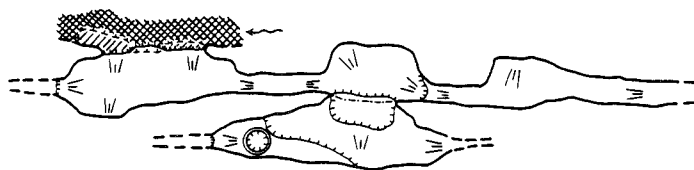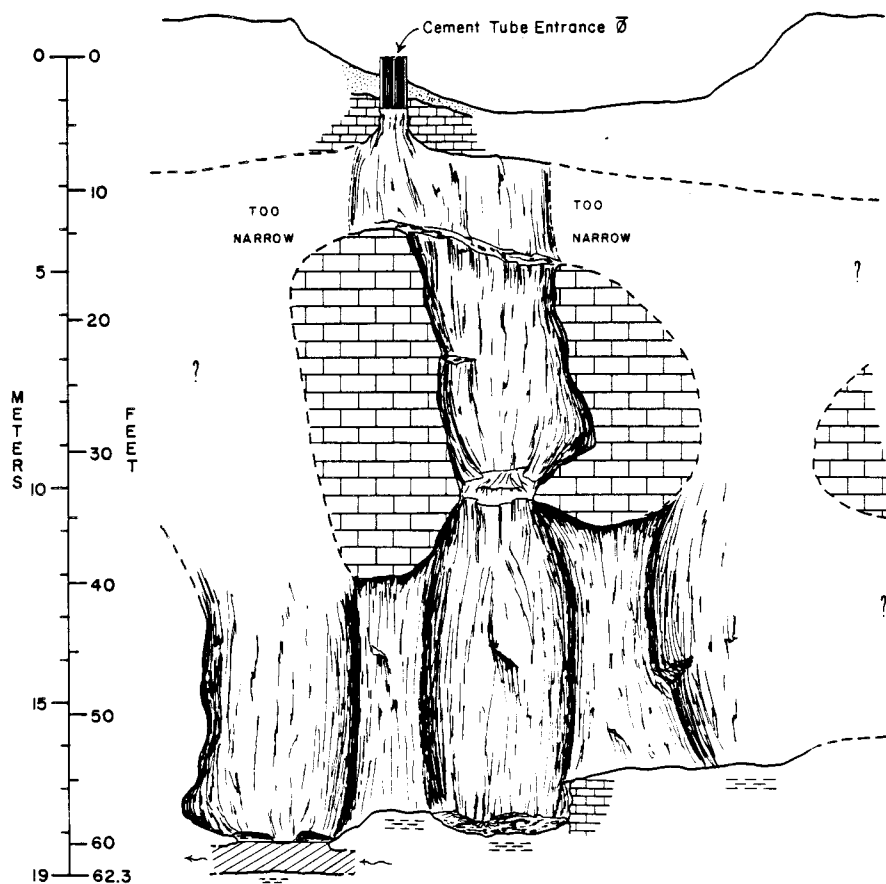# COMPASS & TAPE

Cibolo Island Cave
Kendall County, Texas

Survey: 14 Febuary 1982
Eric Short
George Veni
Randy M. Waters; Draft

Length: 21.5m
Depth: 19m

Units: Suuntos &
30-Meter Tape

METERS
0 1 2 3 4 5

0 5 10 15
FEET

N.mag.

Cement Tube Entrance ∅

TOO NARROW

TOO NARROW

?

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?

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METERS

FEET

Survey & Cartography Section - 1986/1987

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Submissions: Short items may be in any form. Articles: Disks are preferred. Send 5 1/4-inch MS-DOS Double or High-density, with ASCII, Word, Wordstar or Word-Perfect Files. ALL DISKS SUBMITTED WILL BE RETURNED PROMPTLY. Modem service is not available. Hard Copy: Should be in black ink. fixed pitch (no proportional spacing); typewriter or daisy-wheel preferred. Dot-matrix must be large and highly legible. Illustrations: Are strongly encouraged! Camera-ready copy is appreciated and should be designed for reduction. Contact the Editor if you have any questions or special requirements.

COVER: Cibolo Island cave, Kendall Co., Texas. By Randy M. Waters.

CONTENTS

EDITORIAL

How NOT To Mark Survey Stations

Later in this issue is an excerpt about cave mapping in support of what might be called the "Resource Inventory" school of Cave Conservation. While the concept of a "resource" is a bit vaporous, there is no doubt in the minds of those who inventory the contents of caves that a map is necessary for keeping all those bits and pieces organized. Yet, as we see in this article, it's possible to be so intent on keeping all these little "resources" accounted for that one loses sight of the big resource-- the cave as a whole.

The practice of riveting station markers to cave walls seems absurd-- especially in a situation where the surveyors are being accompanied by Bureau of Land Management personnel to keep them from "damaging" the cave! Surely it is possible to permanently mark stations so that they can be recovered, yet are unobtrusive. Have you ever seen a USGS benchmark which is an eyesore? No. They are discreetly placed, yet quickly recoverable with the aid of a short, one-paragraph description.

