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WISCONSIN MAPPING BULLETIN

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Editor

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STATE
CARTOGRAPHER'S
OFFICE

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608/262-3065

Est. 1973

FINI!
FERTIG!
FINALIZADO!

Trumpet fanfare! Drum roll! Clash of cymbals! The cooperative U.S. Geological Survey/Wisconsin 7½' topographic quadrangle program is finished. The last quad sheets rolled off the Washington presses in June. The Wisconsin Geological Survey now has every map in stock. (See the map index on a following page.) A complete, up-to-date index map is available from either the Wisconsin Geological Survey or the State Cartographer's Office. A free topo map brochure will be available from the SCO in September.

If you've been reading the story of Wisconsin mapping excerpted in the 1985 Bulletins, you're aware of the arduous path topographic mapping has followed in Wisconsin to achieve complete, uniform coverage. To recognize this mapping benchmark, a ceremony will be held sometime in October. Representatives from the U.S. Geological Survey and the state departments of Transportation, Natural Resources, Geological Survey, State Cartographer's Office, as well as from the University will present the Governor with the last 7½' topo quad. The public will be invited to attend. Details will be available in September from either the SCO (608/262-3065) or the WGS (608/262-1705).

LARGE-FORMAT CAMERA

The Large-Format Camera (LFC) on the Shuttle flights is bigger, more stable, more precise, and more technologically advanced in optics and electronics than its airborne predecessors. The LFC can forward overlap photos at 80, 70, 60, or 10 percent. At 80% overlap, earth objects as small as 30 meters in height can be seen at a map scale of 1:50,000. Although the LFC is designed for map making, the individual photos are useful for qualitative studies in earth resources disciplines.

(continued next page)

LFC, continued

Each frame of LFC film is imprinted with a Reseau grid, fiducial marks, mission and frame numbers, Julian day, and Greenwich mean time. The Shuttle Orbiter's general purpose computer monitors the LFC. The data transaction signals are relayed to the operations center at the Lyndon B. Johnson Space Center in Houston.

Distribution Policy

The U.S. Geological Survey EROS Data Center (EDC) through a Memorandum of Understanding with NASA will archive the LFC original film and provide reproductions at established prices for use in Federal Government and cooperative research programs. As required by Public Law 98-365, the EROS Data Center will not provide reproductions to those users intending to make commercial use of the data.

All non-Federal requestors of LFC photography will be required to sign a Usage Certification. When the completed Certification is returned to EDC, the requestor will be designated an "authorized USGS cooperative research investigator" and the order will be processed.

Ordering

The SCO has received microfiche indexes, order forms, and certification forms from the EROS Data Center. For more information, contact the SCO or the User Services Section, EROS Data Center, U.S. Geological Survey, Sioux Falls, SD 57198, phone 605/594-6151.

LFC IMAGE SAMPLE

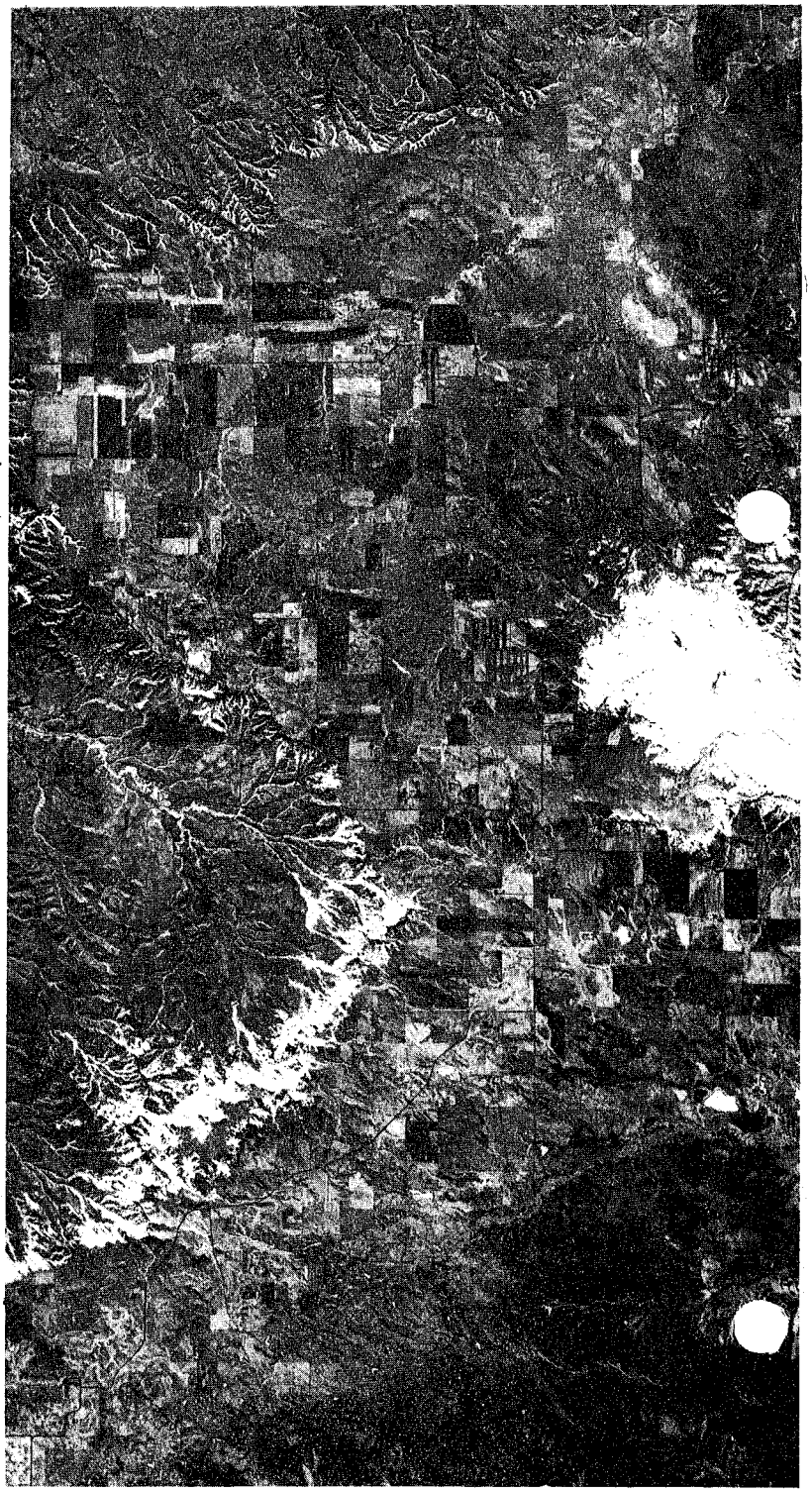
The SCO obtained a portion of a Large-Format Camera (LFC) negative which we had printed and half-toned for reproduction here. This sample print cannot begin to do justice to the high-quality resolution of the original. The crisp, clear photographic image looks as if it came from conventional aircraft, certainly not from the Space Shuttle 241 km high (150 miles).

