

# WISCONSIN MAPPING BULLETIN

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Editor

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State Cartographer

STATE  
CARTOGRAPHER'S  
OFFICE

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Est. 1973

## TRANSPORTATION BASE MAP

The Wis. Department of Transportation proposes to scan U.S. Geological Survey 1:100,000-scale maps by computer to produce new county highway base maps. The Brown County 1:100,000-scale map served as a pilot study. DOT had the map's line work scanned and put into a raster file. Computer software then turned the raster data into vectors which were subsequently plotted. Approximately 600 staff days a year could be saved by the automated system versus manual drafting. Current inhouse digitizing costs for new base maps for all the counties would be \$153,600 (10 days/map x 48 maps\* = 480 days; 480 days x 8 hours x \$40 station/operator). In comparison a Computer Assisted Drafting and Design (CADD) system would cost \$48,000 (48 maps x \$1,000/map). The versatility of the CADD system allows up to 63 layers of information to be manipulated.

The advantages of an automated map base are many. A wide variety of scales and levels of information are available to the Department and many other users. This facilitates creating new maps, as well as reducing duplication in map development. Automation greatly reduces time spent on revision. The DOT anticipates the interchange of map data with other state agencies as they adopt DOT's base maps.

More information on DOT's program is available from Ron Schaefer, Division of Highways/Transportation Facilities, P.O. Box 7917, 4802 Sheboygan Ave., Madison, WI 53707, phone 608/266-3896.

\*Wisconsin is covered by 48 1:100,000, 30' x 1° U.S.G.S. quadrangles.

## ILLINOIS MAPPING COMMITTEE

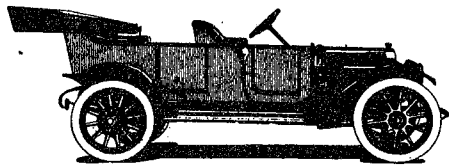
Tom Carlsen, Supervisor of Special Services Department of Transportation-Madison, and Art Ziegler, State Cartographer, are scheduled to make a presentation to the Illinois State Mapping Advisory Committee on Friday, March 1, 1985. The Illinois Committee is the body that recommends that state's participation in cooperative programs with the U.S. Geological Survey.

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## ILLINOIS MAPPING COM., continued

The principal topic of the meeting will be the 1:100,000-scale mapping program. The State Cartographer will present Wisconsin's current mapping status in the program, both in the 30 minute by 1 degree format and the county series. Also the plans of the Wisconsin Topographic Mapping Committee for future state production will be explained. The Bureau of Census will present their plans for the 1:100,000-scale mapping for the 1990 census. The State Cartographer will report on the Census's operation "Tiger" in the April Bulletin.

A meeting of the Wisconsin Topographic Mapping Committee with the U.S. Geological Survey staff is scheduled prior to the Illinois presentation. Tom Carlsen of the DOT will present the state's plan for digitization and automation of the 1:100,000-scale series. He will explain the potential products and the possible economic savings of the program. The April Bulletin will carry a report of the meeting.



## SURVEYORS' INSTITUTE 1985

Art Ziegler, State Cartographer travelled to Stevens Point to exhibit SCO services and products at the 36th Annual Wisconsin Society of Land Surveyors' Institute at Stevens Point, WI on January 23 and 24, 1985. Over 225 registrants attended the Institute which was said to be one of their most successful ever. The State Cartographer's Office's display was well received and generated many comments and questions.

Arden "Sandy" Sandsnes of Madison turned over the WSLS presidency to Les Van Horn of Green Bay. One of the most interesting displays at the Institute was the collection of antique instruments and surveying artifacts of Karl McConnell which filled the center of the exhibition hall.

## POINTS AND LINES

### DUNN IS DONE

The DUNN County Cartographic Catalog just returned from the printer. The 103-page publication is the 35th of the series.

CRAWFORD County is expected in June, to be followed by VERNON County in September.

### PRECAMBRIAN MAPPING

Geologists with the Wis. Geological Survey and the U.S. Geological Survey met in Wausau, Wisconsin in August to discuss coordination of Precambrian bedrock mapping. The W.G.S. is conducting a regional reconnaissance mapping program at a scale of 1:250,000 (see New Maps). An agreement was made to coordinate efforts toward the eventual production of a regional bedrock map at a scale of 1:500,000. W.G.S. is scheduled to complete its mapping by fall of 1985, at which time U.S.G.S. preparation of the regional map will begin.

### PUBLIC LAND SURVEY SYSTEM

May 20, 1985, will be in the 200th anniversary of the Land Ordinance of 1785, which established the rectangular public land survey, the United States' unique contribution to the art of land surveying. (see Events, Past and Future)

### U.S. IN POSTCARDS

Bob Lazar (a former SCO employee and now with the U.S. Geological Survey) was kind enough to send your Editor two Alabama postcards. This brought our search for a postcard from every state to an end. UW-Madison Map Librarian Mary Galneder and this Editor spent an evening trying to put the postcards widely varying scales in a semblance of the United States. The result is on view in the Map Library, 310 Science Hall.

(continued on next page)

## POINTS AND LINES, continued

### MAPS AND MINDS

Michael Edmonds of the State Historical Society announced a change in the free map talks accompanying the exhibit Maps and Minds (see v. 10, no. 4, p. 4).

The February 26th presentation will be given by Prof. Barbara Battenfield of the UW-Madison Geography Department. Her topic is "Representing the Terrain: From Hachures to Fractals." All talks will be in the Society's Sellery Room from 4 to 5 p.m.

### SURVEYING FOR 52 YEARS

The Wisconsin Counties' Surveyors Association recently honored Lloyd Jensen for an unprecedented 52-year term as the county surveyor of Walworth County. He was first elected county surveyor in 1932, and has been the successful candidate in each of the 26 surveyor elections since then.

### MAP FESTIVAL CANCELLED

The Executive Board of the Capital Area Map Alliance has decided to cancel the Map festival currently scheduled for March 20-24, 1985 at the Washington, D.C. Convention Center, primarily due to lack of funds. The CAMA Board will be meeting in January to discuss the future of CAMA and the options available for planning a similar but scaled-down version of the original festival, to take place some other time.

With the exception of contributions from the U.S. Geological Survey, the Map Store and some personal donations, CAMA was unsuccessful in raising funds in either the private or public sector. But, there still seems to be strong support for the idea of a map festival. As such, CAMA will continue to look for an appropriate way to get the festival produced.

### 11 YEARS OLD

1985 marks the beginning of the eleventh volume of the Wisconsin Mapping Bulletin. The last issue (October) was a record breaking 26-pages long and proved to be quite expensive to print and distribute. We plan to keep each of the next four issues at 20 or less pages, without depriving our readers of news and information.

### GREAT LAKES IN 3-D

Cartographics offers a Mapcraft kit which gives step-by-step explanations of how to fashion a 3-dimensional model of the Great Lakes. This particular kit is listed as "intricate", taking over 6 hours to put together its 9 layers. It's recommended for those 16 years old and over. The Great Lakes is one of 7 kits available. The 5½" x 7" kit sells for \$8.00, with \$2.50 postage for each order. To order the Great Lakes model or for information on the other kits, contact Cartographics, 1849 SW 58th Street, Portland, OR 97221.

### IN THE DARK

Howard Deller often gives lectures on all aspects of cartography as well as history and geography through maps. Howard, a Literature Analyst with the American Geographical Society Collection at the UW-Milwaukee Library, recently gave a new lecture on "The Mapmaker's Art" to the UW-Milwaukee Guild for Learning in Retirement. As it turned out, it was an illustrated lecture without illustrations (a university generator blew-up just as he was being introduced). He was able to talk for over an hour in the dark and without slides. At the end of his talk, the President of the Guild presented him with a coffee mug with the organization's logo on it. The ceremony also took place in the dark since the electrical failure lasted about two hours (and affected half the UW-M campus).

