



SPAN

The Newsletter of
The Natural Arch and Bridge Society

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SOCIETY NEWS

Dues

The following tries to answer a few questions about dues. Dues for NABS membership is currently \$5.00 per year. One of the benefits of membership is a year's subscription to *SPAN*. The subscription includes all issues of the *SPAN* volume which begins that year. New volumes begin with the October issue of any given year. Thus, if you have paid your 1989 dues, you are entitled to receive all issues of volume 2 of *SPAN*, regardless of their date. This issue is volume 2, number 1. Annual dues are due in June of each year. Thus, 1990 dues will be due in June 1990 and will entitle members to volume 3 of *SPAN*, which will start with the October 1990 issue.

Subscriptions to *SPAN* can be purchased without becoming a NABS member. These are also on a per volume basis. Volumes 1 and 2 can be purchased for \$5.00 each. If your dues or fee payment has been received, "V2" appears prior to your name on the mailing label of this issue.

Because several people requested copies of the August 1988 issue of *SPAN* (vol. 1, no. 1), it has been reprinted. It is now available for \$3.00 which includes postage. Again, a complete set of *SPAN* volume 1 (nos. 1, 2, and 3), is available for \$5.00. Please mail either check or money order for dues, subscriptions, or back issues to NABS, P.O.Box 26236, Colorado Springs, CO 80936.

1990 Convention

Plans for the May 4-6, 1990 NABS General Membership Convention continue to develop. The Howard Johnson's Motor Lodge in Grand Junction, Colorado has been chosen from three competing motels to host our convention. NABS will be mailing out registration forms to members later this year. Part of this packet will be a form to send into the Howard Johnson's to reserve a room. We have been given a special room rate of \$32 per night (whether single or double). More details will be included in the registration packet.

It is important that at least 10 rooms be rented (entitles NABS to free use of conference and banquet rooms), so please consider staying at the Howard Johnson's while attending the convention. Please mention NABS to get the special rate.

The tentative agenda for the Convention is:

Friday evening, May 4

6:00-7:00	Late Registration.
7:30-9:30	Mixer (informal discussions, slide presentations, and welcoming remarks by Danny Horowitz).

Saturday, May 5

8:00-3:30	Field Trip to Rattlesnake Canyon (Box Lunches). A separate fee will be charged for this tour.
6:30-????	Society Banquet and General Membership Meeting. A separate fee will be charged for the catered banquet service. Items of business to be handled at the meeting will include modification and ratification of the NABS Bylaws, nominations for Officers and Directors for the 1991-2 term, and other items of business raised by the membership.

Sunday, May 6

8:00-9:00	Executive Committee Meeting.
9:00-11:00	Formal Presentations and Invited Talks (Terry Cain is organizing this portion of the program).
11:00-12:00	Organizing/orienting meetings for subsequent field trips.
1:30-????	Organizing meeting of the Standards and Definitions Working Group (Jay Wilbur is organizing this session).
??:??	Concluding remarks by Horowitz.

Monday, May 5 through ????

Individually organized and led field trips in the Grand Junction and Moab areas. Specific trips will be decided at the convention. Bob Keniston is serving as the focal point for these activities. His list of possible trips follows.

Arches! Arches! Arches! We hope to be able to show ya'll plenty of arches, windows, holes, and natural bridges after our convention in Grand Junction. Here is a tentative list of some of the possible field trips we could make. First, however, let me say that this list totally depends on what everyone wants to do and see and how many 4WD vehicles are available.

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The Natural Arch and Bridge Society is a national, non-profit organization dedicated to increasing the understanding, appreciation, and preservation of natural arches and bridges. Any person with an enthusiastic desire to visit, study, photograph, or write about natural arches and bridges, and who supports the preservation of these features, may become a member. Membership dues are \$5.00 per year.

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Monday after the convention, those of ya'll who wish can take a trip with Jay Wilbur to Juanita Arch [see Member's Exchange -jhw]. Others may wish to travel to Moab on Sunday afternoon and get settled in there for what follows. Depending on how much daylight is left, we could go to Arches National Park late on Sunday.

Monday - Arches NP with a tour of the Fiery Furnace led by Ed McCarrick. Trips to Magic Mystery Bridge [Vreeland's Pipeline Arch -jhw] and others should complete the day. We could also have Virginia and Sam Allen show us some of their personal finds, and a surprise or two.

Tuesday - With help from Jack Bickers, Ber Knight, and other members of the Red Rock Four Wheelers we will visit Gemini Bridges, Jack's Arch, Periscope Arch, Mosquito, Crips, Shadow, Bullwhip, [the Four Arch Canyon quartet -jhw] and any others we happen upon.

Wednesday - Trips to Morning Glory Bridge, Jughandle Arch, Bowtie, Corona, and Gold Bar. Also Updraft, Sally's Arch, and maybe some of the openings at Island in the Sky. Maybe we can talk Ber into showing us the magnificent opening he found a month or so ago [see Member's Exchange -jhw]. Who says there are no big openings left to find?