Cavers of the Proyecto Espeleologica Purificacion (PEP), faced with a complex 60 km long/825 m deep system in northern Mexico, have for years marked major stations in the survey by drilling a small hole at the spot. Nothing else is needed-- no foreign materials are introduced into the cave. The holes are tiny, invisible to cavers moving through the passages, and immune to flooding. And yet, when they are needed, they are absolutely unmistakable. By permitting only highly-experienced sketchers to work in the system (plan and profile sketches are always done), the coordinators have a carefully organized, extremely detailed record of every single hole drilled-- to say nothing of a map which is awesome. This record goes on each expedition in the form of two telephone-book-sized photocopies of all the notes. These books are consulted before trips and information on potential tie-stations, etc. is selected. Since the notes and draft maps *look* like the cave (quite a concept, isn't it?), it is seldom difficult to recover stations.

Surely other cave projects can learn from the PEP: if we are skilled and careful surveyors then we do not need to make our caves look like construction sites in order to mark locations within them. The idea of monitoring damage to a pristine cave environment by riveting reflective orange squares to its walls is both patently absurd and unnecessary. <-- -John Ganter.

Software Developments

News From Doug Dotson

According to a letter sent to registered SMAPS users on 22 December 1986, the long-awaited SMAPS 4.0 is in the coding phase. Major changes include: (1) The CP/M operating system will no longer be supported: only IBM PCs and close compatibles. (2) The system will have extensive screen graphics supporting CGA, MGA or EGA. (3) The editor will be more powerful, file manipulation capabilities increased, and the loop adjustment improved (probably based on the NET3 algorithm as developed by David McKenzie.) (4) Assembly language routines will be used in key parts to speed operations. Doug hopes to have SMAPS 4.0 available by the '87 NSS Convention. (118 Washington St., Frostburg, MD 21532 301- 689-1024)

News From Bob Thrun

Bob indicates that for those interested, he has various versions of his CMAP13 and CMAP14 survey plotting packages available for machines ranging from micros to mainframes. He is planning to release Z80.COM files for his Printer Graphics Driver, having obtained public domain Hershey fontsets via John Halleck. Bob also has Neil Smith's (Australia) sophisticated loop closing algorithms available for US cavers. (8123 14th Ave, Adelphi, MD 20783 301-439-7289).

More on the International Congress of Speleology

by Rich Breisch

San Diego, California

The 9th International Congress of Speleology was held in Barcelona, Spain between 1 and 7 August 1986. The organizers seemed to have problems with hosting the congress. Many people who had sent in abstracts and papers never showed up to deliver them. Only two papers on cave mapping are included in the proceedings; their abstracts are at the end of this report.

Although the congress had exhibits of caving publications and poster board displays, there was no separate cave map exhibit or competition. The best cave maps that I saw in Spain were not at the Congress, but in the Burgos Museo, an archeological museum in the city of Burgos. The museum had large, detailed maps of Altamira Cave and other prehistoric art caves. UNdoubtedly, these maps were created for an archeological report on the caves.

Abstracts of Cave Mapping Papers at the 9th ICS

Bosted, Peter and Ann. "Making Three-Dimensional Cave Models," pp. 304-305 of Volume 2 of the Proceedings.

Abstract: It is often difficult to portray the complexities of mazelike caves such as those found in California using standard cartographic techniques. I have therefore worked out a method for making three-dimensional models using wires, clays and other materials. Methods of construction will be discussed, and pictures of models both completed and in progress will be shown.

Strummer, Gunter (Institut fur Hohlenforschung, Messeplatz 1/10, A-1070, Wien, Austria). "Koordinatengebundene Teilblatter zur Grossmasstabigen Darstellung von HonhlensystememIdee und derzeitige Realisierung," pp. 308-311 of Volume 2 of Proceedings.

Abstract: The paper describes the sytem of dividing maps of giant cave systems into sheets with the same map-sections. The new sections are now fixed to the rectangular Guass-Krugercoordinates. By this way, a network of "Subterranean Atlas" over great mountain areas is possible.

For this purpose, a lot of geodetic work was done by the "Institut fur Hohlenforschung" in Vienna, and the first Austrian cave systems are now drawn in the new system. The paper gives a view of the present position.

[Editor's Note: Rich's report arrived just a little too late for the last issue. See also: Bob Thrun, "9th ICS," C&T vol 4:1, Summer 1986, p. 15.]

A Neoprene Suunto Case

by Carol Vesely

Goleta, California

A number of Western cavers have built cases for their Suunto instruments. The advantages to such a case are: (1) It provides your compass with protection from bumps and scratches while surveying and in your pack; (2) It is more rugged and better suited to the cave environment than the cases which come with the compasses; (3) It's easy to use and to clean. However it is not meant to be waterproof.

I don't know who originally came up with the idea, but almost everyone builds their compass case a little differently. Mine is built to hold both the compass and the clinometer which I have taped together back-to-back. To make my case, I followed these steps:

1) Cut a piece of neoprene into a rectangle using the compasses to roughly judge the size: about 1.5 inches wider than the instruments and about 3 times as long.
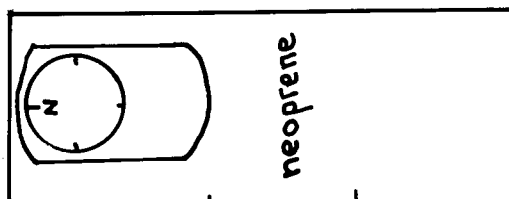
2) Next, fold the neoprene around the compasses lengthwise and mark it at points A and B as shown .