Howard reports that up to that incident, the only other last minute challenge he'd faced as a lecturer occurred last year when he showed up at the Milwaukee Jewish Community Center to give a talk to senior citizens and found out that 75 percent did not speak English. (They were recently arrived Russian emigres.) Fortunately the electricity worked and he was able to show slides. (He also gestured a lot.)

Luckily, these unfortunate circumstances have happened rarely in the last two years in which Howard has spoken to over 70 community groups. You can reach Howard Deller at the AGS Collection, UW-M Library, P.O. Box 399, Milwaukee, WI 53201, phone 414/963-6282.

## W.G.S. MAP AND POSTAGE INCREASES

The Wisconsin Geological and Natural History Survey (WGS) has increased its map prices in accordance with the U.S. Geological Survey's increases effective January 1, 1985.

### MAP INCREASES

Standard quadrangles (15-minute, 1:62,500 scale or 7.5-minute, 1:24,000).....	\$2.50
U.S. series topographic maps at the scale of 1:250,000.....	\$4.00
Wis. State Base map at the scale of 1:1,000,000.....	\$2.00
Wis. State Base map at the scale of 1:500,000.....	\$3.10
Wis. State Topographic Base map at the scale of 1:500,000.....	\$4.00
Wis. Shaded Relief map at the scale of 1:500,000.....	\$4.00

### POSTAL INCREASES

(3rd class U.S. Postage--U.S. & Canada Only)

For 1st Class Mailing, contact the M.A.P.S. Office, W.G.S., 1815 University Ave., Madison, WI 53706, 608/263-7389.

### LOCATION ADDRESS

TOTAL AMOUNT OF PURCHASE*	WI	IL, MI, MN, IN, IO,	ALL OTHER U.S. & CANADA
\$ .00 - \$ 3.00	\$0.85	\$ 0.85	\$ 0.85
3.01 - 5.00	1.80	1.85	2.15
5.01 - 10.00	1.90	2.00	2.50
10.01 - 20.00	2.00	2.15	2.75
20.01 - 30.00	2.40	2.75	3.75
30.01 - 40.00	2.65	3.00	4.30
more than 40.00	6% of purchase	7% of purchase	10% of purchase

\*Wisconsin residents add 5% for state sales tax.

### MAP CURIOSITY

Do you know the name of the only 7.5 minute topo quad of the 1,154 quadrangles covering Wisconsin which starts with a "Q"?

answer: Go Fish. The name of this quad appears somewhere in this Bulletin.

# NEW U.S. GEOLOGICAL SURVEY PRODUCTION

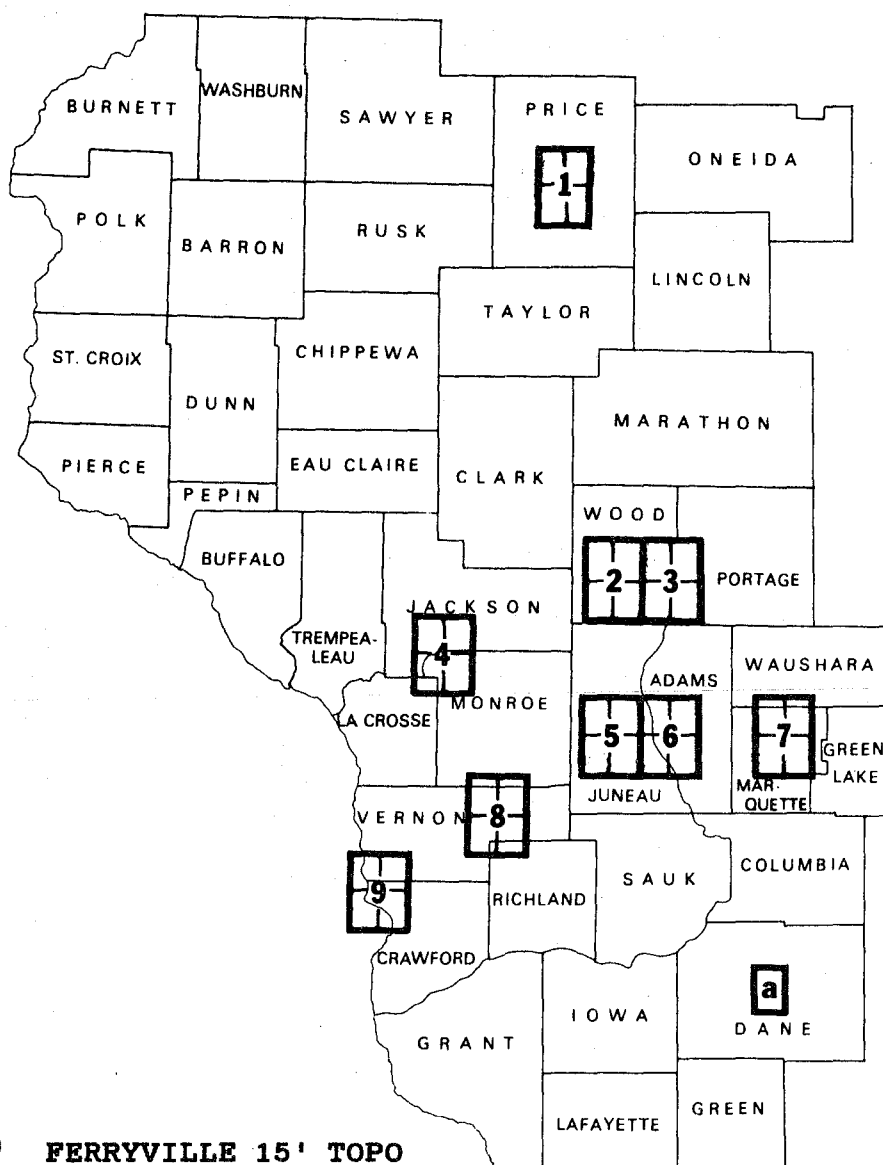
These newly published (underlined below) 7½' topographic quadrangle maps (1:24:000) are listed by their location on the superseded 15' topographic map of the area. They are available from the Wisconsin Geological Survey, 1815 University Ave., Madison, WI 53706, 608/263-7389. Topographic quadrangles are \$2.50 each, plus tax, postage and handling.

- 1 PHILLIPS 15' TOPO**  
NE¼ none  
NW¼ Phillips '84  
SW¼ none  
SE¼ none
- 2 PITTSVILLE 15' TOPO**  
NE¼ none  
NW¼ none  
SW¼ Quail Point Flowage '84  
SE¼ none
- 3 WISCONSIN RAPIDS 15' TOPO**  
NE¼ none  
NW¼ Vesper '84  
SW¼ none  
SE¼ none
- 4 MELROSE 15' TOPO**  
NE¼ Shamrock '83  
NW¼ Melrose '83  
SW¼ Four Corners '83  
SE¼ Cataract '83
- 5 MAUSTON 15' TOPO**  
NE¼ Kelly '83  
NW¼ New Lisbon North '83  
SW¼ New Lisbon South '83  
SE¼ Mauston '83
- 6 ADAMS 15' TOPO**  
NE¼ Adams '83  
NW¼ Dellwood '83  
SW¼ Round Bluff '83  
SE¼ Easton '83
- 7 MONTELLO 15' TOPO**  
NE¼ none  
NW¼ none  
SW¼ none  
SE¼ Montello '84
- 8 LAFARGE 15' TOPO**  
NE¼ Ontario '83  
NW¼ Dell '83  
SW¼ Lafarge '83  
SE¼ West Lima '83

- 9 FERRYVILLE 15' TOPO**  
NE¼ Retreat '83  
NW¼ DeSoto '83  
SW¼ Lansing, IA, WI '83  
SE¼ Ferryville '83

## PHOTOREVISED 7½' QUADS

- a** Madison West '59, '74PR, '83PR



Order 7½' quads by name, NOT by the index number or letter used here for location.