Unfortunately the Shuttle was in the process of rolling over as it came over Wisconsin and only the far northern portion was recorded on film. As luck would have it, it was a cloudy day. The date of the next LFC mission is uncertain.

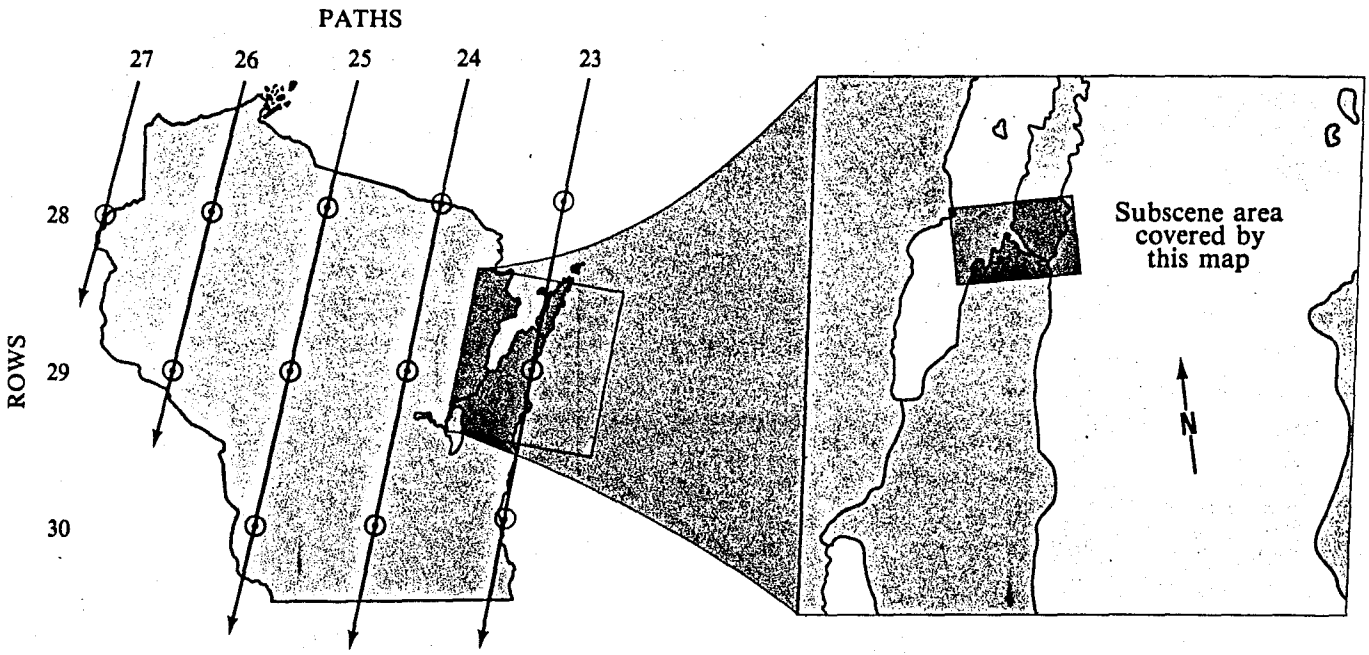
EKALAKA, MONTANA
October 11, 1984
approx. 6:15 p.m

original scale
approx. 1:790,000

4x enlargement



EXPERIMENTAL SATELLITE IMAGE MAP



Landsat Orbit Paths and Scene Centers for Wisconsin

Geographic Coverage of a Full Landsat Scene
ID Number 5013916030 Path/Row 23/29
Date: July 18, 1984

The State Cartographer's Office recently published an experimental image map of Sturgeon Bay (DOOR COUNTY), Wisconsin, compiled from Landsat-5 Thematic Mapper data. The map illustrates how digital satellite images can be used to analyze earth resources data. Prof. Thomas Lillesand and Thomas Lo, both of the UW-Madison Environmental Remote Sensing Center, used a computer to manipulate TM bands 1, 2, and 3 to enhance specific types of earth surface features.

The Sturgeon Bay area is shown in "natural" color. Insets depict how various features look when different processing and display techniques are used. One inset illustrates the water temperature gradients. A tremendous difference between Green Bay and Lake Michigan becomes very obvious. Another inset shows how an agricultural area can be categorized. The Clark Lake inset is a color composite which can be used to study water quality characteristics and forest cover types. Two insets are given for Gardner Marsh. One is a false-color composite which enhances the distinctions among vegetation types.

The other illustrates how an image analyst can classify land cover categories. The final inset is a portion of a conventional 15' topo quad over the city of Sturgeon Bay. The distinctions between the quadrangle and the image are striking.

The map's production was a cooperative effort between the University, private industry, and the William and Flora Hewlett Foundation. It is an example of state-of-the-art printing. The 1:62,500-scale image map measures 31" x 24".

The map is available free of charge except for a shipping and handling fee from the Wisconsin Geological Survey. It will be shipped rolled 4th Class for $2.00 or 1st Class for $3.00. There is no cost for over-the-counter orders. No more than five copies will be sent to anyone.

Requests for larger orders should be directed in writing to the State Cartographer's Office. Order from Map Sales, WG&NHS, 3817 Mineral Point Road, Madison, WI 53705, phone 608/263-7389.

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, 3817 Mineral Point Rd., Madison, WI 53705, 608/263-7389. Topographic quadrangles are $2.50 each, plus tax, postage and handling.