As everyone knows, there are plenty of arches in the Moab area and lots of trails that lead to these arches. There are trips to Tusher and Dellenbaugh tunnels, Burrito Bridge, the many arches in Lavender Canyon, and the whole of the Needles Area, just to name a very few. There are way more possible trips than can be done in a week, so we'll have to pick and choose. Anyone wishing to take some of these trips or who has another idea should let me know what your druthers are so we can do some preliminary planning, but things won't get really decided until we all get together in Grand Junction. Please write or phone Robert Keniston, 12530 Ashcroft, Houston, TX 77035, (713) 723-1646.

- Bob Keniston

All members are welcome to attend any and all meetings and field trips conducted during the convention. Separate fees may be charged in some cases. Please keep a lookout for our registration packet and plan to attend this historic and fun event.

Experience Directory

The NABS Member Experience Directory is now fully functional, and inquiries can be processed readily by sending me your questions. For those of you who have not returned your survey questionnaire, please do so now so your experiences can be shared. If you don't have a questionnaire, let me know and I'll send you one. If you have already submitted one, does it need to be updated due to new finds? Please send all Directory data and questions to Larry Bouchez, P.O. Box 183, Lawndale, CA 90260, (213) 374-2706.

- Larry Bouchez

Utah Arches Threatened

The following is quoted from Bulletin No. 8 of the Southern Utah Wilderness Alliance:

On July 12, 1989, Utah's State Land Board approved a draft marketing plan to sell off 82,000 acres of state-owned lands within Arches National Park, Capitol Reef National Park, Dinosaur National Monument and Glen Canyon National Recreation Area. (Plus 35,000 acres in the Navajo and Goshute Indian Reservations.)

The Land Board's plan calls for "active marketing" of the state inholdings that have "significant development potential," including international solicitation of development proposals. It also calls for "simultaneous" offering of all mineral interests in the national parks and reservations.

One "developable" parcel to be "actively marketed" includes the famous Jacob Hamblin Arch in Coyote Gulch, Glen Canyon NRA. Promotion of a parcel in Arches NP "will emphasize the fact that the famous geologic feature known as the Eye of the Whale is located on the property." The plan touts that scenic arch as an "attraction for potential developers," and describes this Arches parcel as having "excellent potential for development as a campground and associated amenities such as a convenience store, showers, curios shop, etc."

A key plank in the NABS charter calls for us to advocate the protection and preservation of natural arches. NABS Arch Protection Director, Bob Moore, has already written to Utah's Governor and State Land Board expressing our outrage at a plan that would seriously denigrate and devalue these two magnificent natural wonders. Although NABS has officially spoken as an organization, it can only help if each individual NABS member also writes to the Governor and Land Board expressing opposition to this plan. Please write to:

Governor Norm Bangerter
State Capitol
Salt Lake City, UT 84114

Utah State Land Board
3 Triad Center, Suite 400
355 W. North Temple
Salt Lake City, UT 84180

For more information on this action and the issues surrounding it, please write to the Southern Utah Wilderness Alliance, P.O.Box 518, Cedar City, UT 84721.

PRESIDENT'S CORNER

Now that we have successfully accomplished the task of becoming an established society, the NABS Executive Committee is eager to foster its continued growth, influence, and membership benefits. Our immediate thoughts are focused on the NABS Convention next May

in Grand Junction. Do plan to attend, to meet your fellow arch hunters and to participate in the first General Meeting. But do not wait until the convention to share your ideas on ways to improve or enrich the Society. I and other Executive Committee members are receptive to your suggestions and invite you to write or call us anytime. Also, help us identify natural arches and bridges in need of protection, and remember to alert Bob Moore of any land use or environmental impact studies conducted in areas with arches.

- Danny Horowitz

EDITOR'S MARK

One of the goals of NABS is to develop a data base of information on the natural arches and bridges in the US. Before we can make much progress toward that goal, however, we have to decide what information we want to put into the data base. Unfortunately, that is not as simple as it might first appear. The lack of standard terminology, definitions, and conventions for describing and documenting natural arches (I use the term in its broadest sense) is a severe handicap in trying to develop a data base structure. For that reason, NABS is forming a special Standards and Definitions Working Group to consider the adoption of such standards for our own use.

In the strawman agenda listed above you will note that there will be an organizing meeting of this working group at our 1990 convention. The organizing meeting will attempt to structure the working group and define its charter and modus operandi. If you are interested in standards and conventions, especially if you think your experience can help us get a grasp on this tricky problem, please attend this session and contribute your thoughts.

Later in this issue you will find an article by McCarrick and Stevens challenging NABS to develop standards and conventions for the serious study of natural arches. I hope that the working group will make every effort to establish standards that have a good chance of receiving general acceptance. We may not succeed in achieving a universally accepted solution to this knotty problem, but we at least need to adopt a set of standards for our own internal use. In any case, I can promise you a lively discussion!

- Jay Wilbur

WHERE IS CLELAND'S LOST BRIDGE?

by Danny and Joanne Horowitz

Late in 1970, the State of Tennessee commissioned a study to identify the natural arches and bridges in the state. The study culminated in the publication of Tennessee Division of Geology Bulletin 80 (Corgan and Parks, 1979) which located and described three dozen features.