3) Then glue the first side seam together by folding at point B and matching A and A'.
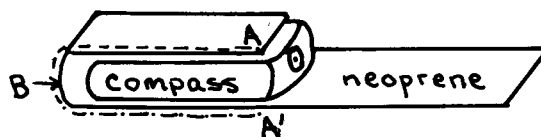
4) When this dries, slip the instruments into the L-shaped pocket and mark where the other side seam should go, trimming off any excess width to be sure that the instruments fit snugly.

5) Next, glue this side seam together, leaving a small hole at the corner where the seam folds over (point B) to put the neck cord through.

6) The remainder of the neoprene folds over the end as a flap. Glue or sew some velcro on the flap to keep it closed.

7) (Optional) You may also want to add a few stitches to reinforce the seams at the edges.

With this design the cord on the instruments can be passed through the hole in the case allowing you to carry then around your neck while surveying. When you need to take a reading, you simply slip the instruments out of the case. You don't need to take them off of your neck, and the case remains on the cord so that you won't lose it. Because it is so easy to use, the instruments can be slipped back into their case after every shot for maximum protection.

There are other variations on this design. One is to make a smaller open-ended case without a flap. Another is to attach a neoprene loop to the case and slip the flap under the loop to close it, instead of using velcro.

Cave Mapping System

Version 4.3

by Steve Peerman

Las Cruces, New Mexico

The CAVE MAPPING SYSTEM (CMS) is an integrated package of Cave Survey Data routines developed for the Apple IIe (with an Extended Memory 80 column card) or an Apple IIc. Since it is written in Apple Pascal Version 2.1, it must have 128K of memory space and will consequently not run on an Apple II+. (An Apple II+ also does not have all the necessary keys.)

CMS Version 4.3 has many important features. It also has many important differences from earlier versions of the program. Three main differences are worth noting. First, it is not necessary to remember what every file is called anymore. Each time one wishes to get a file from memory, a list of all the files is displayed. Also when it is appropriate to choose more than one file at a time it is a fairly simple matter. Second, many sections of the Data Entry routines and other option selection routines have been made screen oriented. That is, the user may enter the data on the screen in whichever order he wishes, move around the screen by using the arrow keys, and end the process by typing the ESC key. Third, the screen dump routine (that prints the graphics) has been improved and is somewhat faster.

Basically CMS consists of three general types of routines. One type of option is that involved with Data Entry. Another option section is composed of routines that do Data Modification. The final series of options deal with Data Display.

Data Entry

The first type, Data Entry, allows the user to enter raw survey data to be saved in a data file. The user is asked for a data file name, and then prompted for the items to be put in the file. The program allows the user to imbed comments before any line of data. The data that is saved consists of the previous and present station; distance, azimuth, and inclination from the previous to the present station; and the distance from the present station to the left wall, right wall, floor and ceiling.

NUM	STA1	STA2	DIST	AZI	ELEV	X	Y	Z	LW	RW	FL	CL
ANTHONY GAP CAVE												
SURVEYED WITH SUUNTO AND TAPE - JAN. 12, 1985												
STEVE PEERMAN, BOOK, TAPE; JEFF LORY, INSTRUMENTS												
0	A0	A0	0.000	0.0	0.0	0.00	0.00	0.00	0.0	0.0	0.0	0.0
1	A0	A1	1.398	310.0	-90.0	0.00	-0.00	-1.39	0.5	2.0	1.5	1.3
2	A1	A2	4.300	311.0	-28.0	-2.07	2.49	-3.41	2.5	0.6	1.7	1.5
3	A2	A3	4.450	283.0	-41.0	-6.14	3.25	-4.33	2.0	1.0	0.6	0.2
4	A3	A4	5.960	260.0	-19.0	-11.71	3.05	-8.25	0.3	0.8	0.3	0.2
5	A4	A5	4.590	270.0	-5.0	-16.29	3.05	-8.65	0.0	2.0	0.2	0.4
6	A5	A6	3.486	319.0	-7.0	-18.55	5.46	-9.07	0.2	0.6	0.1	0.2
7	A6	A7	6.760	332.0	1.0	-21.72	11.63	-8.96	5.0	0.2	1.0	1.0
8	A7	A8	4.430	278.0	3.0	-26.11	12.24	-8.72	3.0	2.5	1.5	0.0
9	A8	A9	6.030	308.0	-29.0	-30.26	15.49	-11.65	0.6	0.7	0.8	0.3
10	A9	A10	6.330	300.0	-6.0	-35.71	18.64	-12.31	4.0	8.0	0.6	1.0
The A survey from A10 to A10* forms a loop around the "big room".												
11	A10	A11	4.705	263.2	4.9	0.00	0.00	0.00	1.5	1.0	3.0	0.3
12	A11	A12	3.791	310.2	-4.3	-43.25	20.53	-12.17	2.0	10.0	2.0	1.0
13	A12	A13	5.888	339.3	4.1	-45.33	26.02	-11.76	1.5	5.0	2.0	1.0
14	A13	A14	5.894	337.3	-13.9	-47.53	31.30	-13.18	2.0	5.0	3.1	1.0
15	A14	B1	3.180	290.0	-90.0	-47.53	31.30	-16.36	2.0	0.2	0.0	4.0
16	B1	B2	1.500	299.0	-18.0	-48.78	31.99	-16.82	0.4	0.4	0.3	0.0
17	B2	B3	2.830	346.0	-16.0	-49.44	34.63	-17.60	0.2	0.5	0.1	0.3
18	B3	B4	3.620	5.0	1.0	-49.12	38.24	-17.54	0.0	0.8	0.4	0.4
19	B4	B5	8.700	24.0	1.0	-45.58	46.18	-17.39	0.3	0.3	0.6	0.0
20	A14	A15	7.127	115.5	4.4	-41.12	28.24	-12.63	5.0	10.0	1.6	1.0
21	A15	A16	5.620	150.7	2.1	-38.37	23.34	-12.43	8.0	9.0	1.4	3.0
22	A16	C1	10.120	29.0	-8.0	-33.51	32.11	-13.84	2.0	0.5	0.5	1.0
23	A16	A17	5.086	69.8	-8.0	-33.64	25.08	-13.14	5.0	7.0	1.8	2.0
24	A17	A18	4.282	100.8	18.8	-32.17	21.30	-11.76	2.0	10.0	1.0	1.0
25	A18	A18*	4.460	233.1	-7.1	35.71	18.64	-12.31	5.0	10.0	0.6	1.0