1 PORT WING 15' TOPO
NE¼ none
NW¼ none
SW¼ Port Wing '84
SE¼ Herbster '84

2 BRULE 15' TOPO
NE¼ Oulu '84
NW¼ Cloverland '75
SW¼ Lake Nebagamon '75
SE¼ Brule '84

3 ELLISON LAKE 15' TOPO
NE¼ Island Lake '84
NW¼ Lake Minnesuing '84
SW¼ Metzger Lake '84
SE¼ Ellison Lake '84

4 MARENGO 15' TOPO
NE¼ Marengo '84
NW¼ Sanborn '84
SW¼ Marengo Lake '84
SE¼ Mineral Lake '84

5 MELLEN 15' TOPO
NE¼ Gurney '84
NW¼ High Bridge '84
SW¼ Mellen '67
SE¼ Mt. Whittlesey '67

6 GLIDDEN 15' TOPO
NE¼ Glidden '84
NW¼ Morse '84
SW¼ Shanagolden '84
SE¼ Peeksville '84

7 BUTTERNUT 15' TOPO
NE¼ Lake Six '84
NW¼ Augustine Lake '84
SW¼ Butternut '84
SE¼ Hay Creek Flowage '84

8 PARK FALLS 15' TOPO
NE¼ Blockhouse Lake '84
NW¼ Park Falls '84
SW¼ Priest Lake '84
SE¼ Gates Lake '84

9 PHILLIPS 15' TOPO
NE¼ Cranberry Lake '84
NW¼ Phillips '84
SW¼ Pennington '84
SE¼ Prentice '84

10 OSSEO 15' TOPO
NE¼ Augusta East '84
NW¼ Augusta West '84
SW¼ Osseo '84
SE¼ Price '84

11 BLAIR 15' TOPO
NE¼ Hixton '84
NW¼ Pigeon Falls '84
SW¼ Blair '84
SE¼ Taylor '84

12 BLACK RIVER FALLS 15' TOPO
NE¼ Merrillan '84
NW¼ Alma Center '84
SW¼ Stenulson Coulee '84
SE¼ Black River Falls '84

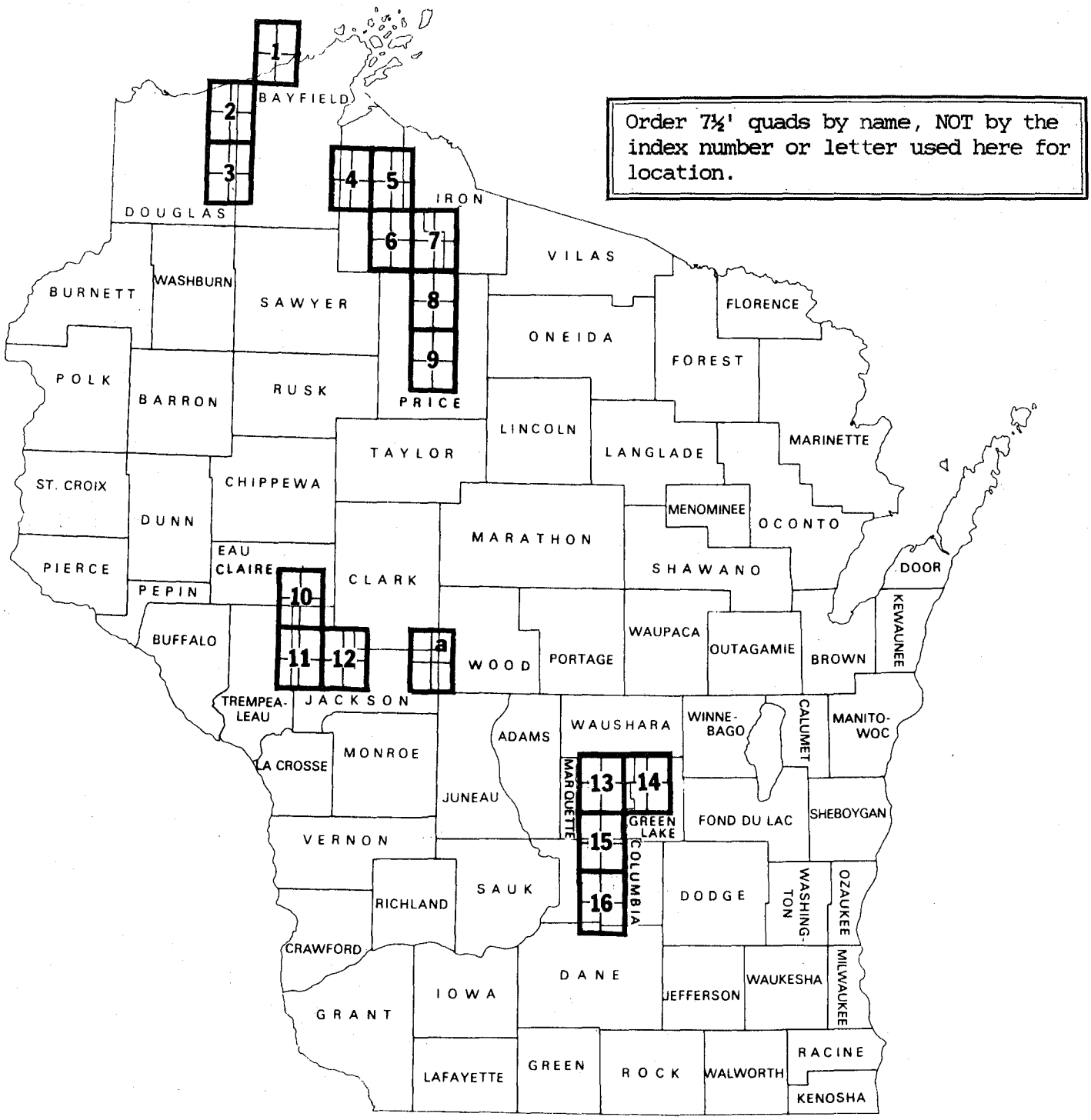
13 MONTELLO 15' TOPO
NE¼ Germainia '84
NW¼ Westfield East '84
SW¼ Packwaukee '84
SE¼ Montello '84

14 NESHKORO 15' TOPO
NE¼ Fairburn '84
NW¼ Neshboro '84
SW¼ Princeton West '84
SE¼ Princeton East '84

15 PORTAGE 15' TOPO
NE¼ Observatory Hill '84
NW¼ Endeavor '84
SW¼ Portage '84
SE¼ Pardeeville '84

16 POYNETTE 15' TOPO
NE¼ Wyocena '84
NW¼ Poynette '84
SW¼ Arlington '84
SE¼ Morrisonville '84

NEW U.S. GEOLOGICAL SURVEY PRODUCTION



PHOTOREVISED 7½' QUADS

a City Point NE '70, '85PR

CRAWFORD AND VERNON CATALOGS

We're happy to announce the availability of two more county cartographic catalogs. This brings us to 37 completed counties. The CRAWFORD Catalog consists of 96 pages. VERNON is 108 pages long. Both are free on request from the SCO.