One bridge was notable in being listed as 'lost'. This bridge was first described by Cleland (1910) who included a photograph that is reproduced as Figure 1. Cleland did not describe its location, but a caption on the photograph noted that it was situated on top of Lookout Mountain, near Chattanooga. In spite of a search lasting several days, the authors of Bulletin 80 failed to locate Cleland's bridge. They speculated it might be hidden on private property or located on the Georgia side of Lookout Mountain.

Interestingly, the authors did describe another bridge on Lookout Mountain, which they called Lookout Mountain Natural Bridge. The quality of their photograph is poor, so they also included a map-view sketch. Comparing their sketch and photo with Cleland's photograph, it appeared that both features had the same general morphology, that is, both appeared to be cave-type arches using Vreeland's (1976) classification, or cliff-wall arches using Stevens and McCarrick's (1988) terminology. Naturally, I became suspicious that Cleland's bridge was Lookout Mountain Natural Bridge.

I questioned both authors of Bulletin 80 by phone. "We are positive they are not the same," they replied. So much for that. I then resolved to try to locate Cleland's lost bridge on our June 1988 vacation.

I next wrote the Tennessee state geologist to inquire if anyone had located Cleland's bridge. Negative, but the geologist did send the address of the superintendent of the Chickamauga & Chattanooga National Military Park which covers much of Lookout Mountain. The superintendent was unaware of Bulletin 80, but he did send directions to Lookout Mountain Natural Bridge. More importantly, he included a brochure of the park that mentioned a historical fact about the bridge which rekindled my suspicion that it had to be Cleland's lost bridge.

Lookout Mountain Natural Bridge used to be a tourist attraction many decades ago, accessible by a narrow gauge railroad. On the Cleland photograph are a number of visitors and a wooden footbridge which attests to the bridge's popularity at a time when only a few such features were known.

Suspicions are fine, but how to prove the identity? Cleland's photograph provided the clue. Barely discernable on the reproduced photograph, but clearly defined on the original, is a message scratched on the rock behind the lintel (just above the two middle men at the end of the footbridge):

NO !#@%ING
ALLOWED UNDER
THIS BRIDGE

The first few letters of the second word appear to be scratched out (your guess is as good as mine!) The message, while faded, should still be visible to render a positive identification.

We arrived at park headquarters near Chattanooga on the morning of June 4, 1988. A ranger informed us that the bridge was located in a residential area, but on public land used as a dumping ground for leaves and twigs. He took us to the site and pointed to a trail innocently bordered with poison ivy. We carefully picked our way to the bridge, a respectable structure with a lintel about 14 feet above ground level and a span of 85 feet. At first I barely noticed the span in my haste to locate the scratched message on the rear wall. Then the shock - no message! The authors must be correct, this is not Cleland's bridge. It is still lost!

Oh well, it was a nice feature and may well merit the honor of being the best bridge in the southeastern US. [I would have to vote for Natural Bridge of Alabama for that honor. -jhw] We took photographs and were about to leave when I decided to return to the car and fetch a xerox copy of Cleland's photograph, so I could compare the two features closely. They looked similar, but the structure we were examining lacked a footbridge, and had more vegetation. Also, there was a partly hidden brick wall to shelter a cistern on one end of the span. These are features that could change with time, but the nagging lack of a scratched message prevented a positive identification.

Wait! Do I see a crossbedded feature and erosional sculpting on the lintel identically matched with those on the reproduced photograph? Yes indeed - that's the proof! I shouted with excitement, "I have found Cleland's lost bridge!" My startled wife thought I had tumbled into a poison ivy patch, but soon verified my identification and shared my triumph. I have reproduced one of my photographs (Figure 2) showing the characteristics of the lintel that match those on Cleland's photograph. Evidently nature's sculpting is more durable than man's scratching.

As a postscript, I declare it a pity that this historical natural bridge is situated in an unprotected area used as a local dump. I plead for the state authorities to incorporate this feature into the Military Park and restore it to its former glory as a scenic attraction worthy of public attention. I intend to send copies of this issue of SPAN to the appropriate authorities.

References

- Cleland, H. F., 1910, "North American Natural Bridges, with a Discussion of their Origin", *Geol. Soc. America Bull.*, v 21, p 313-338.
- Corgan, J. X., and Parks, J. T., 1979, Natural Bridges of Tennessee, State of Tennessee, Dept. Conservation, Div. Geology, Bull. 80.
- Stevens, D. J., and McCarrick, J. E., 1988, The Arches of Arches National Park, Mainstay Publishing.
- Vreeland, R. H., 1976, Nature's Bridges and Arches, v 1, General Information.