If desired, the user may omit the passage dimension data (the program will save a value of 0 for each one). The user may also choose to enter backsight, azimuth and inclination values. If so, the program will flag backsight data that is more than 5 degrees off what it should be compared to the foresight data and it will automatically average the foresight and backsight data and record that data. The stations may be any combination of five or less non-blank letters or numbers. The station names in each file should form a connected set. That is, any previous station referred to (except for the initial station) must have been the present station somewhere beforehand in that file.

The distance and passage dimension data may be entered in any of three forms: meters,

decimal feet (feet and tenths), or feet and inches. The program will store the data in either meter or decimal feet form. Feet and inches will automatically be converted to whichever other form is chosen. (If you are wondering, 6 feet 11 inches would be typed in as 6.11 and 4 feet 5 inches would be typed in as 4.05.) The azimuth may be entered as a bearing (N30W for example) but it will be converted and saved as an azimuth. The elevation is taken as positive or negative degrees. No other choice is allowed. The user may also have the input data corrected for non-random errors present, such as compasses that are off by a few degrees or tapes that have stretched by a few percent, etc. Another Data Entry option is to add stations to an already existing data file.

In the Data Entry options, as with the rest of the program, inappropriate or nonsensical responses to prompts are ignored or rejected without loss of data. At almost every point in the program, typing the (ESC) key will nondestructively take the user back to a command level. This provision allows the user to get out of a routine that does not appear to be doing what he wants it to.

Data Modification

The Data Modification Series is quite extensive. The most important modification that is done to the raw data is that the X, Y and Z coordinates of each station can be calculated. When this is done the user is asked to give the coordinates of the initial station of the file. These initial coordinates need not be 0,0,0. The other coordinates in the file will then be calculated with respect to the coordinates that the user entered.

The next most important section of the Data Modification series is the loop closure routine. This is perhaps one of the most powerful portions of the whole program. In this section the user is prompted for those stations in the file that are parts of the loop that is to be closed. Then the user must enter the amount of change in the X, Y, and Z coordinates of the last station of the loop. Then the user is given a chance to weight the correction factor for the distance, azimuth, and elevation data items. (Since distance data is usually assumed to be much more correct it is weighted heavier than the other two.) The program then calculates the amount change of each of these items for each station in the loop so as to minimize the total amount of change and spread it appropriately across each item. The algorithm for the closure routine comes from an article in the December 1982 Newsletter of the Computer Applications Section of the NSS by Neil Smith. ["Simultaneous Multiple Loop Closures- A Computer Program." *CAS Newsletter* #9, pp. 11-21. This is a reprint of an Australian article article published in 1979 <--Ed.]

The program displays the amount of the corrections, along with the old and new distance, azimuth, and inclination data for each station in the loop. The user may then save a new file with the corrected items replacing the old ones, or he may choose to try different weighting factors and try the whole process again. The original file with the uncorrected loop in it is not destroyed.
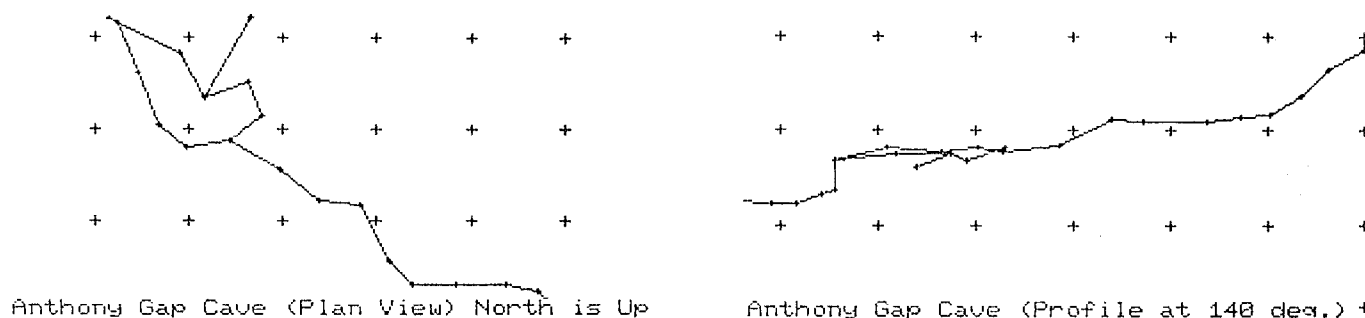
Data Display

There are several Data Display options. First, the user may display the contents of any data file on the data disk. But the most significant Data Display Option is the one that allows the user to read the X, Y, and Z coordinates from any number of data files and display various things based upon the data that now resides in memory.