## NEW MAPS

### CITY OF MADISON AND VICINITY

A detailed, up-to-date, full color street map of metropolitan Madison was recently released by Milwaukee Map Service. It measures 38" x 42"; folded it's 4 3/4" x 10 3/4". All surrounding cities are included, as well as enlargements of the campus and isthmus areas. Zip code boundaries are clearly marked. It sells for \$4 plus 5% state tax, plus \$2.00 for UPS shipping. Order from Milwaukee Map Service, 4519 W. North Avenue, Milwaukee, WI 53208.

### DANE COUNTY ATLAS

Milwaukee Map Service also recently issued a 68-page atlas of Dane County which includes a separate copy of the City of Madison map mentioned above. The atlas pages measure 9" x 11". Color maps cover all the cities, villages, and townships. The atlas sells for \$12.95, plus 5% state tax. Include \$2.00 for UPS delivery. Order from the address given above.

### MINERAL DISTRIBUTION IN B-HORIZON SOILS

The following four maps are part of the U.S. Geological Survey's Miscellaneous Investigation Series. Each mineral distribution is shown by isopleths and symbols on a topographic and simplified geologic base at a scale of 1:250,000. They measure 30" x 39" and sell for \$2.80 each. They can be purchased from the Eastern Distribution Branch, U.S.G.S., 1200 South Eads Street, Arlington, VA 22202. Include the series number when ordering.

I-1360-I. Chromium distribution in B-horizon soils, Iron River 1° by 2° Quadrangle, Michigan and Wisconsin, by H.V. Alminas, J.D. Hoffman, and R.T. Hopkins. 1984.

I-1360-J. Cobalt distribution in B-horizon soils, Iron River 1° by 2° Quadrangle, Michigan and Wisconsin, by J.D. Hoffman, H.V. Alminas, and R.T. Hopkins. 1984.

I-1360-K. Nickel distribution in B-horizon soils, Iron River 1° by 2° Quadrangle, Michigan and Wisconsin, by J.D. Hoffman, H.V. Alminas, and R.T. Hopkins. 1984.

I-1360-M. Molybdenum distribution in B-horizon soils, Iron River 1° by 2° Quadrangle, Michigan and Wisconsin, by R.T. Hopkins, H.V. Alminas, and J.D. Hoffman. 1984.

### FORTHCOMING FROM THE WGS

Mike Czechanski, cartographer with the Wisconsin Geological Survey, reports several maps are in work. For up-to-date information, contact him at 1815 University Ave., Madison, WI 53706, telephone 608/263-7393. The Spring Bulletin will list more complete information, including prices. The WGS will soon issue a new list of publications, including an index for the first time.

A paper version of the popular Madison Lakes map will be available in mid-February. It is identical to the one printed on tear and water resistant Tyvek. The WGS will sell it for less than the water resistant copy.

Currently at press is Bedrock Geology of Wisconsin, Regional Map Series NE Sheet. Prepared by J.K. Greenburg and B.A. Brown at a scale of 1:250,000, the map is in full color and measures 28" x 38". Regional Map Series #84-2 will be available in mid-February.

Also at press is Information Circular 46, Pleistocene Geology of the Superior Region, Wisconsin by Lee Clayton. The publication will include a folded map which is the Superior Sheet of the Regional Map Series described above. The map will also be sold separately. Look for it in mid-March.

### NIGHT VIEW U.S.A.

The U.S. Census Bureau has published a map with the mundane title of 1980 Population Distribution in the United States which doesn't do it justice. The 30" x 40" map has a very dark blue background with population densities shown by various sized white dots. It looks like a view from a satellite at night with city lights shining across the country. Order the map by name and numbers (Census GE-70, #4 and Superintendent of Documents #003-024-05651-8) for \$1.25 from The Government Printing Office, Washington, D.C. 20402.

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## EVENTS, PAST AND FUTURE

NICOLET TILL NOW - A HISTORY OF GREEN BAY AND THE GREAT LAKES THROUGH MAPS, February 21 - April 11

Mark Steuer, cartographer with the Green Bay-Brown County Planning Commission, will lead an eight-week course on the history and geography of the Green Bay region through maps, charts, air photos, and satellite imagery. Sponsored by the UW-Extension out of the UW-Green Bay Lifelong Learning Program, the course will be held from 7-9 p.m. at the Neville Public Museum. The fee is \$35 single; \$63 for two. Contact Mark at 414/497-3633 for more information.

AUTOCARTO 7: DIGITAL REPRESENTATIONS OF SPATIAL KNOWLEDGE, March 11-14

The Seventh International Symposium on Computer-Assisted Cartography will cover topics such as spatial data bases, future developments in hardware and software, softcopy exploitation, standards, government programs, and digital map applications. The Washington, DC Hilton is the conference site. Auto Carto 7 is sponsored by the International Cartographic Association, the American Society of Photogrammetry, and the American Congress on Surveying and Mapping. The latter two are holding their annual conferences concurrently with the Symposium. For more information contact Helen Foreman, 5709 Annamarie Court, Derwood, MD 20855, phone 301/926-3910.

POSITIONING WITH GPS, April 15-19

The First International Symposium on Precise Positioning with the Global Positioning System will be held at the Holiday Inn, Crowne Plaza in Rockville, MD. It is sponsored by the International Union of Geodesy and Geophysics, the Defense Mapping Agency, and the National Geodetic Survey. For more information, write to GPS-1985, White Flint Mall, P.O. Box 2095, Kensington, MD 20895.

POINT OF BEGINNING, April 19

A 200th birthday party for the Public Land Survey System will be held on the shore of Lake Michigan where the Wisconsin baseline begins. The Southern Lake Michigan Section of the American Congress on Surveying and Mapping and the Western Great Lakes Region of the American Society of Photogrammetry will cohost a program of presentations on the PLSS in Wisconsin and Illinois and automated systems, a visit to the point of beginning, a social hour, and a banquet with featured speaker, Prof. Jim Clapp of the UW-Madison's Center for Geographic Analysis. Prof. Clapp will speak on "One Person's View of the Evolution and Future of North American Land Systems".

The Kenosha Holiday Inn on the Harbor will be the meeting location. For more information contact Prof. Dick Dahlberg, ASP-WGLR president, at 815/753-0631 or Prof. Phil Muehrcke, ACSM-SLMS president, at 608/262-3213. Christine Reinhard, 608/262-6850, can also provide details. Non-members are cordially invited to attend. (Anyone wishing to be added to the ACSM-Southern Lake Michigan Section's mailing list should send \$2.00 to Richard Corbett, 334 W. Crystall Street, Mundelein, IL 60060.)

MACHINE PROCESSING OF REMOTELY SENSED DATA, June 25-27

This eleventh international symposium will focus on quantifying global processes with models, sensor systems, and analytical methods. It is sponsored by and held at the Lab for Applications of Remote Sensing at Purdue University. For more information contact D.B. Morrison, Purdue University, LARS, 1291 Cumberland Ave., West Lafayette, IN 47906, phone 317/494-6305.

(continued on next page)

## EVENTS, continued

### CHARTING THE INLAND SEAS: A HISTORY OF LAKE MICHIGAN THROUGH MAPS, July 21 - October 20

The Manitowoc Maritime Museum is planning an exhibit of approximately 40 maps depicting the history of Lake Michigan as shown on antique maps. Mark Steuer of the Green Bay-Brown County Planning Commission is coordinating the map selection. The Museum is located on the Manitowoc River near the harbor, at 809 South 8th Street, Manitowoc, WI 54220. The Museum charges a nominal admission fee of \$1.75 adults, \$1.00 children. Call 414/684-0218 for more information.

### COMPUTERS IN PUBLIC AGENCIES, SHARING SOLUTIONS, July 28 - August 1

The Urban and Regional Information Systems Association (URISA) is holding its 23rd annual conference in Ottawa, Ontario, Canada. Sessions on geographic information systems, land records, microcomputers and natural resources will be held. Contact the URISA Secretariat, 1340 Old Chain Bridge Road, Suite 300, McLean, VA 22101, phone 703/790-1745.