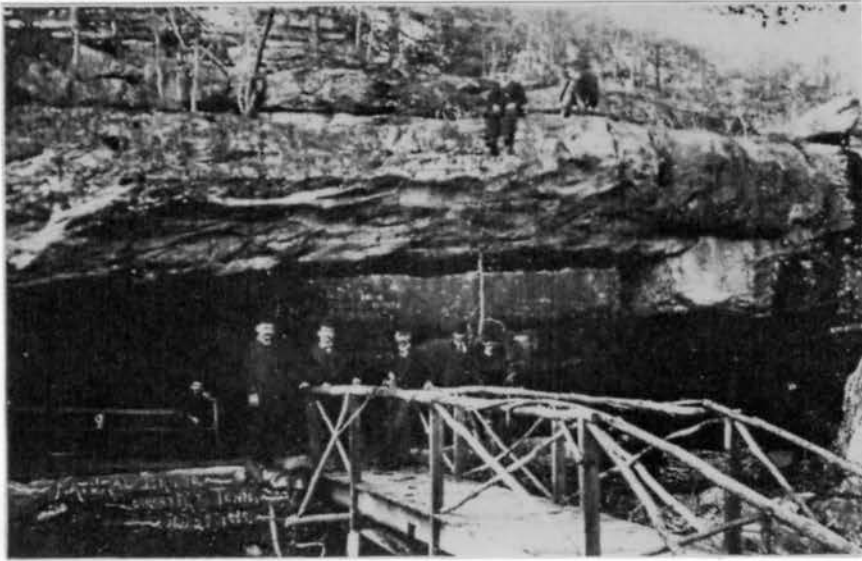


Figure 1 - Photo of a "Natural Bridge" reproduced from Cleland 1910.



Figure 2 - Joanne Horowitz in front of Lookout Mountain Natural Bridge. Note the conformance of erosional sculpting.

FIRST VISIT TO SKYWALK ARCH?

by Fran Barnes and Tom Budlong

On April 17, 1989, NABS member Tom Budlong of Los Angeles managed to reach lofty Skywalk Arch, in the canyon country of southeastern Utah, making him the first person known to have accomplished this difficult feat.

Fran's Story

Immense Skywalk Arch, depicted on page 192 in my book, Canyon Country ARCHES & BRIDGES, is at the top of a sheer 400-foot cliff in an isolated sandstone butte called "Big Mesa", about 14 miles northwest of Moab, Utah. Access to the top of this complex butte is blocked by high, sheer cliffs on most sides, and by accidents of geologic stratification on the few other possible approaches.

Because of this inaccessibility, it is doubtful if Skywalk Arch has ever been reached before. It is known to few people, even though it is within distant sight of State Highway 313. Tom reported seeing only one trace of prior human visitation on top of the lofty mesa, a rock cairn possibly left by some anonymous hiker. Of course, it is also possible that a mineral search helicopter might have set down somewhere on the mesa's several square mile summit during one of Moab's uranium prospecting booms. But in either case, there is no record of Skywalk Arch having been reached and documented.

Tom's adventure started several years ago, when Moab resident and NABS member Jack Bickers reported to me the existence of the inconspicuous span. Even then, it took a powerful pair of binoculars and some hiking to verify that the span did, indeed, have a continuous opening behind it. A pothole arch in smooth redrock, at the top of a 400-foot cliff more than a mile from the paved road, was not easy to see or study. Jack had spotted it from a rarely-used jeep trail that approaches the base of the cliff.

For the next several years, I studied various parts of immense, miles-long Big Mesa, trying to find a way to its summit and then on to Skywalk Arch, and eventually found two possibilities. One would require a difficult and dangerous two-day backpack hike. The other could be done in one day or less. There was no assurance that either was physically possible to anyone but an experienced, well-equipped desert rock climber. The nature of the butte made both possible routes chancy, and there was no way to be certain from below that either would work.

When Tom Budlong expressed a willingness to try the shorter route, my wife and I took him to the site and he set off with a day pack containing a camera, food, plenty of water, a marked map for guidance to the distant span, and one of our two hand-held CB radios. As he neared the top of the first ascent, Tom encountered a canyon country rarity - a large desert-sheep ram.

After he left the ram, we lost sight of him for 30 minutes or more, until he appeared far around the lofty, convoluted cliff on a promontory, where he joined us for lunch - but more than 400 feet above us.

As Tom continued his climb, we drove the tortuous jeep trail for several miles around the base of Big Mesa, to where we could see Skywalk Arch high above. After we had waited about 30 minutes, Tom appeared against the sky on the even higher red slickrock slopes behind the arch, then carefully descended to the cliff rim. There, he took a series of pictures of Skywalk from various angles and estimated its dimensions, while I photographed him at the span from far below.

When we asked him over our walky-talky whether it was possible to walk across Skywalk Arch, he said yes, but damned if he was going to! He said that the immense pothole behind the span was very deep, with undercut walls, and that on the other side of the span the drop seemed to be forever. We could see from below that the approaches to both ends of the long, flat-topped arch sloped steeply downward, making even a slight slip fatal.

By agreement, we parted company with Tom then, leaving him to explore the longer approach I had thought might be possible. It was - just barely - and while exploring that route, Tom found two other ways up the cliff to the intermediate level in the miles-long cliff that the second approach traveled.

Tom's Story

Earlier this year Fran Barnes, his wife Terby, and I "teamed up" to get to Skywalk arch. "Teamed up" is the right term since Fran has had his eye on Skywalk arch for long enough to worry the route out of the landscape. I followed his instructions and suggestions and managed to get to it. As far as I could tell when I was there, and as far as Fran can tell from just being around the area for a long time, no one else has ever visited it. But then I left no permanent physical record, and if you were to go there after a few summer storms have washed out my footprints then you might conclude you had christened the place. Except, of course, for this published report. I would not be surprised if this article draws a previous visitor out of the rocks.