AIR PHOTO CATALOG

At long last the third edition of the Catalog of Aerial Photography on Wisconsin is now available. It covers the years 1977-1984. The 76-page publication is available free of charge from the SCO. If you've already requested a copy, please don't go through the trouble of asking again. Brenda has a long list of requests which she'll begin to process as soon as possible.

TOPO BROCHURE

To commemorate the completion of the 7½' topo mapping program, the SCO is publishing an informative brochure. It's hoped the brochure will promote the use of topographic maps among the general public. Irena Fraczek, a UW-Madison Cartography grad student and Christine Reinhard developed the pamphlet. Free copies will be available in late August.

WISCONSIN MAP LIBRARIES

Mary Galneder and Christine Reinhard, assisted by UW-Madison Library School graduate student Sarah Castello, conducted a survey of libraries throughout the state about their map collections. A summary of the results will appear in the October Bulletin.

Mary and Christine are tentatively planning a map library seminar for early fall. Interested persons should contact them as soon as possible. Call Mary at 608/262-1471 or Christine at 608/262-6850.

NEW CATALOG STAFF

John Laedlein is our new County Catalog Production Manager. John replaces Carol Krug who is concentrating on finishing her degree in Urban and Regional Planning.

Before starting the graduate cartography program, John worked for several years as an associate editor of a weekly educational news program. We're happy to have someone with his expertise on the staff.

Marty Balikov continues as Catalog Assistant Editor. Besides Marty, we have Mark, Mark, Mark, Marvin and another John as student employees. For variety we also have a Rita, Keith, and Barb.

OIL MAPS

Petroleum Information Corporation now has a toll-free number. Dial 1-800-OIL-MAPS.

INTELLIGRAPHICS

Donohue Engineers and Architects of Sheboygan, WI, recently organized Donohue Intelligraphics. This department provides varied capabilities in computer graphics, utility mapping, data base management, and photogrammetry.

ARTICLES OF INTEREST

The following articles appear in the journal Social Education:

v. 49, no. 1, January 1985
"Building Map Skills to Advance Geographic Understanding" by Raymond H. Muessig, p. 28,
"Teaching Map Skills: Theory, Research, Practice" by Jack W. Miller, p.30,
"Building Higher-Level Geographic Skills with Topographic Maps" by Raymond H. Muessig, p. 34,
"Literary Geography and Mapping" by Linda S. Levstik, p. 38,
"Helping Elementary and Secondary Students to Discover Three Functions That Maps Can Serve" by Val Arnsdorf, p. 44.

v. 49, no. 2, February 1985
"The Environmental As a Data Source: Map Activities for Young Children" by David W. Van Cleaf, p. 145

Our thanks go to Howard Deller of the UW-Milwaukee AGS Collection for the references.

IFLA VISITS

Map Librarians from around the world will visit Milwaukee and Madison cartographic facilities as part of the International Federation of Library Associations 51st annual conference in Chicago. On August 21st, approximately 50 map and geography librarians will tour the UW-Milwaukee AGS Collection and the following Madison sites: the Archives of the State Historical Society, the Arthur H. Robinson Map Library, the Geography Library, the Cartographic Laboratory, the History of Cartography Project and the State Cartographer's Office. To rejuvenate the group after all of that, the SCO is sponsoring a reception in the Map Library.

SAUK COUNTY MAPPING

Theodore Brenson, Sauk County Cartographer, recently sent in a report on and samples of his one-person Assessment Mapping Program. Since 1981 he has redrawn 11 townships and 9 villages. To illustrate how tremendous his project is: the Town of Delton contains 90 maps in one set; the Village of Lake Delton contains 50 sheets in one set. Sauk County consists of 22 Townships and 20 Villages/Cities.

Brenson reports: " When I began to design a mapping system for Sauk County, I reviewed maps of other area counties and municipalities. I tried to keep in mind that these maps are for the purpose of assessments and are not supposed to take the place of survey maps. To my surprise a lot of large counties in Wisconsin have no assessment maps whatsoever. The Tax Clerk in these areas draws maps on scratch paper and wrapping paper. I don't have any idea how these areas can have accurate assessments.

Our system is correlated with the records in the County Surveyor's office. Listed below you will find a small summary of how our maps are laid out.

Townships: Each section is laid out on 17" by 22" paper at a scale of 1" = 400'. If areas are congested, a detailed sheet is drawn to the scale of 1" = 200' for a ¼ section or 1" = 100' for a ¼ - ¼ section. Villages and Cities are drawn at 200 and 100 scales for platted areas.

Sections: To lay out a standard section in a township, I use the Government Survey notes for the base, combined with all of the recent survey information available, such as section breakdowns, plats of surveys, certified surveys, and any other information that may be available.

Locations of roads, lakes, and rivers are determined by the use of aerial photos, if there is no other information available such as surveys and right of way and construction plans for roads. By the use of the assessment roll and the deeds, the properties are plotted on the maps. The number of each given property is also put on the parcel.

When the section is complete a piece of mylar drafting film is placed over the drawing and everything is traced in ink. All of the information on the map is duplicated by mechanical drafting equipment.

Copies of complete villages and townships are sent to the Assessor and Village or Town Hall. A copy of each is also kept in the Treasurer's office. Once a year all of the maps are revised, and all of the revised sheets are sent to the Assessors and local officials.

50% of the Townships are redrawn and about 50% of the Municipalities are completed. It is my hope to have everything complete and redrawn in about 6 years."

People interested in learning more about Theodore Brenson's program can contact him at the Sauk County Mapping Dept., Courthouse, P.O. Box 30, Baraboo, WI 53913, phone 608/356-5581, ext. 72.