### PLSS AND TOPO MAPPING CELEBRATION, August 23 - 24

During the summer meeting of Wisconsin Society of Land Surveyors (WSLS), two significant events will be celebrated. To honor the 200th anniversary of the Public Land Survey System, the WSLS hopes to set a commemorative monument in the floor of the state capitol rotunda. Why the capitol rotunda? Because Wisconsin's capitol is the only one that sits directly over a PLSS section corner.

Then to observe the completion of the U.S. Geological Survey's 7½' topographic mapping program in the state, the Committee on Topographic Mapping will present the final topo quad to the Governor in a public ceremony. Leading officials from the major federal mapping agencies are expected to attend. More details will follow in the April Bulletin.

### RACING INTO TOMORROW, September 8-13

The fall convention of the American Congress on Surveying and Mapping and the American Society of Photogrammetry will be held in Indianapolis. More information on the program is available from Paul Mausel, Department of Geography and Geology, Indiana State University, Terre Haute, IN 47809, phone 812/232-6311.

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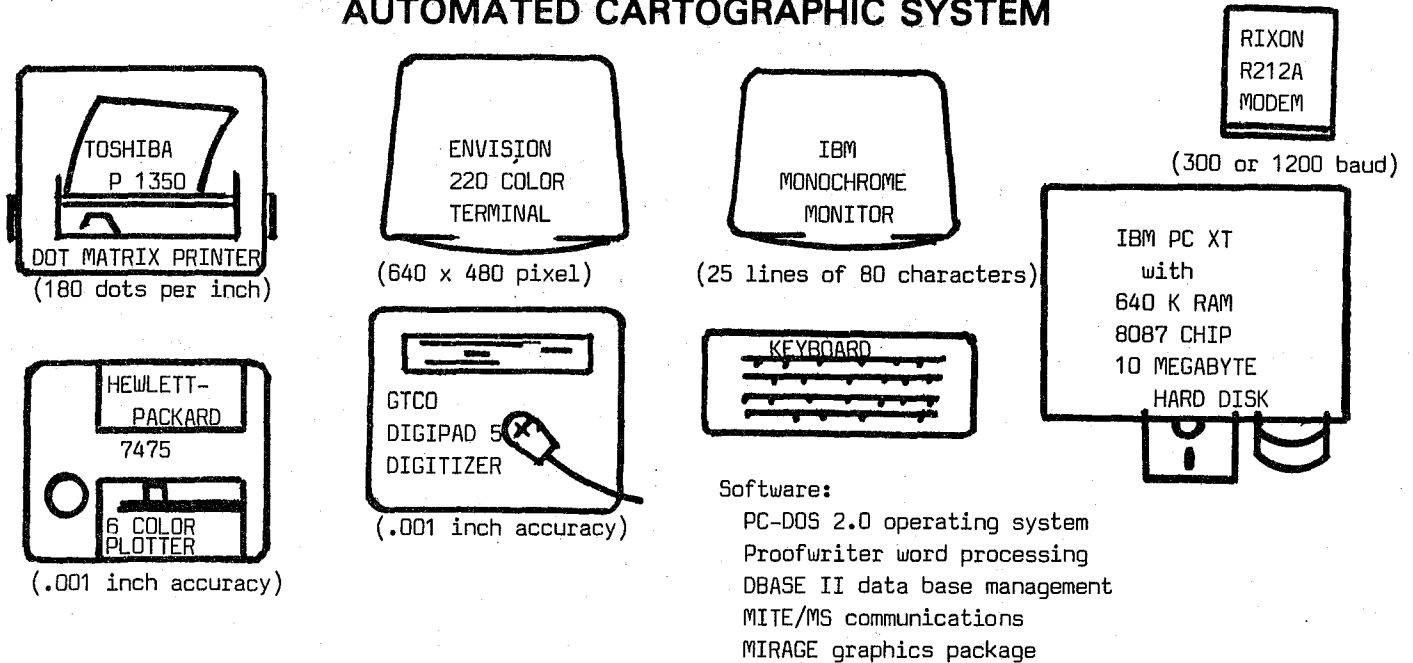
## NEW MAPS, continued

### FEDERAL LANDS AND CLEAN AIR

The American Petroleum Institute has announced the availability of maps depicting federal land systems and Clean Air Act protection areas in the Eastern United States. Three full color maps, approximately three by four feet, locate national parks, forests, wildlife refuges, wilderness areas, preserves, recreation areas, seashores and monuments in each of three regions in the United States. The maps also show military parks, military installations, wild and scenic rivers, Army Corps of Engineer projects, Indian lands or reservations and areas under consideration for wilderness designation. An additional map for each region shows the boundaries of Clean Air Act protection areas. In addition, an information kit accompanies the maps. The kit provides information on access to federal lands for energy development and assists map users in understanding onshore federal land use issues. Order #863-00203, Great Lakes Region, (which includes Illinois, Indiana, Michigan, Ohio, and Wisconsin) for \$15.00 from the American Petroleum Institute, 1220 L. St., NW, Washington, DC 20005, ATTN: Publications Department.



## AUTOMATED CARTOGRAPHIC SYSTEM



In the October 1984 Bulletin Art Ziegler, State Cartographer, briefly explained the Automated Cartographic System (ACS) being developed at the State Cartographer's Office. The diagram above illustrates the hardware configuration (minus switches, surge protectors, etc.) and lists the software currently in use. The system is totally operational. However, Office staff are not yet proficient in each program area.

The ACS's four original objectives are in various stages of completion. Time conflicts are already developing between them.

### 1. Data Base Collection

Go "on line" with the National Geodetic Survey, the U.S.G.S. National Cartographic Information Center and EROS Data Center, and other data holders through the modem. Print out information on the dot matrix printer;

### 2. Wordprocessing

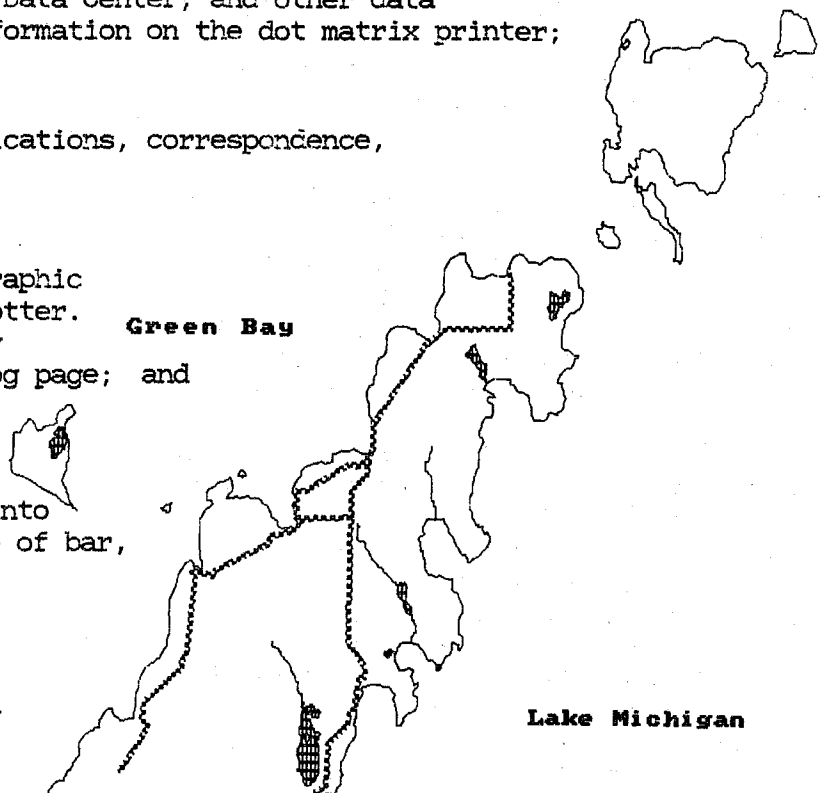
Produce the Mapping Bulletin, other publications, correspondence, and mailing labels;

### 3. Catalog Graphics

Automate the production of County Cartographic Catalog pages using the digitizer and plotter. The graphic on the right is a preliminary dot matrix print of a portion of a catalog page; and

### 4. Geographic Information System, GIS

Develop a statewide, multicounty format to display various data. Combine units into different formats with the additional use of bar, graph, or pie charts.