Skywalk Arch is at the top of an Entrada formation plateau. Entrada, as a refresher, goes like this: Dewey Bridge thin, soft, layered, on the bottom. Entrada thick, harder, comes next. Moab is on the top 100 feet or so thick, and forms rounded white touching pillows. The Moab is gone where the arch is so the arch is at the top of the Entrada.

You can actually see the arch from the paved road into Dead Horse Point. It's right in plain sight but you have to know where to stop the car, where to look, and have good eyes. Not many notice it.

The plateau is indeed a plateau all the way around. No relict dinosaurs roaming the top though. The Entrada makes sheer walls, so there's no hiking straight up.

Skywalk's plateau communicates with a neighboring one via a connecting web at the head of Tusher Canyon, and that would be one possible way to get to there. Over the years Fran had four-wheeled around a lot and found a thin rubble slope on the back side that went almost to the top a possible second route. The idea of course is to get on top so you can walk directly to the arch.

In Fran's sand-walking Land Cruiser he, Terby and I got near the base of the thin rubble slope. Armed with some of Terby's roast beef sandwiches and a walky-talky I went up the rubble slope as far as I could get, which was the intersection of the Entrada and Moab layers. I then traversed sideways along the intersection looking for a joint or other hole through the Moab to the top. Perhaps with more agility and less apprehension I could have made it through the thin cracks I found. I even discovered an old weathered Juniper log jammed into a crack by the ancients, but it didn't provide enough support either.

However, following the sheep trails on the horizontal Entrada/Moab intersection turned out to be fairly easy, so that's what I did until the Moab petered out and I could get to the plateau's top. Then it was an easy compass shot for a mile or two over to the arch on the other side.

Skywalk arch is a pothole arch. Fairly near the edge of the cliff a fat-stomached pothole had developed. The fat stomach poked through to the cliff wall, leaving the neck connection intact. Behold, an arch. It's really a very well formed arch, quite symmetrical, and in a spectacular location. About 6 to 8 feet wide I guess, 10 to 12 feet thick, and 25 or so feet long. Not very large as good arches go, but the elegant address and design make up for the size. The pothole is quite deep, as you can see from the photo above. Note the tree growing in it. This being a dry period it was empty. You can see the bathtub rings from it's usual supply of water. Maybe wind will now be able to vacuum out some of the silt that has built up in it.

Walk across it? In theory, yes. In practice, no way. One side is 600' straight down, and the back side is the pothole which must be a hundred feet deep with no way out if you did survive the fall. Put it in your back yard and the kids could play on it. But on location, only one of Moab's Hollywood stuntmen would try it.

Here are the vital statistics: 38° 39' 06"N x 109° 52' 41"W; The Knoll 15' quadrangle.

ARCH CRITERIA (A Great Opportunity for NABS)

by
J. Edward McCarrick and Dale J. Stevens

When natural arches and bridges are discussed by those who consider themselves to be authorities on the subject, a persistent problem almost always arises about the technical aspects of arch study. Specifically, there is no universal agreement on what an arch is, what terms to use in describing its components, which dimensions to measure and how it is to be categorized into a distinctive type. Because of the lack of a generally recognized formula to resolve these issues, those interested individuals in NABS should attempt to establish some basic, generally accepted criteria that the novice arch enthusiast can understand and that serious academic researchers can agree upon.

Although the situation may appear to be totally chaotic, there is probably more agreement among arch hunters and researchers than is outwardly obvious. Some of the apparent lack of accord may be due to different interpretations of terminology as well as the lack of open discussions on the points of agreement and conflict, at least to the extent of resolving differences. It is suggested that in the annual meetings of NABS, sufficient time be allocated to discussing these issues. A committee of individuals who have already devised a system or published materials dealing with the topic should be included along with others who have unbiased feelings, but considerable background in examining arches in the field.

The main points to resolve are these:



1. What is and is not an arch? Such things as shape, size, appearance, condition, opening, etc. need to be considered.

2. Should there be other categories such as bridges, windows, etc. which may not be considered as true arches or should they be subcategories of arches?

3. What terms should be used when describing an arch? Such things as "span, opening, base, top, etc." need to have uniform meaning among those who use them.

4. How should arches be grouped or classified? Should the classification be based on form, genesis, size, lithology, etc. or should a combination of them be used?

5. Once terminology is agreed upon, what measurements should be made and from what points? When an arch is said to have a span of 20 feet, what does that mean?

6. What measuring devices are acceptable and does there need to be a witness or someone to verify the accuracy of the measurements? If discrepancies occur, what steps should be taken to resolve the problem?

7. Should geographic coordinates be established for all arches, and if so which system should be used? (There are 4 commonly used grid systems for point locations.) If coordinates are not to be used, what guidelines should be followed to describe location.

Those who have been involved in years of arch field work naturally have some strong opinions on many of the above topics. We are no exception. Our observations based on detailed field work in southern Utah (primarily Arches National Park) has yielded a system that is workable for over 1000 arches reported and documented over the last 16 years. During this time numerous ideas have emerged, the literature has been searched, discussions have occurred with other researchers and many modifications and refinements have been made. The details of our system, which has already gained some acceptance, can be found in the book The Arches of Arches National Park which we published in 1988. Continued application of that system indicates that improvements or revisions are always possible and in some cases, necessary. Certain aspects, however, have proven to be very functional and should be agreeable to most other researchers. A brief overview of our system may help to establish a platform for discussion.