NORTH POLE WANDERINGS

According to the Knight-Ridder News Service, dateline Toronto, 11 years ago Canadian government scientists pinpointed the magnetic north pole on Bathurst Islands in the Northwest Territories above the Arctic Circle. Then, in mid-January 1985, they reported that it had moved more than 60 miles north. Now, it is "in a spot of icy desolation north of that island in the Belcher Channel. The precise location is 77.0°N, 102.3°W. It moves about 1° of latitude (roughly 69 miles) a decade," said Larry Newitt, leader of the two-person team of geophysicists who found the location last May.

Newitt said that along with its basic movement, it can shift as much as 50 miles a day and then return to its point of origin.

The present location is about 930 miles south of the true North Pole. Navigators of ships and aircraft need this information for correct compass bearings to determine their location.

Newitt pointed out that "for the average person using a compass, it isn't going to affect them at all." He went on to explain for laypeople that unlike the true North pole, which stays put on top of the world, the magnetic north pole that attracts your compass needle keeps slipping northward.

Scientists still do not understand why the magnetic north pole has been moving consistently north and somewhat west since 1904.

Scientists understand the sometimes dramatic daily fluctuations: Ionized particles emitted by the sun reach the earth's upper currents that disturb the earth's magnetic field. As a result, the position of the magnetic pole skitters about like a water bug, moving generally in elliptical patterns.

It was in the 1500's that seafarers believed that compass needles were attracted to a magnetic mountain somewhere in the north. In the next century, Sir William Gilbert, who was physician to Queen Elizabeth I, figured that the earth itself was a giant magnet and the force pulling the magnet was somewhere inside the earth. Making a model of the earth from a lodestone, he showed that at two points the compass needle would stand vertically. These, of course, are the north and south magnetic poles.

Basically the same definition is used today: A compass that is designed to dip, rather than just rotate on one plane, will point down at 90° when placed on the earth's surface at the poles. This method was what led James Clark Ross to be the first to locate the magnetic north pole on June 1, 1831, at Cape Adelaide, on the west coast of Boothia peninsula. He had accompanied his uncle, Sir John Ross, who led an expedition to discover the Northwest Passage; their ship became icebound in 1829 and stayed there for 4 years.

Scientists believe the pole moved south during the 1840's and 1850's, then began to move north.

The next explorer, a Norwegian, Roald Amundsen, located the pole in 1904 on his famous voyage through the Northwest Passage, finding that it had moved slightly to the north.

After World War II, scientists figured the pole had moved 150 miles north to Allen Lake on Prince of Wales Island, and in 1962, 1973, and 1984 studies indicated that the pole was continuing its movement in a northwesterly direction at about 6 miles a year.

Newitt and his partner, Ron Niblett, did not use a compass with a dip needle; they used two instruments--a proton magnetometer to measure the strength of the magnetic field and a Fluxgate magnetometer, which is something like a surveyor's transit, to determine the direction.

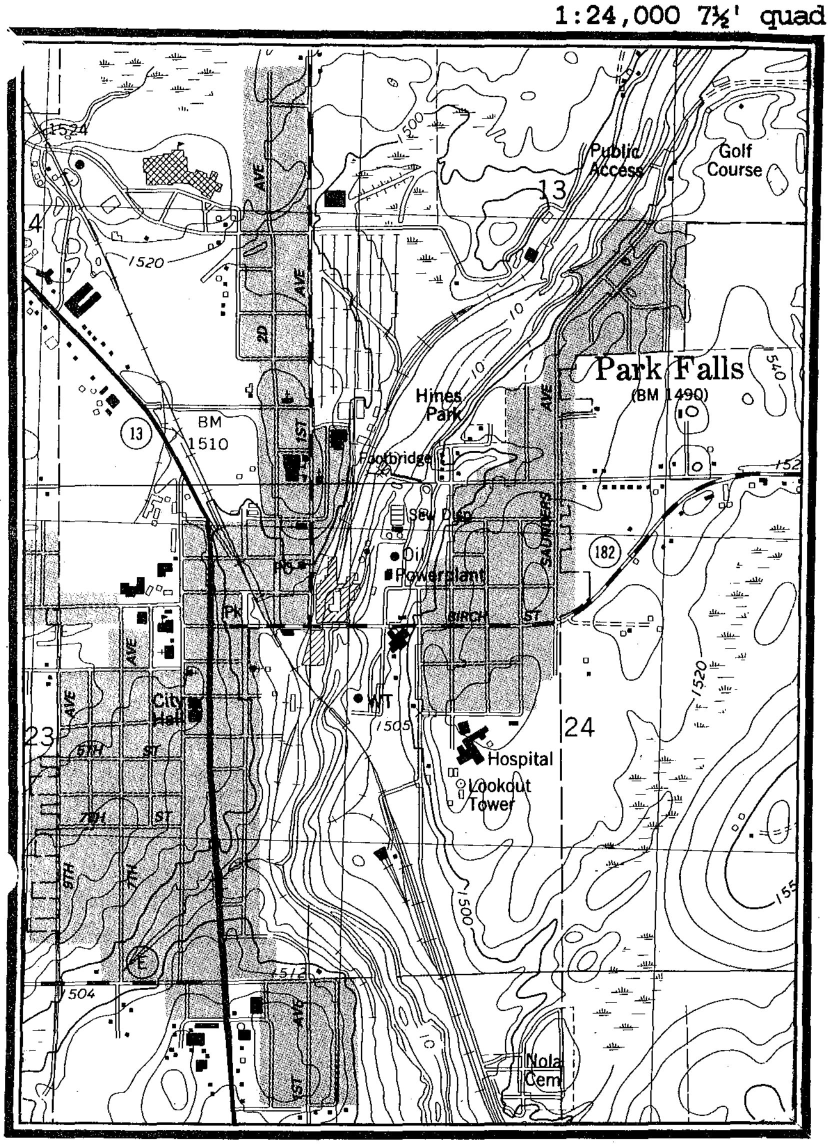
Newitt and Niblett plan to use their studies to create a magnetic chart to be released shortly.