To achieve all four objectives and avoid production conflicts, the SCO plans to expand the normal work day into early evening hours. More details will appear in future issues of the Bulletin.

# GEOGRAPHIC NAMES INFORMATION SYSTEMS

(continued from the July Bulletin)

## The U.S. Board on Geographic Names and The Board on Geographic Names Data Base

The Board on Geographic Names (BGN) was established in 1890 to be responsible for establishing and maintaining uniform name usage throughout the Federal government. Working with the Secretary of the Interior, and in cooperation with State names authorities, (the State Cartographer is a member of this group), the Board develops policies, principles, and procedures governing the spelling and application of geographic names on Federal maps and in other publications. It also rules on name controversies, new names, and name changes. BGN policy for names in the United States and the territories is to follow present-day local usage whenever possible. If there is confusion or duplication of local names, or if a name is derogatory, the BGN may or may not approve the name and may seek other local names for the feature. It also is guided by policy of not approving new names for Federal use that honor living persons.

The USGS furnishes staff support for domestic BGN activities. Any person may inquire about or request the Board to rule on proposed new names, proposed name changes, or names that are in conflict.

The Board on Geographic Names Data Base will provide information resulting from the investigations and decisions of the Domestic Names Committee of the U.S. Board on Geographic Names. Currently, the data base contains information collected since the Board's creation in 1890 through the first quarter of 1959. Each entry in this data base may also be found in the National Geographic Names Data Base, but the entries in this data base contain the reference and associated detailed information as researched and compiled by the BGN staff. Activities of the Board from 1959 through the present are currently being incorporated into the Board on Geographic Names Data Base, which is scheduled for completion in 1984.

## Available Products and Ordering Instructions

GNIS information is available as spiral-bound books, microfiche, and magnetic tape. Special searches are also performed upon request. Products in any format from data bases other than the National Geographic Names Data Base are considered special searches. Contact the National Cartographic Information Center (NCIC) for more information or to order GNIS products.

## National Headquarters

National Cartographic Information Center, U.S. Geological Survey, 507 National Center, Reston, VA 22092, 703/860-6045.

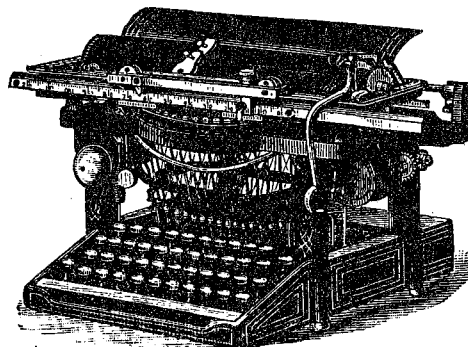
## Manager, GNIS

U.S. Geological Survey, 523 National Center, Reston, VA 22092, 703/860-6261.

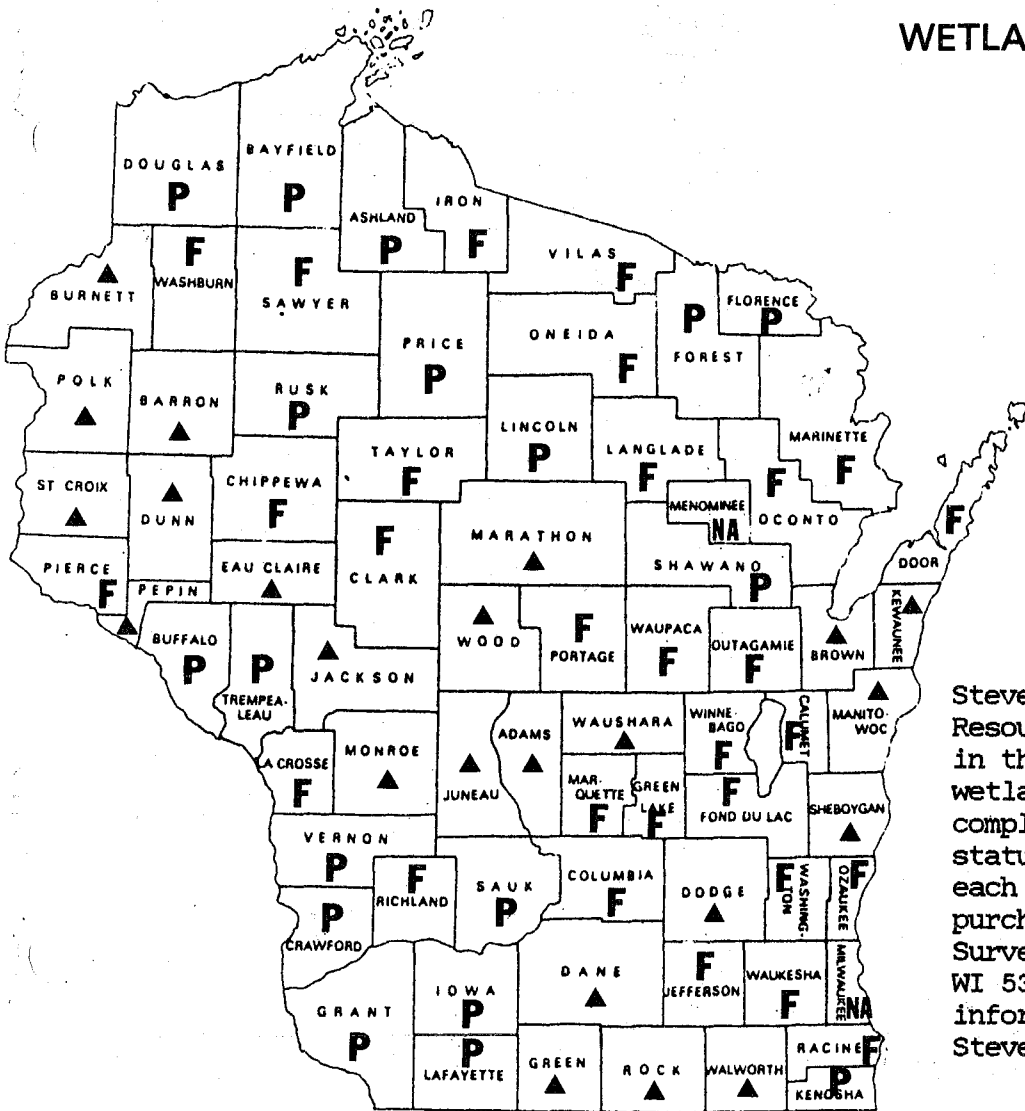
## Regional Office

NCIC-USGS Mid-Continent Mapping Center, 1400 Independence Road, Rolla, MO 65401, 314/341-0851.

To purchase volumes of The National Gazetteer of the United States of America, contact Eastern Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett Street, Alexandria, Virginia 22304.



## WETLANDS MAPPING STATUS



### LEGEND

- P** Preliminary maps sent to county for public review
- F** Final maps sent to county for adoption under NR 115
- ▲** County wetlands ordinance adopted and approved
- NA** Not applicable

Steve Fix, Department of Natural Resources Wetlands Inventory, reported in the July 1984 Bulletin that the wetlands inventory mapping was completed. The graphic shows the status of the required public review by each county. Final maps can be purchased from the Wisconsin Geological Survey, 1815 University Ave., Madison, WI 53706, phone 608/263-7389. For more information on the program, contact Steve at 608/266-0053.