On what an arch is, we have established four points. 1) There must be an enclosed opening through rock produced by natural weathering and erosional processes. Shape of opening or span is unimportant. 2) The amount of rock mass above or to the sides of the opening is unimportant, but it must be continuous and firmly bonded. 3) The opening must have a minimum of 3 feet of continuous light in any direction. 4) Esthetics or "significance" are not factors in arch determination.

Terminology is very important and in this area we have tried to be consistent with accepted usage of words.

Two terms which we consider important to clarify are briefly defined below.

Span: That segment of rock that bridges or surrounds the upper or outer part of the opening. Without a span there would be nothing but empty space, and without an opening there would be nothing but rock. The dictionary use of the word "span" to indicate the extent or spread between abutments, actually refers to distance of the bridging item, not the opening.

Opening: "Opening" actually has two meanings for arches, the "light opening" refers to an area of open space through which light penetrates. It can be in a variety of places in different arches. It is very important because it establishes the opening as an arch, not just a cave or alcove. On the other hand, "opening beneath the span" refers to the a specific position, but need not have light penetrate completely through it such as the case of an alcove or hollowed out part of some cliff wall type arches.

Other terms need clarifying as well, but many of them are tied up with the classification or measurement systems. Their exact meaning should be examined only after all matters are resolved within each system.

In classifying arches we have differentiated openings into two groups, arch and non-arch openings. Within Arches National Park there are ten different arch types and 5 different non-arch types. Arch types are determined primarily by morphometry where each name reflects a general description of the specific type. The ten arch types are: Free Standing, Cliff Wall, Jug Handle, Pothole, Spanned Alcove, Perforated Alcove, Expanded Crevice, Platform, Natural Bridge and Natural Tunnel. The non-arch types are given the name "opening" rather than arch and are called Undersized (Miniature Arch), Joint, Bedding Plane, Tunnel and Rock Fall openings. It is obvious that this system would not be complete or adequate for some areas of the world where processes and rock material differ from those in southeastern Utah.

Measuring arches is one of the most critical things that must be agreed upon. It is better to make a few extra measurements than to make only a few and overlook some important aspects of the arch. Our system gives information on the actual dimensions of both the rock span and the opening. The critical measurements are: *light opening*, which is a two dimensional measurement, and *opening beneath the span*, also a two dimensional measurement, which in many cases is the same as light opening. Where the light opening is a narrow slit between the span and the main rock mass, but the opening beneath the span is much larger, the two measurements are quite different. Three values are measured on the rock mass (*span*) "above" the opening. They are vertical and horizontal values and in certain types of arches, the "extent" which is the longest horizontal distance from the inside of one base to the other of the arching span.

The most accurate instruments used to make the above measurements in order of preference are steel tape, telescopic measuring rod, precision range finder, and telefix. In some cases an EMD (electronic measuring

device) and/or theodolite using triangulation may be necessary.

One other measurement, which should also be considered important, is compass orientation of the span. This measurement is an azimuth from true north between 0° and 179° and is always corrected for the magnetic declination of the area.

Before searching for arches and cataloging them, which NABS appears to be in the process of doing, it is necessary to know the qualifying features that an opening must possess to be considered an arch. A universally accepted set of rules and guidelines which could be ratified by NABS membership, would help to establish uniformity in cataloging, and unity among members. We are most willing to assist in establishing such a system.

By sponsoring such a project, NABS should acquire some credibility and perhaps gain some recognition from the professional and academic fields in the earth sciences. Such recognition might mean additional membership and involvement by those who have backgrounds in a variety of professional fields. We sincerely hope that NABS will not pass up this opportunity.

MEMBER'S EXCHANGE

Fran Barnes reports the following:

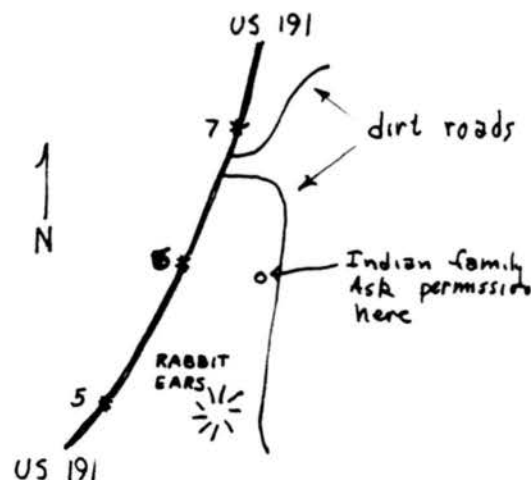
1. "Here is a sizable arch that I am willing to bet has never been reported before. Its map location is SE 1/4 of the NE 1/4, Section 31, T29-1/2S, R22E, Harts Point USGS 15' topographic map. I noticed a wide band of sunlight on the cliff below and behind the span, indicating that it has an opening at least 25 feet long, perhaps more. Anyone wishing to visit this arch would be well advised to contact me first for some practical guidance, since its location within the canyon can be reached only by one very inconspicuous route on foot."