(source: The Denver Post, Jan. 20, 1985, p. 9C)

MAP CURIOSITY

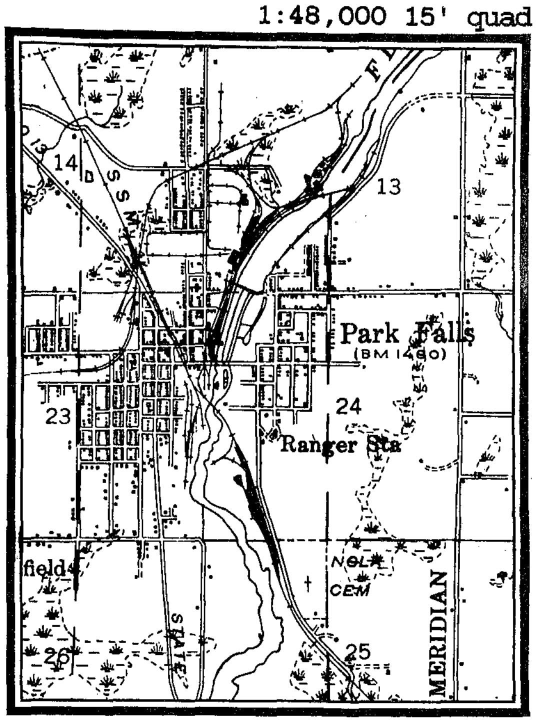
**NOW YOU SEE IT,
NOW YOU DON'T**

1:24,000 7½' quad



The 1941 planimetric 1:48,000-scale, 15' Park Falls quadrangle shows the Flambeau River coursing through the city of Park Falls in Price County. On the new 1984 Park Falls 7½' 1:24,000-scale topo quad, the river disappears? The city has built right over it. This is an excellent example of using U.S.G.S. quadrangles to compare areas over time.

1:48,000 15' quad



COUNTY HISTORICAL SURVEYS

During 1984, the Bay-Lake Regional Planning Commission initiated a contract with the State Historical Society to complete the historical reconnaissance survey of OCONTO, MARINETTE and FLORENCE counties. As these three counties had not been totally surveyed, the Commission's efforts are to document historic features through field inventories, to prepare maps delineating the location of the features and photographs. They will establish an historical record and inventory file and prepare a community summary report regarding the historical sites within these counties. The Commission will also provide information sessions to the public on state and federal historical preservation activities and of the significance of historical structures in the region. The study was initiated in the fourth quarter of 1984 and will continue into 1985. Fieldwork, photographs, maps, and community narratives of the Florence County area were completed during 1984.

(source: Bay-Lake RPC 1984 Annual Report)

EROSION MAPPING BY SATELLITE

In what their professor calls a "first," a team of UW-Madison Institute for Environmental Studies (IES) graduate students has produced a map of potential soil erosion trouble spots in the DANE County Town of Westport with a satellite and a computer.

"The students have found areas where their parameters indicate that, in the absence of other factors, this is where you would expect soil erosion before other places," explains Thomas Lillesand, a professor of environmental studies, forestry, and civil and environmental engineering.

But Lillesand hastens to point out that his students' map shows only potential, not necessarily where soil erosion actually occurs. "It may be that people in those places employ careful land-management practices, and there's very little erosion there at all."

Lillesand says the students' map of Westport is important because the state legislature, in a step toward reducing erosion, has ordered all Wisconsin counties to assess the soil-erosion potential within their borders. He says the students, using remote sensing technology, have found what may be a time- and labor-saving way to do the job.

The environmental monitoring students employed a special sensor aboard the Landsat 5 satellite to record the Westport data while the satellite passed over Wisconsin last August 26.

The sensor, a Thematic Mapper, has seven channels that detect different wavelengths of light and heat reflected or emitted from the ground. Since different types of land cover--rock, soil, and plants, for example--reflect or emit different types of light and heat, the Thematic Mapper can read their electromagnetic fingerprints from space and relay the data to the ground. A computer programmed to recognize those fingerprints can identify them and produce a map of land cover.

The Thematic Mapper can distinguish between features as small as 30 meters square, so its maps have a resolution of 30 meters--impressive work for a satellite that's orbiting 440 miles in space and covers the entire earth in 16 days.

The students produced their erosion-potential map of Westport by combining the computer-interpreted satellite map of the town's forests, meadows, row crops, water, and other types of land cover with data supplied by the multi-agency Dane County Land Records Project on the town's soil types, hilliness, and other factors influencing erosion. The final product shows the town's area broken into five categories of erosion potential--from least to greatest.

The students also produced a map breaking the whole of Dane County into 13 land-cover categories: urban; corn, soybean, small grain, and alfalfa cropland; pasture; bare soil; deciduous and coniferous forest; water; wetland, beach; and quarry.

Lillesand stresses that the technology is still far from perfect. Although the Thematic Mapper, for instance, is sensitive enough to record differences in energy reflected or emitted by different types of cropland, interpreting its data accurately--and then programming a computer to do so--is tricky.

"The technology sometimes misclassifies corn as alfalfa and so forth, but the type of experimental work our students have done is making it more and more reliable," he says.

"We don't purport to have the last word on who's to blame for soil erosion, nor should landowners worry that some kind of spy satellite is going to take away all their rights," Lillesand adds. "But the class has done something that may set the tone for how land managers use satellite data in Wisconsin and other states."

(source: Institute for Environmental Studies Newsletter, May 1985)

PUBLIC LAND SURVEY SYSTEM CEREMONY

August 23-24, Madison. The Wisconsin Society of Land Surveyors (WSLS) will celebrate the 200th anniversary of the PLSS at its summer meeting. At a ceremony 6:00-6:30 p.m. Friday, Bernie Holstrip of the National Bureau of Land Management will present the governor with the historical patent to lands leeded to the Governor. Dane County Circuit Judge Moria Krueger will speak on the sectionalized land system. William Wambach, District No. 1 Director, Dept. of Transportation, will talk about the point of beginning. Both Les Van Horn, WSLS president, and Governor Anthony Earl will also comment on the significance of the PLSS in Wisconsin.

The next morning at 9:30, the Society will set a monument at the section corner in the center of the Capitol's Rotunda. Wisconsin's capital is the only one in the country situated over a PLSS section corner.

ADVERSE POSSESSION/UNWRITTEN RIGHTS

August 24, Des Moines, IA. Landmark Education Group presents "Adverse Possession and Other Unwritten Rights: How They Affect the Land Surveyor" at the Des Moines Holiday Inn - South Airport. Registration is $140. Course completion awards 0.6 CEU. More information is available from Landmark Enterprises, 10324 Newton Way, Rancho Cordova, CA 95670.