## ADAMS-JUNEAU FLOODPLAIN MAPPING

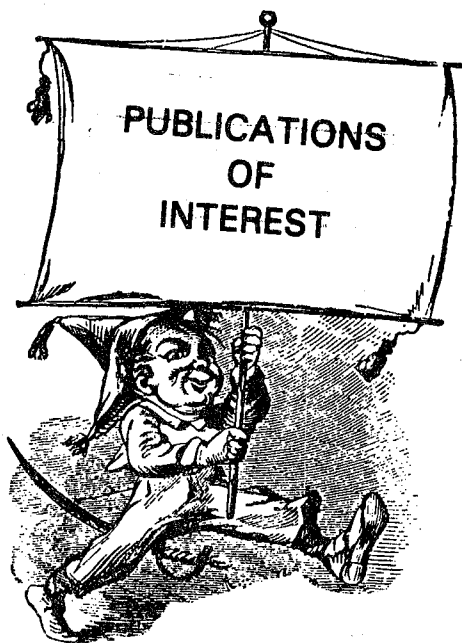
A study of the Wisconsin River basin in 1968 by the DNR established 100-year floodplain levels for the river. In 1984, Adams and Juneau Counties decided to re-examine the 100-year flood levels on the 108 square mile area of the river between the City of Wisconsin Dells and the Castle Rock to establish a new regulatory floodplain.

There are essentially three phases to a project such as this: photogrammetry, survey, and a detailed floodplain study.

Estimated costs for completing both counties are in excess of one million dollars over a span in excess of five years. The project is made more feasible through the 50% cost sharing for the floodplain and shoreland mapping

portion of the project under DNR funding. Peripheral information derived from that project will be useful in keeping costs down for other aspects of the project. The highly accurate base maps, known as orthophotos, are referenced to Wisconsin State Plane Coordinates and U.S.G.S. sea level elevations. These base maps will form the basis for as many as 20 different types of map overlays for future use. When completed in 1990, Adams and Juneau Counties will have a state-of-the-art mapping system which will fulfill the needs of both counties for decades.

source: Frederic Zietlow, Mid-State Associates, Inc., Baraboo, WI



Wisconsin Travel Companion (1983) by Richard Olsenius and Judy A. Zerby is "a unique guide to the history along Wisconsin's highways." The authors have crisscrossed the state, from Highway 2 through Superior and Hurley to Highway 61 from the Iowa border to Readstown, documenting their travel with pertinent facts, local history, historical photos and maps. Cartographer Sona Karentz Andrews' black-and-white maps at 1" = 4 miles illustrate every section of road; seven maps cover Highway 51. The 327-page book includes an index to cities and sites. It sells for \$12.95 from Bluestem Productions/Mijaz, Inc., Box 334, Wayzata, MN 55391. Check your local bookstore or public library for a copy.

The Use and Value of a Geodetic Reference System (1984) is the result of research performed by Earl F. Epstein and Thomas D. Duchesneau from the University of Maine at Orono with a grant from the Federal Geodetic Control Committee. The 36-page report describes the analytical framework for evaluating the geodetic reference system and includes case studies. It is available from the National Geodetic Information Center, NOAA, N/CG17X2, Rockville, MD 20852 for \$3.00. Make checks payable to the National Geodetic Survey.

Surveying Publications. Landmark Enterprises offers a wide variety of books and manuals of interest to those in surveying and related professions. They offer a free newsletter. Contact them at 10324 Newton Way, Rancho Cordova, CA 95670.

Around the Shores of Lake Michigan (1985) by Margaret Bogue is a 448-page travel guide to all the significant historical attractions around Lake Michigan. It has 240 illustrations, including six thematic maps prepared by the University of Wisconsin Cartographic Lab. Over 180 sites along the 1,600-mile route are keyed to a large (24" x 32"), multi-colored, foldout map in the back of the book. The book itself measures 9½" x 9½". The author is a professor of history with UW-Extension. She explains the early settlement of the region, the native people, and the significance of the forest and mineral resources. All of this is carefully depicted on the accompanying maps. The University of Wisconsin Press will begin to distribute the book in May. The hardcover price is \$25.00; softcover is \$19.95 (Wisconsin residents add 5% tax). Credit card orders are also accepted. Order from UW Press, 114 N. Murray Street, Madison, WI 53715, phone 608/262-8782.

Manual of Remote Sensing (second edition 1984) published by the American Society of Photogrammetry is a hardcover, two volume work of 2,724 pages. The entire spectrum of remote sensing is covered in 36 chapters, with a complete index, comprehensive bibliographies, and a glossary. The price is \$125 to non-members, \$99 to active members and \$65 to student members. USA shipments require \$7.00 postage. Order from ASP, 210 Little Falls Street, Falls Church, VA 22046.

Multilingual Dictionary of Remote Sensing and Photogrammetry (1984) also published by the American Society of Photogrammetry, includes 1,716 terms defined in English, French, German, Italian, Spanish, Portuguese, and Russian. The non-member price is \$30; \$20 for active members; \$17 student members. USA shipment requires \$4.00 postage. Order from ASP (address given above).

# THE MAPPING OF WISCONSIN SINCE 1832

BY

CHRISTOPHER BARUTH

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of  
Master of Science in Geography at the University of Wisconsin-Milwaukee,  
December 1979

Editor's Note: This year the final USGS 7½' topographic quadrangle will come off the press. It will mark the first time Wisconsin has had uniform, large-scale map coverage over the entire state. To better appreciate the importance of this event, the Bulletin will cover Wisconsin's history of topographic mapping. Abridged sections of Christopher Baruth's Masters thesis will appear in this and the next three issues. Chris is currently a map curator at the American Geographical Society Collection, UW-Milwaukee Library. The Editor thanks him for his cooperation and hopes that her deletions don't detract from his scholarly work.

## ACCURATE MAPPING IN WISCONSIN

### Early Triangulation

It was during the 1870's that the control trigonometrical survey of the state was begun.

Trigonometrical surveying or triangulation was and is still used as the basis for precise mapping. It allowed the construction of a rigid system of horizontal relationships. The Geological Survey of Wisconsin required accurate base maps for the presentation of its material.

After the Civil War, the Army Engineer Department was assigned the task of re-charting the Great Lakes. This was an immense project that required the construction of triangulation networks paralleling the lakeshores.

At about the same time, the state of Wisconsin embarked upon an ambitious geological survey. The project was initially under the supervision of the aging I.A. Lapham who held the post of State Geologist, but was completed under Prof. T.C. Chamberlin of the University of Wisconsin. An element of this survey was mentioned in the 1874 report of the U.S. Coast and Geodetic Survey (U.S.C.G.S.):

"Prof. John E. Davies is now in the field with a view of selecting

stations for triangulation; the object being to determine points for correcting the State map, and thus to afford a reliable basis for representing the results of the "1 geological survey of that state.

Davies was somewhat of a generalist who actively pursued a number of scientific fields. During his association with the U.S.C.G.S. he held a physics professorship.<sup>2</sup> The triangulation of Wisconsin was to occupy his summers for seventeen years. Since the job was far from complete at the end of that time, one must conclude that the difficulty of that task was greatly underestimated.

The difficulty in preparing a station for occupation, and the great care taken in the measurement of each angle caused the work to progress slowly. When latitude, longitude and azimuth are determined from one point to another, lengthy equations must be employed by persons trained in higher mathematics. Furthermore, the work was done only in the summers when Davies was free of university duties. Additional time was lost due to the occasional lateness or lack of federal funding.<sup>4</sup> In sixteen summers in the field, Davies managed to cover only about one degree of latitude in southern Wisconsin.<sup>5</sup>

(continued on next page)  
January 1985

## WISCONSIN MAPPING, continued

Actual triangulation began in the summer of 1874 in the vicinity of Madison. By 1876 he was able to connect his Spring Green baseline with the observatory in Madison, for which latitude and longitude had been computed.<sup>6</sup> This allowed him to determine the latitudes and longitudes of all the points which would be occupied or sighted in the course of his survey. This included not only the major stations, but all points, be they spires or section corners that could be sighted from two stations.

The lack of federal funds prevented additional work from being done during the summer of 1877, but the<sup>7</sup> survey resumed the following year.