The kinds of things that can be displayed are:

Line Maps (both plan and profile)
Data summaries;
Rose charts showing shot direction
 distributions;
Distances between stations.

When displaying line maps, several options are available. The user may choose to display the entire set of data that has been read into memory or only the stations between two other stations. The program will automatically center the map on the screen or the map may be centered on any coordinates the user chooses. If the user chooses to display a plan map, he may also choose to rotate the displayed map from -90 to +90 degrees. If the user chooses a profile map, he must choose the angle along which the profile is to be shown. In either case, the user can choose a scale, or the program will fill the available space.

Anthony Gap Cave (Plan View) North is Up

Anthony Gap Cave (Profile at 140 deg.)

The user may choose to have the stations labelled or not; he may also choose whether or not to have an array of crosses displayed on the map to show the scale.

The data summary includes the total survey line length, horizontal projection length, highest and lowest stations, stations farthest East, West, South, and North, etc.

The rose chart shows the distributions of survey line directions. It will very quickly show the user if a cave is joint controlled and at which angles the joints lie.

Anthony Gap Cave

Finally, the user may choose to find the distance between any two stations, perhaps to see how close a loop is to closing or to see how far apart two stations really are.

The maps and rose charts and of course the files of survey data may be printed out at the users option. The graphics printing procedure is designed to work with an Apple Imagewriter Printer. It should also work with a C. Itoh 8510 printer.

The best way to see how the CAVE MAPPING SYSTEM program works is to use it. It is designed to be "user-friendly" and self-explanatory. It is not, however, perfect. There remain a few "bugs" in the program. Some I know about- hopefully not many more exist. The bugs that I am aware of are not serious and should not hinder the user of the program.

The CAVE MAPPING SYSTEM is available from Steve Peerman, 1757 Defiance Road, Las Cruces, NM 88001 for a price of $25.00. This price includes one master disk, one user's manual and one blank formatted data disk. Additional blank formatted data disks are available for $3.00. There will be an additional $2.00 postage and handling charge for any items to be mailed. Should any master disk be damaged a new one can be obtained for $5.00 by returning the old one. New versions of CMS (as they become available) will cost $10.00 to anyone who has already purchased a copy from me.

[from a handout at the Computer Applications
Session, Convention '86.]

Book Review

Courbon, Paul and Claude Chabert. (1986) *Atlas des Grandes Cavites Mondiales.* Published by l'Union Internationale de Speleologie and Federation Francaise de Speleologie, 24 x 32 cm., softbound, 255 pages.

In 1977 Chabert compiled a special issue of *Splelunca,* French caving magazine, devoted to the large caves of the world. In 64 pages he listed the longest and deepest caves known at that time. That issue contained no maps. Two years later, Courbon wrote *Atlas des Grands Gouffres du Monde.* That atlas had profile maps of the deepest caves in the world as known at that time, but dealt only with deep caves, not long caves. Now the men have joined forces and published a book giving lists of the longest and deepest caves of the world, as well as maps for many of them. All of these publications are in French.

The first chapter of the atlas contains tables on the deepest caves, longest caves, chronological records of the deepest caves, long submerged caves, caves with passages leading upwards from the entrance, and largest volumes of cave rooms. It also lists the largest known caves in various types of rock including conglomerate, calcareous deposits, granite and gneiss, quartzite, gypsum. lava, and salt. Maps of twenty deep cave pits are included.

Each of the remaining chapters is devoted to a particular continent, although many people would consider North and South America as two continents, and Europe and Asia as one. Each chapter is then divided into countries arranged alphabetically by French spelling of the countries' names. Within each country there are two lists of caves: deepest and longest. Usually several paragraphs are devoted to describing the most significant caves of each category. This might include the history of exploration, connections with small caves, published reports, type of rock, statistics about the cave, and either total depth or length.

The three countries which have the most long caves are the United States, France and Spain with 328, 182 and 69 caves, respectively. The three countries with the most deep caves are France, Spain and Italy with 163, 132 and 94 caves, respectively. The cutoff criteria varied with the country and so these numbers cannot be compared directly. Not all caves are listed by name. For example, in the USA there are 328 caves with mapped lengths of at least 3 kilometers; however, only the 74 caves longer than 10 kilometers are listed. For countries with few long caves the cutoff might be 1 kilometer.

Profile and/or plan maps are given for many of the most significant caves. Most of the maps appear to have been redrawn for this book since the style is a consistently clean format with block letters and minimum clutter. A large number of the maps take up the full page, and there are two fold-out maps.

