch the scenery come alive with the day.

"The desert can be a very hairy place to fly," says Caldwell, "because of the heat and all the vegetation. You think, 'It's the desert, I can land anywhere', but you can't. The desert has cactus, it has nasty rocks, it has inaccessible areas which can be even worse.

There's a place near Magdalena (Baja) which is surrounded by desert. The only place to land is in mangroves, little islands of them. As you go further into the grove, the water gets very

Stephen Simpson

Above and Below: The balloons must be durable and well-constructed. Close-ups show the workmanship.



Stephen Simpson

shallow. You can only take a kayak there: Well, getting a balloon out in a kayak is *not easy.* A couple of times I flew beyond the mangroves, and here you're talking about the meanest, nastiest desert you've ever seen anywhere in your whole life and the reason is that it's as dense as the Hawaiian jungle, only there's nothin' green. It's spider cacti and ocotillos all wound and interwoven miles and miles long—absolutely nowhere to land. If you did land it would take a helicopter to pull you out, and there aren't any helicopters. There are tractors and one could probably reach you, but you'd be dead before you got out. (At this point the photographer and I are anxious with suspense. "So what did you do?").

"You hope there's enough wind and you have enough fuel to reach the other side. Luckily there was. I made it to these big green fields at the edge of the desert where they irrigate.

"Albuquerque is not the most exciting place to fly, but it does have workable air. It's the ballooning capital of the world, basically, because a group of people worked hard to promote it that way. The city supported them until it became the permanent site of the International Balloon Fiesta. The reason Albuquerque's good is because it has what's called the Albuquerque Box." This box is a topographical feature which creates fantastic wind currents. They make it possible for the pilot to perform intricate maneuvers. "In a place with normal air currents, you would have 1,000 balloons wreaking havoc with each other."

Part of the excitement of ballooning centers on the immensity of the spectacle, part on the romance and part on the dangerous difficulty of working with this kind of aircraft. Here you see pilots performing as skilled technicians using

sophisticated machinery and backed by a formidable technology. "The key grab," Caldwell mentions, "is extraordinary evidence of how precise a pilot can be." This precision can be seen in an event where car ignition keys are hung on poles. To win the car, the balloonists must grab for them like the brass ring on a merry-go-round.

Many of the activities at Aerostatic are unconventional, but actually, most have never been done before. The most important quality his ballooning personnel can have, according to Caldwell, is autonomy. Frequently he will be heard to say or scream, depending on the deadline or client pressure, "Why are you asking me? I'll just have to sit there and figure it out, the same as you do. Here's the phone, here's the phone book. Find out how to do it!" Then he will return to his desk, chase the kitten off the warm, high stool with some comment concerning the mice terrorizing the shop, shake his head and mutter something about how "It's just like taking care of kids at the zoo."

At best, Aerostatic combines the magical romance and mystique of complete freedom in flight with the sophisticated professionalism required to use a tremendous aircraft in advertising promotion. "We have done TV commercials for Chrysler automobiles and Coca-Cola. When you ask about 'nontechnical aspects of balloon piloting', you're talking about the ability to deal with those prestigious corporations on their own level, that diplomacy, that credibility and being able to work with the film crews and directors." At the worst, when the winds are impossible, the client's impatient and the crew's tired or tense, it's a cross between, "Gosh, Toto, we'll never see Kansas again at this rate," and "Hold onto her, Scotty, she's breaking up!"

Dorothy Caldwell, Michael's wife, puts up with constant craziness since the shop is on the Caldwell property. She handles it in stoic and patient fashion having in 10 years seen it all, and by now taking most of Mike's clients' balloon insanity in stride. Something to do with her being Dorothy and him the Wizard with the balloons.

"At dawn, at only 20 feet, the desert is an unbelievably unique place to fly."

Herb Remmling, the second pilot in residence at Aerostatic after Caldwell, and also the resident pyromaniac, builds the burners and does all the "plumbing" in the fabricating/flying operation. Other personnel in sales or sewing may come or go, but Remmling has been with Caldwell since '76, and is really the foreman in the background. He became a licensed balloon pilot as a direct result of working for Aerostatic.

"Your grandmother could inflate a hot-air balloon if you told her what to do," says Remmling. "You can make it really simple. Sometimes Mike wants to give a client a show, make it exciting and tense for a while so the client is sure he's getting his money's worth. You can wait until the envelope is full of cold air from the inflation fan and then use the burners slowly to warm and expand that air gently; or you can have the envelope about three quarters full and crack the burners for half a minute or so. This will send a ball of turbulence toward the the crown which will cause some terrific convection currents and whip the fabric, the lines and the crew around in spectacular fashion. But the purse for 'first balloon inflated' at the San Diego Exposition balloon race this year was taken by a pilot with an all-girl crew, two of whom had never done it before."