By 1882, Davies' work had taken him to the state's southern boundary. It was at this time that he discovered that the southern boundary, as laid out by Lucius Lyon, deviated from its constitutional prescription of 42° 30' N, by as much as  $\frac{1}{2}$  to  $\frac{3}{4}$  mile.<sup>8</sup> In the following year he continued his survey along the southern boundary, and discovered that the southern half-mile of the city of Beloit was south of the constitutional state line.<sup>9</sup> He expressed his concern over this to the U.S. Coast and Geodetic Survey, as well as to Reuben Thwaites who was soon to publish an article on the boundaries of Wisconsin.<sup>10</sup> In 1884 he linked up his network with that of the Lake Survey, and was pleased with the closeness of the results.<sup>11</sup> The survey was set back in 1885 when fire destroyed the old Science Hall on the University of Wisconsin campus. Since many of Davies' records were lost in the fire, it was necessary to reoccupy a number of stations.<sup>12</sup> In 1886, Davies reported further linkup with the Lake Survey, but also complained of impeded progress due to smoke from forest fires.<sup>13</sup> Work progressed steadily every summer until 1891. Of the work of 1891 we are given the following report by Henry A. Fairfield who had been appointed Assistant in Charge of State Surveys in March of 1891:

"As Prof. Davies sent in no monthly reports and journals, it is hard to follow his movements. He worked in the field until about Sept. 12, occupying Fitzsimmons, Observatory Hill and Bald Bluff stations. He was instructed to occupy the first two only, and to observe on poles erected on Bald Bluff and Sheep Pasture. Instead of confining himself to this program, he built a tripod and scaffold signal at Bald Bluff and occupied that station.

At Fitzsimmons he failed to see Bald Bluff, and at Observatory Hill he observed on the wrong hill entirely instead of on Sheep Pasture. Therefore, my intention of having him close the quadrilateral ending on the line Fitzsimmons--Observatory Hill, and at the same time measure the angles to the two stations ahead was frustrated. He did close the quadrilateral, but should it at any time be deemed expedient to continue the triangulation to the northward, Fitzsimmons and Observatory Hill will have to be reoccupied, rendering it necessary to rebuild the tripods and scaffolds at these stations.

Had Prof. Davies followed out his instructions carefully, it would have been necessary to erect poles only at these stations to be observed on.

Owing to the uncertainty about the appropriation for the present fiscal year it was not thought advisable to continue the work in Wisconsin this season under Prof. Davies."<sup>14</sup>

Professor Davies was never again to reenter the field, and Wisconsin's area triangulation was never continued.

In addition to the work done by both Professor Davies and the Army Engineer Dept., Professor Hoag of the University of Minnesota supplied a number of points to Wisconsin as he extended a triangulation chain down the Mississippi River.<sup>15</sup>

(continued on next page)



### Early Topographic Maps

In the 1870's the explorer, geologist and first director the U.S. Geological Survey, John Wesley Powell determined that the United States should be covered by accurate topographical maps. The original plan was to produce atlas-sized quadrangles at the scales 1:62,500 (15 min.), 1:125,000 (30 min.), and 1:250,000 (1 degree). The larger scale was to be employed in the more heavily settled areas, while the smaller scales were to cover the more thinly settled areas.<sup>16</sup>

Wisconsin's first topographic maps essentially grew out of Chamberlin's glacial investigations in Wisconsin. During the years 1886 and 1887, Chamberlin had the assistance of I.M. Buell, a topographer with the U.S. Geological Survey. During this time Buell was engaged in mapping the glacial deposits of southeastern Wisconsin.<sup>17</sup> The area mapped, however, was irregular in shape, and its limits did not conform to standard sheet lines. Toward the end of the 1887 season, John Renshaw of the Geological Survey came to Wisconsin at the request of Mr. Buell to begin preparing the material for publication. That year Renshaw worked until late November and surveyed 136 sq. miles.<sup>18</sup>

During the following season, 1888, Van H. Manning, Jr. was assigned to continue where Renshaw had left off. In spite of his late start, Sept. 24, he was able to prepare six sheets for publication, working through October. In his little more than a month in the field he surveyed 390 sq. miles.<sup>19</sup>

The following May, Manning returned with an assistant. They worked through the end of October and completed an additional three topographic sheets.<sup>20</sup> In 1890, with two assistants, Manning was able to complete seven more sheets,<sup>21</sup> and in 1891 an additional six.<sup>22</sup>

With the completion of these 25 topographic maps, what might be considered the first period of topographic activity came to an end. The major catalyst to this mapping activity was Chamberlin's geological work, which promoted the efforts of both

Davies and Buell. While it is unfortunate that the triangulation was halted, and that the topographic mapping effort was decreased after 1892, a word must be said about the quality of these early maps.

Each sheet covered approximately 220 sq. miles, which means that something over 1000 sq. miles were surveyed yearly--supposedly "precise" topographic surveying. The fact that by 1905 three-quarters of these sheets had been revised at least once, indicates that the quality was probably affected by the speed of the survey. Figure 1 shows the original area of topographic coverage and the revision dates of the original sheets.

The errors in the original sheets were of three types. The first was the old problem of latitude and longitude. The basic control network was somewhat coarse. Figure 1 shows the triangulation stations relative to the topographic sheets. It can be seen that some sheets are well provided with control points, but most have one or none at all.

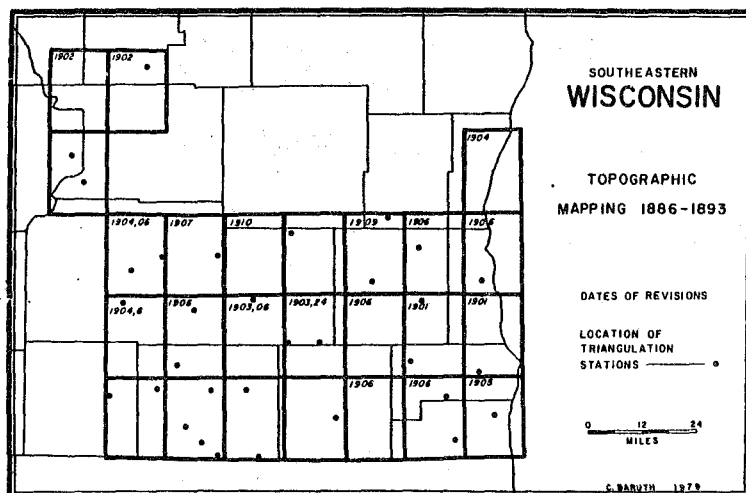


figure 1

The second type of error found on these early sheets pertained to elevation. It wasn't until 1896 that Congress provided funds for the running of levels and the establishment of vertical control bench marks.<sup>23</sup>

(continued on next page)

The third type of error was the misplaced feature or incorrect hydrography. The only differences between the first and revised editions of the Racine sheet, for example, were the correction of the hydrography and the re-situation of a misplaced road.

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<sup>2</sup>J.B. Parkinson, "John Eugene Davies," Transactions of the Wisconsin Academy of Sciences, Arts and Letters, Vol. 13, pt. 1 (1900), pp. 614-617.

<sup>3</sup>Clair E. Ewing and Michael M. Mitchell, Introduction to Geodesy (New York: American Elsevier, 1970), p. ix. In the Preface, the authors explain that even though their book is designed to be only an intermediate geodesy textbook, students using the book are assumed to have knowledge of calculus.

<sup>4</sup>U.S. Coast and Geodetic Survey, Annual Report (1877), p. 47.

<sup>5</sup>For a map of Davies' triangulation see Atlas of the Geological Survey of Wisconsin, plates 41-42, which accompanies Geology of Wisconsin, Survey of 1873-1879, 4 vols. plus atlas vol. (Madison, Wis.: Wisconsin Commissioners of Public Printing, 1887-1882).

<sup>6</sup>U.S. Coast and Geodetic Survey, Annual Report (1877), p. 47.

<sup>7</sup>Ibid.

<sup>8</sup>Idem, Annual Report (1883), p. 65.

<sup>9</sup>Idem, Annual Report (1884), p. 76

<sup>10</sup>Reuben Gold Thwaites, "The Boundaries of Wisconsin," Wisconsin Historical Collections, Vol. 11 (1888), p. 501.