The table below lists statistics about this atlas and its completeness of coverage. I can think of only a few countries which seem to be missing. I have read of caves in Antarctica, Easter Island and Pitcairn Island (none of which are covered), but I do not know if any of these caves have ever been mapped.

Although I have never studied French, I have spent many hours enjoying the maps and cave lists of *Atlas des Grandes Gouffres Mondiales.* I highly recommend this book to any caver interested in cave maps or the caves beyond his own caving area. <--- Rich Breisch.

[Editor's note: This atlas should be available through *Speleobooks* at this time. The word is that a prominent California cave mapper will be translating it to English.]

Table ▷▷

Breisch... continued

<div align="center">

Summary of Contents of
Atlas des Grandes Cavities Mondiales

</div>

| Chapter No.	Continent	No. Pages	No. Count-ries	No. Deep Caves	No. Long Caves	No. Cave Maps
1	Worldwide	9	----	---	---	20
2	Africa	14	23	23	50	140
3	Americas	41	31	146	524	33
4	Asia	15	27	149	176	8
5	Europe	157	28	762	676	123
6	Oceania	12	12	76	65	9
2 to 6	TOTAL	239	121	1183	1581	181

Computer-Aided Landscape Maps

Looking for some *high-tech* decoration ? Raven Press (34 North Central, Medford, OR 97501) offers 8 computer-plotted "fishnet" representations, enhanced with color, of western US landscapes like the Hawaiian Islands, Mount St. Helens, etc. Printed on heavy paper in 3 to 5 inks, the maps cost $15 to 35, plus shipping. The example below measures 24 by 41.5-inches, is printed with 4 inks, and costs $20. A color brochure with additional ordering information is available on request.
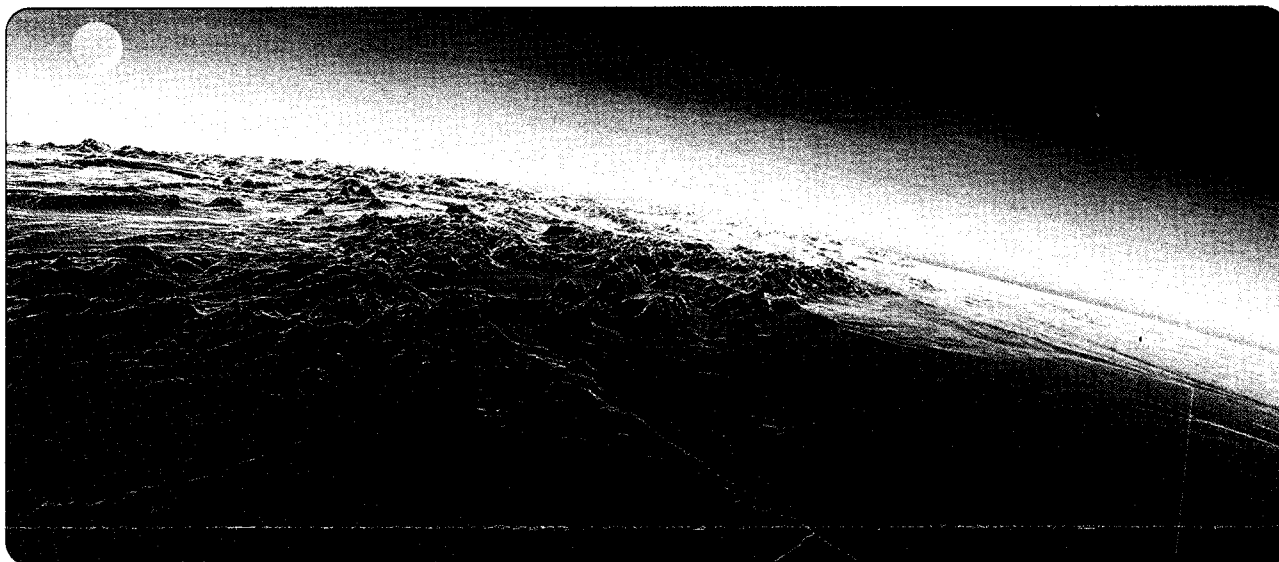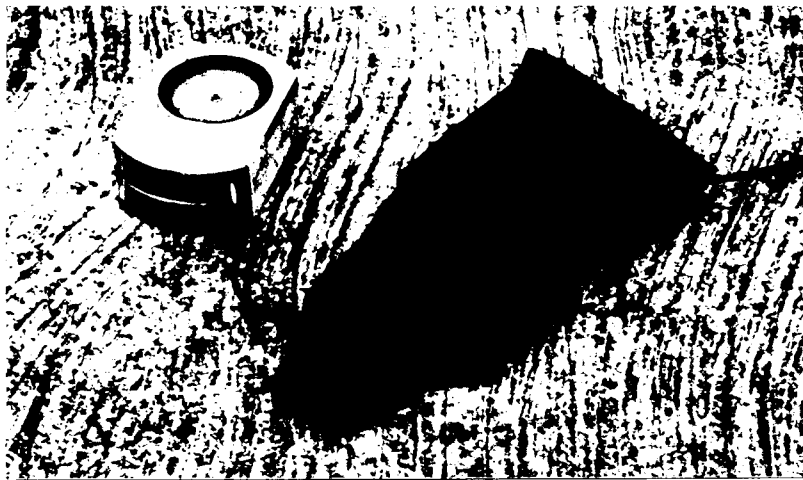
Suunto Protection