CHARTING THE INLAND SEAS: A HISTORY OF LAKE MICHIGAN THROUGH MAPS

August 25-December 31, Manitowoc, WI. The Manitowoc Maritime Museum has assembled antique maps depicting the history of Lake Michigan. A nominal admission fee of $1.75 adult, $1.00 children is charged. The Museum's address is 809 South 8th Street, Manitowoc, WI 54220, phone 414/684-0218.

RACING INTO TOMORROW

September 8-13, Indianapolis. The annual fall technical meeting of the American Congress on Surveying and Mapping (ACSM) and the American Society of Photogrammetry and Remote Sensing (ASP&RS) at the Hyatt Regency. Contact Gary Kent, ACSM/ASPRS Convention Director, P.O. Box 26068, 3675 North Post Road, Indianapolis, IN 46226.

WCGE ANNUAL MEETING AND UW-MILWAUKEE "CENTENNIAL" CELEBRATION

October 4-5, Milwaukee. The Wisconsin Council for Geographic Education (WCGE) will hold its 1985 annual meeting at the University of Wisconsin-Milwaukee (UWM). The meeting is being jointly hosted by the UWM Geography Department and the UWM Golda Meir Library's American Geographical Society (AGS) Collection.

The program for Friday, October 4 will focus on an annual dinner at which retired Wisconsin geographers will be honored, and on a talk by guest speaker Yi-Fu Tuan, a member of the UW-Madison Geography Department and the author of numerous articles and books. Dr. Tuan's talk, entitled "The Good Life," will be followed by several events related to the celebration of 100 years of geography teaching at UWM and its predecessor institutions.

On Saturday, October 5 there will be an early-riser walking tour of the UWM campus, a business meeting, and three paper sessions. Two concurrent paper sessions will be held in the morning: a general session chaired by Barbara Borowiecki and a session on the teaching resources of the AGS Collection chaired by Roman Drazniowsky.

The guest speaker at the Saturday luncheon will be David Woodward, a member of the UW-Madison Geography Department and Project Director and Co-Editor of the History of Cartography project. Woodward's talk is entitled "The Rewriting of the History of the Map." An afternoon paper session on the history of cartography will be chaired by James Flannery. A tour of the AGS Collection's rare map and atlas holdings will follow.

A major highlight of the department's celebration will be a welcoming talk by Donn Haglund and the talk by Yi-Fu Tuan described above. Tuan's talk will be co-sponsored by the WCGE and the Friends of the UWM Golda Meir Library and will be held in the AGS Collection area of the library. Following the talk, Chancellor Frank E. Horton, a member of the UWM Geography Department, will say a few words about the Centennial and officially open an exhibit entitled "Geography in 1885." He will welcome guests at a reception and party celebrating 100 years of geography teaching, where he will cut a special 100th anniversary cake.

The exhibit will consist of a selection of geography textbooks, maps, atlases, and globes used in teaching geography in 1885. For more information on the WCGE annual meeting and/or the Geography Department's Homecoming and Reunion Day, write Howard Deller (WCGE State Coordinator) at the AGS Collection, the University of Wisconsin-Milwaukee, P.O. Box 399, Milwaukee, WI 53201 or call 414/963-6282.

MAPS AS WINDOWS TO THE PAST

October 9 - November 6, Milwaukee. Howard Deller, Literature Analyst for UW-Milwaukee's American Geographical Society (AGS) Collection, will offer a special non-credit course focusing on decorative maps as human artifacts from which we can learn much about earlier peoples and cultures. Stress will be on European and American maps from the period 1450-1950. Included will be discussions of Medieval world maps, old sea charts, city plans and bird's-eye views, military maps, county atlases, and railroad, highway, and airline maps. The course, which is sponsored by UWM's Off-Campus and Extension Programming, will consist of five illustrated lectures given from 6:30-8:00 p.m. on five consecutive Wednesday evenings beginning on October 9, 1985. The location has yet to be selected, but it will be somewhere on the northwest side of Milwaukee County. For more information and a brochure, please call Howard at 414/963-6282, or write to him at UW-Milwaukee Library, P.O. Box 399, Milwaukee, WI 53201.

IMAGES OF THE EARTH

November 10-13, Chicago-Skokie, IL. The North American Cartographic Information Society (NACIS) will hold its fifth annual meeting at the Holiday Inn Conference Center Chicago-Skokie. The Society is a young, interdisciplinary organization whose goal is to promote communication, coordination, and cooperation among the producers, disseminators, curators, and users of cartographic information. The NACIS membership includes professionals from government, academic, and private organizations. NACIS V will be held in Chicago, the center of commercial cartography in the United States, and will immediately follow the Nebenzahl History of Cartography Lectures at the Newberry Library.

The theme of this year's conference is "Images of the Earth". The program will include such topics as historical map information, map literacy, cartographic images from remote sensing, mapping on microcomputers, maps and imagery for schools, geographic information systems, navigational and utility and metropolitan mapping, managing mapmaking facilities, marketing cartographic products, map library technology, Inter-American cartographic networks, and curriculum development. There will be a mixture of contributed papers, keynote speakers, invited papers, panel discussions, poster displays, exhibits, workshops, and field trips. The deadline for early conference registration is October 1, 1985. For program and registration information contact Ruth Anderson Rowles, Department of Geography, University of Kentucky, Lexington, KY 40506-0027. Phone: 606/257-2931.

NEW MAPS AND PRODUCTS

ENT U.S.G.S. MAPS

Geologic Map of the Hurricane Quadrangle, GRANT County, Wisconsin, 1985, #GQ-1582, by Walter West and Allen V. Heyl, scale 1:24,000, $3.60.

Sheboygan Intermediate-Scale Map, 1984, scale 1:100,000, quadrangle format, SE corner 43° 30' latitude, 87° longitude, no contours, $4.00.

Wisconsin State Base Map, 1984, This map shows counties, cities and towns, and most of the smaller settlements, railroads, and township and range lines in black. Rivers, many of the smaller streams, and other water features are in blue. National forests, wildlife refuges, Indian reservations, built-up areas for cities, and county boundaries are indicated by color patterns. Highways are shown in red. Size 42 by 46 inches. Scale 1:500,000, or about 8 miles to 1 inch. $4.00 ($3.10 from W.G.S.)

Wisconson Topographic Map, 1984, This map is an overprint of the 1:500,000-scale base described above, to which brown contour lines are added. Contour interval 200 feet. $4.00.