"Taking executives up at conventions is a popular way to utilize the medium," says Caldwell. "The balloon is displaying their logo at the same time. I could tell you about a two-story-basket that will hold 35 people. You could fly an entire cocktail party, just like the 747's, but the Federal Aviation Administration isn't real happy about alcoholic beverages in the aircraft. The traditional champagne toast is about the limit.

Why do balloonists traditionally carry a bottle of champagne with them? This custom stems from the time of Montgolfier, the French Aeronaut who is credited as being the first man airborne and his countrymen who followed him aloft. Unpredictable and uncontrolled landings in irate French farmers' fields necessitated pilots carrying some pacifying device.

Here's a toast to great moments soaring through the open sky, and hoping to see you in Albuquerque in the fall. Good sailing!

David G. Evans is a free lance writer who lives in Cardiff, California. He has been involved with lighter-than-air craft in the fabrication/flying aspects (sewing, weaving baskets, performance flights) and in the sales and promotion aspects. He now works locally doing balloon advertising, writing and advertising copywriting.

THE TRADING POST

Dear Desert Lovers and Travelers:

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The *Desert* Trading Post is your opportunity to share what you have with your fellow *Desert* readers. I welcome your participation, and I am

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Terri Bianco
Advertising Coordinator

YOUR AD could be run on this page at modest cost—$1 per word per issue for 1-2 issues, $0.80 per word per issue for 3-5 issues, and $0.70 per word per issue for the same ad in 6 consecutive issues. A check or money order must accompany all orders.

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ROCKETRY
Continued from page 45

It was also the last rocket Goddard was to launch in Massachusetts. The rocket exploded in a tremendous roar from its launching pad, blazed across the sky, and plunged to earth—police, fire trucks and frightened neighbors rushed to the scene fearing a plane had crashed.

The local press were hot on their heels . . . and the crackpot professor was back in the headlines from coast to coast.

One result: Massachusetts banned the launching of rockets in the state. Another result: Colonel Charles Lindberg read about the flight of the rocket and came to Worcester to visit Doctor Goddard.

He needed space to conduct his flight experiments away from interfering people. He found it on the edge of endless desert: the town of Roswell, New Mexico.

On Lindberg's recommendation, the Guggenheim family offered a large grant to Goddard to foster his rocket research. Both Lindberg and the Guggenheims were to back Goddard for many years.

Realizing that he needed more space in which to conduct his flight experiments and to get away from interfering people—and the press—Goddard set out to search for a suitable location. Someone suggested the town of Roswell, New Mexico, on the edge of endless desert. Goddard and his wife took one look, noted "its fine dry air, so clear and pure one was glad to breathe," and agreed it was ideal.

Soon they had moved in a freight-car full of laboratory and launch equipment over the Santa Fe tracks, and had set up their laboratory with four assistants in an old Spanish-style house on Mescalero Ranch.

On May 31, 1935, a Goddard rocket, under his own gyroscopic controls, soared to an altitude of 7,500 feet and the incredible speed of 700 miles an hour—very close to the speed of sound.

For all his notoriety and success, Doctor Goddard was ignored by the United States War Department: Not so the Nazis under Hitler. They secured complete details of Goddard's theories and patents by simply writing the United States Patent Office and enclosing 10 cents. Based on his work, they developed the deadly V-2 rocket which did terrible damage in Britain during World War II.

When the United States finally entered the war, Goddard again closed his laboratory and went to Washington. He began working on a new type of rocket for the Navy, but his health failed, and he died in 1945 at the age of 63.

Belatedly, a grateful nation awarded Doctor Goddard the Congressional Medal of Honor and the Langley Gold Medal, aviation's highest award. Named after him is the great Goddard Space Center at Greenbelt, Maryland, and the Goddard Institute of Space Study in New York City.

What happened to Goddard's famous desert laboratory? It has been moved into the Roswell Museum and Art Center in Roswell, New Mexico. Nearby is an exhibit of the paintings of famed desert artist, Peter Hurd, with whom Goddard often shared painting trips. Another great friend of the Goddards in Roswell was Paul Horgan, well-known southwestern author.

If you are driving through southern New Mexico, perhaps on your way to or from Carlsbad Caverns, plan a stop at the Roswell Museum. To see his very fascinating laboratory gives you some idea of the work achieved by the remarkable Doctor Robert Goddard.

You will appreciate that there was a man with the intellectual curiosity of a scientist and the logic of a disciplined physicist. He dreamed of reaching the moon—and, in fact, mankind's first giant steps toward a lunar landing were his.

William T. Adams is a former creative advertising executive with J. Walter Thompson Company. His interest in rocketry stems from his work for Douglas Aircraft Company, AiResearch, Northrup, General Dynamics and Teledyne Ryan Aeronautical. He is a freelance writer based in San Diego, California, and a graduate of Phillips Andover and Dartmouth Colleges. His articles on aviation, the Southwest, Mexico, Japan and Hawaii have appeared in many regional and national publications, including the August, 1981 issue of Desert *magazine.*

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