Carol Vesely's Suunto case. Instructions for building this compact easy-open cover appear in this issue. Save your old wetsuits for this and other construction projects.
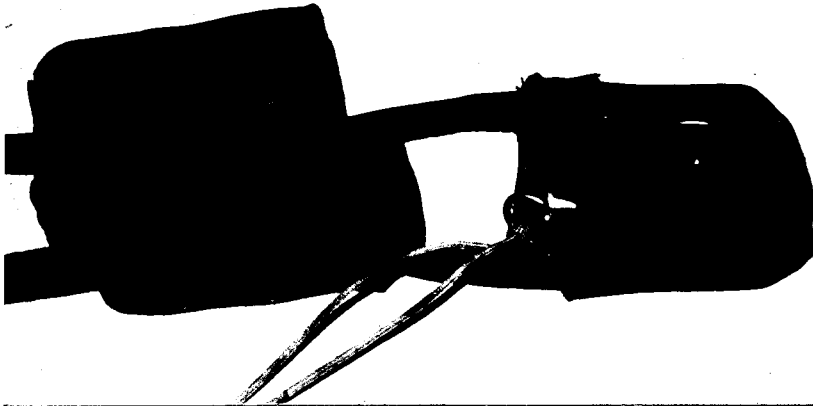
Doug Carroll (Paducah, KY) built this prototype two-piece case out of leather and vinyl. After use, the part on the left slides down to give the instruments shelter from drips and mud. The final version will be constructed of vinyl or neoprene.

Ron Simmons (Charlottesville, VA) carries more than his lunch in a 1-cup "Serving Saver." The container remains watertight to a couple of feet, has room for a wiping rag, and is moderately crushproof if packed carefully. Available for under $1.00 whereever fine plastic ware is sold.

Photos by J. Ganter

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Cave Mapping with the Bighorn Project

The re-survey of the Bighorn/Horsethief system has been progressing under a organization known as the Northwest Cave Research Institute. The approach of the Institute has been somewhat unusual: they have aggressively solicited donations of money and equipment from within and outside the caving community, and have relied on heavy advertising to recruit cavers. The following is an excerpt from an article by John Stembel on his experiences at Bighorn '86.

The surveying and inventory of the cave was done in teams of four. One person taking the notes and sketch, one person taking an inventory of notable features, and two folks reading compasses and handling the tape. One thing we did do that I will try to stress on any future survey trips of my own is the taking of back sights. If we disagreed by more than a degree, the shot was reread until the numbers matched up. It takes a little extra time, but the extra accuracy is worth it. The survey stations were reflective orange squares, riveted to the cave (wall, floor or breakdown). Carrying a popriveter, a ball peen hammer, and a hand drill for a week was no fun at all. The hammer was there to make sure that the rivets were securely attached. I never used it the first two days, so I left it out of my pack the rest of the week.

Once our team got used to working with each other, we achieved a steady rhythm for surveying. Not only did we survey a lot of passage, we were very accurate. One loop that we tied into a previous survey was over 900 feet and the error was less than 1 foot.

Stembel's complete article makes interesting reading, and he is quite candid about the problems associated with cavers recruited by open-invitation. He remarks that the 65 foot entrance pit was a "big worry" to most of the participants, and relates several anecdotes of the "What's a Chicken Loop?" type. <--John Ganter.

[The excerpt is from John Stembel, "Caving in the Bighorns," *The Subterranean Sun* (Sligo Grotto, Maryland) vol 16:12, December 1986, p. 6-8. See also the recent, and nicely-illustrated, *NSS News* article by Linda Heslop ("The Bighorn Research Project," January 1987, pp. 4-12), which includes the new map of the cave. An earlier map appears in Hill, Sutherland and Tierney, *Caves of Wyoming,* Bull. 59, Geological Survey of Wyoming, 1976, Fold-Out Sheet 2.]

SACS ADDRESS CHANGE

Effective immediately, **ALL** section correspondence, including dues, address changes, orders of back issues, and items for *Compass & Tape,* should be sent to the chair at his *new* address:

John Ganter
Department of Geography, 302 Walker Bldg.
The Pennsylvania State University
University Park, PA 16802 USA