2. "I have the unhappy duty to report the collapse of beautiful Courthouse Arch, an event that probably took place last winter. Courthouse Arch appeared as a photograph on page 369 of my book, Canyon Country ARCHES & BRIDGES." [More on this in a later issue of SPAN. -jhw]

3. Fran challenges NABS to locate and document the large arch reported by Jim Hurst and Lee Howland in the Moab Times-Independent, May 18, 1989. Any takers?

John Burns contributes these directions to an arch of unspecified size: The arch is in southern Utah east of US191, on the Navajo Indian Reservation. Leave US 191 between mileage markers 6 and 7. Take the dirt road which curves to the south (of the two dirt roads which go east, take the southern one). Go about 3.0 miles on this road for a view of the arch in a volcanic plug, asking permission from the Indian family on the route. Either hike or drive (4WD) 0.5 mile to the arch. Rabbit Ears, shown on the map below, is the Indian name for

Boundary Butte which gives its name to the USGS 15' topo map covering this area.



Danny Horowitz has received notification from the Sanostee Trading Post that Snake Bridge (see the August 1988 issue of SPAN) is now closed to visitors for an indefinite period of time.

Ber Knight reports the following find:

"There is an arch of substantial size near Moab that apparently has not been reported before. The arch is not far from well known features and well traveled trails, but the country it is in is very rough indeed.

"I first saw the arch at a distance of some 3/4 mile in 1985, while hiking to Jeep Arch [Vreeland's Echo Arch, 5-13 -jhw]. At that time, I could not confirm the opening positively, but I studied the arch through binoculars and photographed it with a 200-mm lens. Its conformation made me confident that there was some opening, however small, behind the rather long span.

"I finally got to the arch location this year, when a new and very difficult jeep trail was developed between the Gold Bar Rim and Poison Spider Mesa trails. On our second trip through, I walked to the rim of the tributary of Gold Bar Canyon where the arch is, and found that it is about a quarter mile from the new trail. We were able to drive to within about 100 yard of it.

"The top of the span is at the same level as the cliff rim, which is the top of the Wingate Formation. The opening between the span and the cliff wall turned out to be more than a crack, it is five or six feet. The top of the span is quite flat and a few feet wide (seems more like a few inches when you walk it!) The vertical thickness varies from several feet to about five feet near the center. I paced the span as about 125 feet long.

"On another day, my wife and I hiked in from a 4WD trail to the southwest to reach the bottom of the arch. I repeat, this is rough country. After seeing the lower part

of the canyon, I believe the canyon under the arch can be reached with easier hiking, but tougher jeeping, from the jeep trails to the north and west. If we had taken that route, however, we would have missed another interesting arch that has a nearly vertical span and a maximum opening of perhaps 15 to 20 feet. We also saw a small bridge of unusual shape.

"Because the new jeep trail was worked out by two groups traveling from each end to meet at the middle, we have been naming "features" (literally axle-breaking obstacles) along it in keeping with the Gold Bar Canyon and "Golden Spike" motif (eg. "golden staircase", "gold crack"). In that vein, types of jewelry would seem an appropriate source for names. Since the large arch resembles a barrette, I suggest the name "Barrette Arch" for it. I have dubbed the smaller arch "Stick-Pin Arch". The photo shows "Barrette Arch" from below. It is somewhat deceptive in scale because I used a wide-angle (24mm) lens."



Ed McCarrick sends in the following comments relative to the cross-reference between his and Dale Stevens' book, The Arches of Arches National Park, and Robert Vreeland's book, Nature's Arches and Bridges, Volume 2, Arches National Park, which appeared in the April 1989 issue of *SPAN*:

"We were confident that we found all of the arches shown in Vreeland's Volume 2, although some of those in the back of Volume 2 were difficult to identify for certain because of the lack of enough information. Since Bob Vreeland would know better than we and he probably has photos, we will not dispute most of the Vreeland numbers 2-101 to 2-122.

"Comments on the cross-reference as it appeared:

2-3/WS15,16,17: Vreeland shows only 2 arches, thus WS17 should not be cross-referenced.

2-38/WS1,2: Vreeland shows only 1 arch, only WS1 should be referenced.

2-46/EP35,36: Vreeland shows only 1 arch, only EP35 should be referenced.

2-105/NOT INCLUDED: We cannot identify this arch from the information in Vreeland's book (it could be one of several), but it is most likely that it is one of the arches in our book. It is not really correct to say "not included".

2-107/NOT INCLUDED: Again, we are not certain of this but it seems to be SD10.

2-108/ND79: This would not appear to be correct. ND79 is more east of Dark Angel and could hardly be called "small". Could it be ND38 which would be more north?

2-109/SD14: We did not identify this as SD14 since we did not consider SD14 as being in "the northern corner of South Devil's Garden". However, the rest of the description fits.

2-114/NOT INCLUDED: "Not included" is misleading. As we stated in our book, we did not include any openings under 3 feet. Since such a small opening does not meet Bob Vreeland's criteria, we wonder why he included this one. There are hundreds, even thousands, of openings that could fit this 12 inch size.

2-116/NOT INCLUDED: Again, we did not include any openings under 3 feet.

2-117/WS5: Vreeland's description seems to fit WS13 more than WS5.

2-119/NOT INCLUDED: Again, we did not include any openings under 3 feet.