<sup>11</sup>U.S. Coast and Geodetic Survey, Annual Report (1885), p. 69.

<sup>12</sup>Idem, Annual Report (1886), p. 86.

<sup>13</sup>Idem, Annual Report (1887), p. 83.

<sup>14</sup>Idem, Annual Report (1892), p. 192.

<sup>15</sup>Ibid.

<sup>16</sup>L.H. Borgerding, Chief, U.S.G.S. Mid-Continent Mapping Center, personal letter.

<sup>17</sup>U.S. Geological Survey, Annual Report (1888), p. 57.

<sup>18</sup>Ibid.

<sup>19</sup>Idem, Annual Report (1889), p. 94.

<sup>20</sup>Idem, Annual Report (1890), p. 38.

<sup>21</sup>Idem, Annual Report (1891), p. 29.

<sup>22</sup>Idem, Annual Report (1892), p. 73.

<sup>23</sup>Idem, "Spirit Leveling," Annual Report (1897), pp. 225-226.

(end of first installment)

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## MICROCOMPUTERS FOR REMOTE SENSING

Prof. Tom Lillesand of the UW-Madison Environmental Remote Sensing Center developed one of the original 28 projects submitted in a proposal to IBM. IBM has awarded a \$7.5 million grant (Project Trochos) to support the introduction of microcomputer-based workstations into the classroom.

Prof. Lillesand's request was for equipment to support the development and delivery of advanced coursework in digital processing of earth satellite data. The equipment requested will permit his program to design and test a series of prototypical software packages aimed at "hands-on" instruction in the merger of digital satellite data with digitized map information, and other land records. More information is available from Prof. Lillesand, 1231 Meteorology and Space Science, Madison, WI 53706, phone 608/263-3251.

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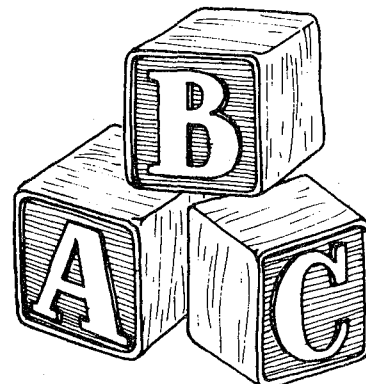
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## S.C.S.'S FUTURE

The Agriculture Department's Soil Conservation Service, one of the most politically popular farm programs in history, would be abolished under administration budget officials' plans to reduce the federal deficit. But Agriculture Secretary John R. Block, according to sources, is appealing to President Reagan to overrule the Office of Management and Budget proposal, which would chop the SCS fiscal 1986 budget to around \$350 million from its current level of about \$821 million. These sources added, however, that Block's task is made more difficult because soil conservation is just one of a number of USDA programs that he is defending.

Should OMB's Stockman prevail, Block likely could count on strong support from SCS advocates on Capitol Hill and from soil-conservation and farmer organizations in his effort to preserve the 14,000-employee agency. Since 1981, when the Reagan administration began proposing SCS budget cuts, Congress routinely has restored funding and pushed for more programs. Only a hard-line stance by the administration last summer prevented Congress from approving a major broadening of existing programs.


Under the new OMB proposal, the SCS would use its fiscal 1986 funds to honor existing technical-service contracts and then begin shutting down its nationwide network of technical support offices in virtually every county in the United States. Sources said this would mean dismissing thousands of SCS employees.

The bulk of the SCS budget is directed toward providing on-farm technical assistance in controlling soil erosion and in adopting tillage practices that preserve topsoil.

Beyond that, the SCS is involved in a variety of soil and water programs in rural areas. It helps develop small watershed flood control, conducts surveys that help determine erosion and fertility problems, and inventories cropland.

(Editor's Note: The SCS publishes county soil surveys. Most of northern Wisconsin remains unmapped.)

source: The Capital Times, Jan. 3, 1985



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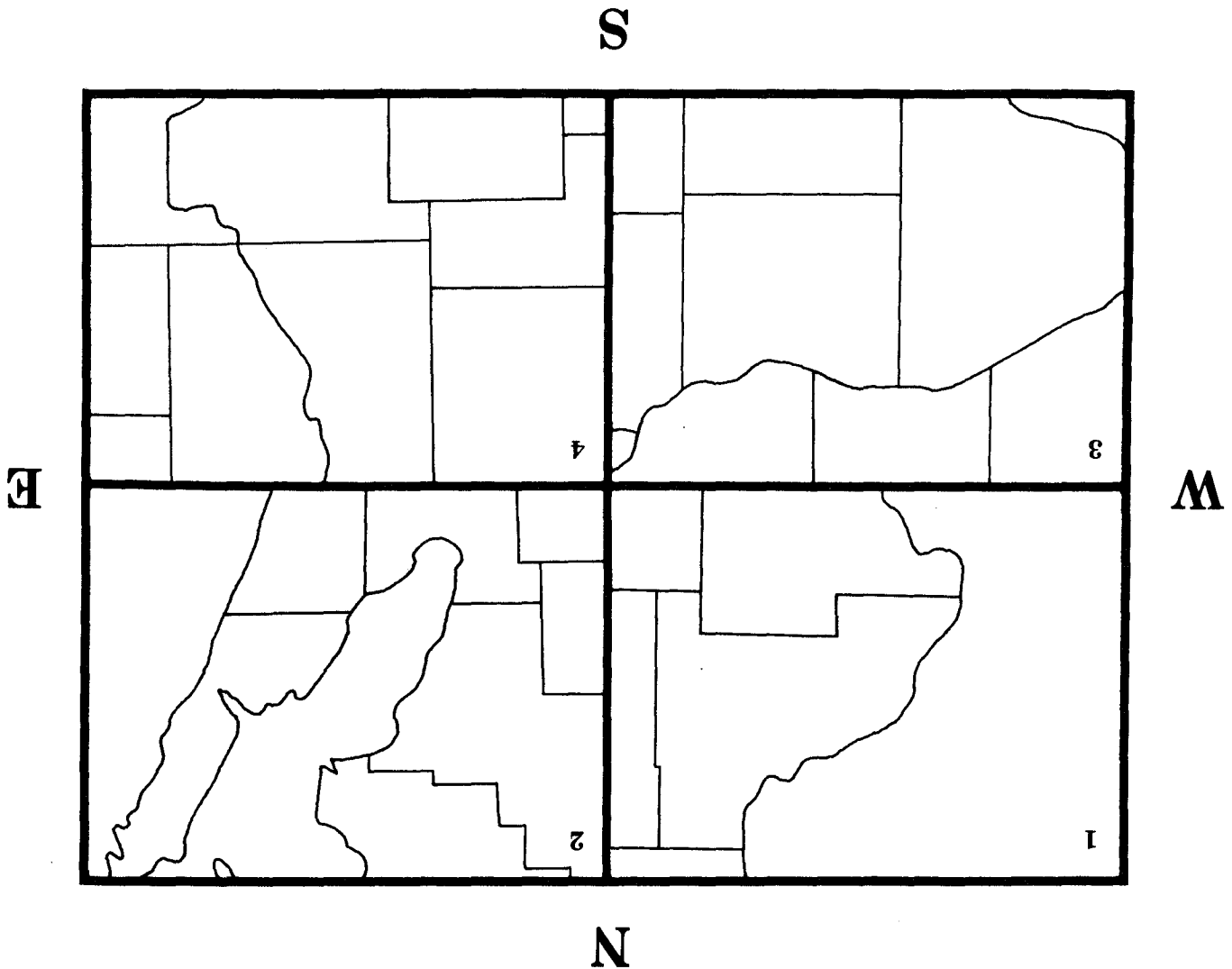
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- 4) Waushara, Marquette, Columbia, Adams, Juneau, Sauk, Richland, Vernon, Crawford, Monroe



Below are four boxes showing county boundaries. All you have to do is figure out the names for the counties outlined. They are all at the same scale. The answers are below in case you need some help.

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