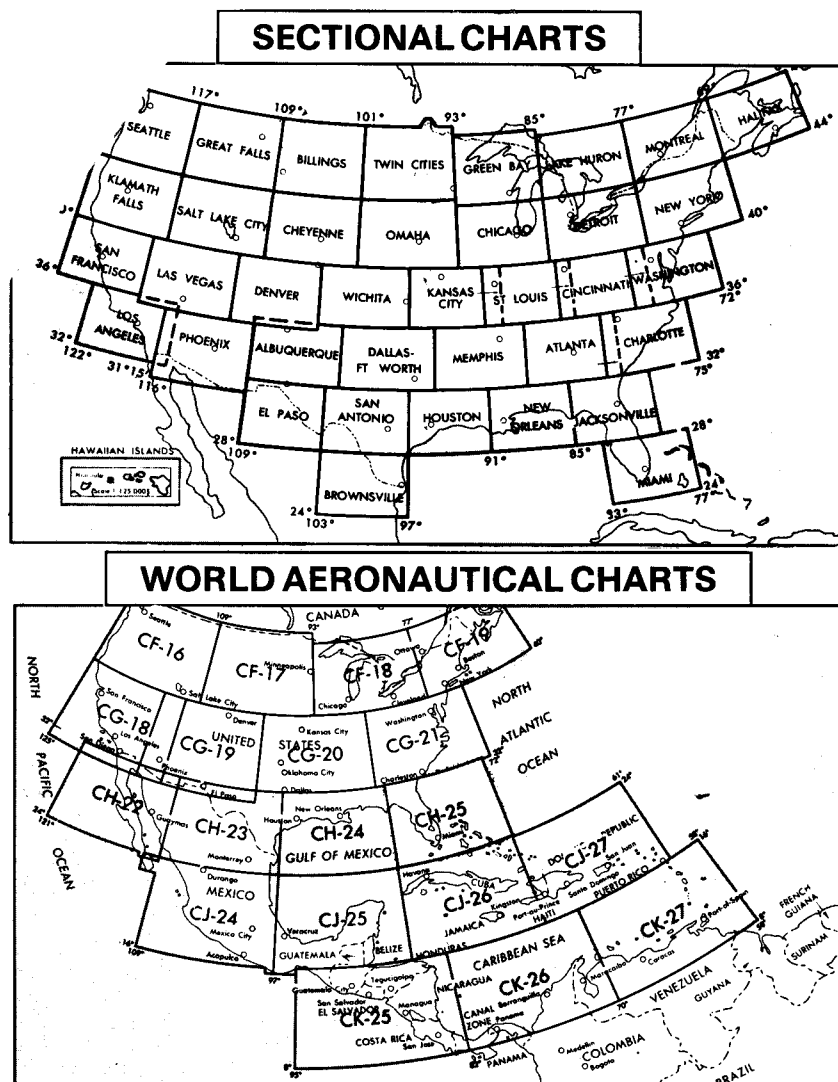H: 814-237-7841 O: 814-865-6421

Sectional Charts
World Aeronautical Charts

Frank Reid

Bloomington, Indiana

When I went to Mexico in 1974, we took along some World Aeronautical Charts. At 1:1,000,000 they are twice the scale of Sectional Charts (1:500,000), but still a great supplement to road maps. They're especially good for driving Out West, where they show all roads. An altimeter becomes a navigation instrument because you can calibrate it as you pass radio towers, and get a fix where a long desolate road crosses a map contour. Sectional charts contain lots of information which is useful to cavers, e.g. up-to-date isogonic lines (lines of equal magnetic declination). They're useful in cave rescue if helicopter ambulances are involved-- you can specify locations in lat/lon or VOR-DME. (However, doing so is likely to bring a horde of TV-News helicopters down on you!) Sectionals are reprinted every 6 months, at which time the previous edition becomes obsolete for air navigation, but they're still fine for other uses, and you can often get old ones free.

These charts can be mail-ordered from Sporty's Pilot Shop, Clermont Airport. Batavia, Ohio 45103-9747. 1-800-LIFTOFF. They cost $3.50 each, with a standard shipping charge of $3.50 for any order. Like the widely-circulated "Sporty's Tool Shop" catalog, "Sporty's Pilot Shop" has an amazing selection of gadgets and specialized equipment for sale: their catalogs are free on request.

SECTIONAL CHARTS

WORLD AERONAUTICAL CHARTS

Survey & Cartography Section of the
National Speleological Society

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University Park, PA 16802

1987 SACS SESSION ANNOUNCEMENT

The Survey & Cartography Section (SACS) of the National Speleological Society (NSS) will be holding a technical session at the 1987 NSS Convention to be held in Sault Ste Marie. Michigan, during the week of August 3-7. The Section would like to solicit presentations to be given at this meeting on any subject related to cave survey and cartography.

In addition to general papers, we are soliciting papers dealing with regional and large cave projects. The session will culminate in a round-table discussion on this area. The Section is particularly interested in papers dealing with:

* survey and cartography organizational aspects
* database applications
* archiving and organization of survey notes
* computer drafting applications
* cave map sectioning techniques
* uniform style drafting techniques
* telecommunication of survey data
* reformatting and integration of survey data
* large database techniques (10,000+ survey stations)
* topographic map overlay techniques
* team map drafting techniques

Other papers of potential interest to regional and large cave projects are also solicited. Please send a letter of intent with a brief description of the proposed presentation to:

Dan Crowl
Vice-Chair, Survey & Cartography Section
1170 Torrey Road
Grosse Pointe Woods, MI 48236
(313) 881-5254

*** *LETTER OF INTENT DUE NO LATER THAN APRIL 1, 1987* ***

The Map Catalog

Agricultural maps, bicycle maps, energy maps, tide maps, utilities maps and many more maps (but no cave maps) are listed and explained in **The Map Catalog: Every Kind of Map and Chart on Earth and Even Some Above It** (Joel Makower, Ed. Tilde Press/Vintage Books, 1986, 252 pgs.) The **Catalog** is actually more of a "guidebook" pointing the way to unusual types of maps, government agencies, libraries, atlases and dealers. Equally useful are sources of map aids and thematic cartography packages for microcomputers. Numerous illustrations make this treasure-trove of contacts and addresses interesting reading. (Spotted by Richard Zopf, Steve Morgan.)

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