2-120/FF19(13?): Our research in Arches National Park historical files indicated that FF19 was once called Box Arch. It certainly has more of an appearance of a box than does FF13, but that in itself does not prove anything. We did not find anything to indicate that FF13 was ever called Box Arch, but that is not to say that it could not have been.

2-122/NOT INCLUDED: We did not include any arches that have fallen. There are many such structures in the Park that might indicate the presence of an arch in the past. We also know of some arches that had fallen, but we did not include them. We are at a loss to know why Bob chose to include just this one."

Ed McCarrick and Dale Stevens announce the availability of their Detailed Map of Arches National Park showing the 966 arches documented in the park as of June 1989. It is a four color map using the USGS contour line and hydrologic base, the same colors as USGS maps, and more place names. It measures 19"x25" and is at a scale of 1:50,000 with contour intervals of 80 and 40 feet. Topographic information extends beyond park boundaries to the edge of the map. Access and park roads are shown.

All arches are numbered for reference to a list showing number, name, park area, type, and light opening dimensions. This list is available either on the back of the map (\$3.25 plus \$.20 Utah sales tax) or on a separate 19"x25" sheet (\$4.25 plus \$.27 Utah sales tax). The map is available folded (\$1.50 postage) or rolled (\$2.50 postage). Maps can be ordered from either Ed McCarrick, 1170 W. Kayenta Dr., Moab, Utah 84532, or Dale Stevens, 471 West 650 South, Orem, Utah 84058.

Robert Vreeland announces that Volume 23 of his book Nature's Bridges and Arches will be available from him in mid-November. Volume 23 will catalog 49 natural rock openings from nine different states, particularly Utah, Arizona, California, and the midwest. It will be 113 pages long and will sell for \$29.95 plus \$.90 postage until January 1, 1990, at which time the price will become \$32.95 plus postage. Bob intends to have only 100 copies printed. The book can be ordered from Robert Vreeland, 221 E. Second Ave. Apt. 4, Mesa, Arizona 85210.

Jay Wilbur reports the following:

1. "In April 1989, I measured the four openings of the multiple arch Jack Bickers calls "Colonnade Arch" and has recently publicized. Labelling the four openings 'a' through 'd' going south to north (left to right in the Barnes photo that has been published in the Moab Times-Independent) and using Vreeland's taxonomy: arch 'a' is a cave type arch with a span of 22 feet, arch 'b' is a cave type arch with a span of 24 feet, a width of opening of 18 feet, and a width of 27 feet; arch 'c' is a pillar type arch with a span of 21 feet and a height of 16 feet, arch 'd' is a pillar type arch with a span of 20 feet and a height of 10 feet. Measurements were made with a steel tape."

2. "The location of the arch in Robbers Roost Canyon reported by Mike Kelsey is 38° 20' 29"N and 110° 29' 08"W as plotted on the Angel Point UT, 1986 (Provisional) USGS 7.5' topo. It is a cave type arch with a span of 32 feet (photo estimate). A long narrow alcove type arch is a short distance upstream, located at 38° 20' 44"N and 110° 28' 54"W on the same map. This second arch has a span of about 55 feet with a narrow opening."

3. "If you've been daunted from visiting Juanita Arch in western Colorado by the Dolores River, here's a much easier route which does not require crossing the river (which usually requires a boat or raft). Bob Sherrill and I took this route successfully in April:

"About 4.3 miles northeast of the bridge across the Dolores River in Gateway on CO141, turn right (southeast) onto a graded dirt road and cross over the bridge over West Creek. Start mileage at the West Creek bridge. At 1.1 miles a road comes in from the left, at 5.8 miles go left on 10 8/10 Road, at 7.3 miles stay right, at 8.6 miles take the rightmost of three forks (a 4WD road). At 10.2 miles cross a cattleguard, at 10.7 miles cross a wash, at 12.2 miles go through an old gate, and at 15.9 miles turn left off of the road where it starts to climb Flat Top Mesa and park. Walk east (finding a way down off of the point) down into a short side drainage of Maverick

Canyon. The main canyon is reached in about .3 mile. Walk downstream for an additional 1.6 miles to the bridge. At one point you will have to choose between some scrambling on the east rim or wading through a pool. There is plenty of poison ivy, so watch your step! A confusing network of cattle trails above the west rim of Maverick Canyon can also provide a route if you prefer, but it is nowhere near as scenic."

4. "When I visited the Hans Flat Ranger Station of Canyonlands NP last November, I was fortunate enough to meet Gary Cox. Gary not only gave me a lot of information on the arches in the Maze area, he pointed out two that were plotted on the then new, provisional edition, 7.5' USGS topo map, Whitbeck Knoll UT, 1986. I was able to visit these two arches in April. They are located in the NE corner of R15E, T27S, section 6, and are correctly shown as "Natural Arches" on the map mentioned. The westernmost of the two is easy to reach. It is a pothole arch with a span of about 20 feet (photo estimate). A photo is below.



"The eastern member of the pair is much harder to reach, and I was only able to view it from a distance. Based on shadows cast, it appears to be a double arch with the larger opening hidden from the viewpoint. The opening that is visible is a cave type arch with a span of about 12 feet (photo estimate)."