You can order all the above maps from the Eastern Distribution Branch, U.S. Geological Survey, 1200 South Eads Street, Arlington, VA 22202. The Wisconsin Geological Survey has all but the Hurricane Quadrangle Geologic Map. W.G.S. orders require postage costs and resident tax.

BAY-LAKE REGIONAL PLANNING MAPS

All orders for maps can be placed by writing or calling the Bay-Lake Regional Planning Commission, Suite 450, S.E. Bldg., U.W.G.B., Green Bay, WI 54301-7001, phone 414/465-2135. Your order will be invoiced to you for the cost of the materials ordered plus postage.

Northside Recreation Facility Design Plan, City of KEWAUNEE, 1" = 50', 1984, $2.50;
Map of Pineview Property, MARINETTE County, 1" = 200', 1984, $2.00;
Zoning Map, Town of Dunbar, MARINETTE County, 1" = 2000', 1984, $2.50;
Zoning Map, City of Kewaunee, KEWAUNEE County, 1" = 700', 1984, $2.00;
Zoning Map, Village of Sister Bay, DOOR County, 1" = 400', 1984, $2.50.

BROWN COUNTY SECTION CORNER RETRACEMEN

This unique status report produced by Les Van Horn, Brown County Surveyor, uses page-size plats of the original Federal Survey Maps by Towns and Sections with translucent overlays showing retraced survey corners. The overlays also pinpoint remonumented corners. A plat map of current ownership faces each overlay. This attractive, 138-page report is available in very limited numbers from Les Van Horn at $15.00 plus $2.00 postage and handling costs. Make checks payable to the Brown County Surveyor and send to the Office of County Surveyor, Brown County Courthouse, Green Bay, WI 54301, phone 414/497-3365.

AMERICAN MAPS AND MAPMAKERS

Subtitled Commercial Cartography in the Nineteenth Century by Walter W. Ristow, 1985, approx. 500 pages, 212 illustrations, 10" x 8½". Price $60.00 plus $2.00 for postage and handling from Wayne State University Press, 5959 Woodward Avenue, Detroit, MI 48202.

DRIFT GLOBE

A hands-on continental drift globe, 12 inches in diameter, is available for $142.00 plus $7.50 UPS shipping. Moveable fiberglass continental fragments have brown land areas and light blue continental shelves. Velcro fabric fasteners allow the continents to be placed anywhere on the globe. Permian to recent drift pathways are on the globe.

A detailed 16-page guide includes paleontology, mountain-building and plate tectonic information, etc. during the past 230 million years of drift.

Order several from Drift Globes, Star Route Box 38, Winthrop, WA 98862, phone 509/996-2576.

TM PRICE

Effective July 1, 1985, the Thematic Mapper (TM) special quadrant price of $1,350 for Computer Compatible Tape (CCT) products will be discontinued. Any TM full scene or combination of quadrants in the archive will still be available on CCT's at the current full scene cost of $4,400.00.

Questions should be directed to:

Landsat Customer Services
Mundt Federal Building
Sioux Falls, SD 57198
phone 605/594-6151.

LANDSAT FUNDING

The U.S. Office of Management and Budget has agreed to fund $286 million in costs associated with the commercialization of Landsat. According to published reports, the Administration will submit to Congress additional requests of $75 million for fiscal year 1985 and $50 million for fiscal 1986. The funds will allow the U.S. Commerce Department to finalize contract negotiations with the Earth Observation Satellite Company (EOSAT), the successful Landsat bidder.

The agreement will give EOSAT enough federal funds to develop and build two new Landsat satellites that will be carried into polar orbits aboard the space shuttle within the next five years.

Flying north-to-south at an altitude of 560 miles, the Landsats will be able to cover every spot on the globe every two weeks using cameras and other instruments.

Also included in the agreement is construction of an Earth station in the United States to receive Landsat pictures and information.

(source: American Society of Photogrammetry and Remote Sensing)

THEMATIC MAPPER PRODUCTION

NOAA has established the following production goals for the Thematic Mapper Image Processing System (TIPS): 25 film scenes and 10 CCT scenes per day, 7 days a week. The TM HDT-A archive at Goddard Space Flight Center contains approximately 50,000 scenes of Landsat 4 and Landsat 5 data at various levels of cloud cover. Production of TM data for customers and the film archive has resulted in 6948 TM scenes produced by April 30, 1985. These products are archived at Sioux Falls as follows:

TM Film Scenes

Landsat 4	1,176
Landsat 5	5,772
Total Film Scenes:	6,948

TM CCT Quads

	Corrected (P data)	Uncorrected (A data)
Landsat 4	971	136
Landsat 5	6,151	643
Total CCT Quads:	7,122	779

As NOAA has gained production experience, certain timelines have emerged. For acquisition data, the timeline from satellite passage to the entry of archive data at Sioux Falls has been about 20 days. This is a reasonably acceptable timeline based on the data collection and distribution system in place. For retrospective orders, turnaround performance is somewhat higher for two reasons. First, TIPS is structured to process data in continuous swaths rather than as single scenes. Secondly, older data, especially those acquired before September 1, 1984, have proven difficult to recover and process. NOAA management intends to continue to refine the system so that customers can receive data in the quickest possible time.

(source: Landsat Data Users Notes, July 1985)

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

Third Installment

Editor's Note: This article is the third in a series of four installments from Christopher Baruth's Masters thesis. The first section presented an overview of early triangulation and the beginning of topographic mapping in Wisconsin. The second portion covered the period of transition from 1893-1945. Refer to Bulletin v. 11, no. 1, January 1985, p. 13-16 and v. 11, no. 2, April 1985, p. 14-16.

Geodetic Control

The U.S. Coast and Geodetic Survey, in the person of Prof. John Davies, so active in the 1870's and 1880's during Wisconsin's first period of precise mapping, became almost inactive in the state for a generation. Prof. Davies' triangulation was never continued, though his network continued to be used for mapping.

Until about 1930, map control was achieved by the running of traverse lines, usually along railroads. These traverse lines would normally commence and terminate at U.S.C.G.S. or Lake Survey stations. The first example of this was a line run in 1896 by George T. Hawkins of the U.S. Geological Survey. It was run from a U.S.C.G.S. station in St. Paul, Minn. to control the St. Croix Dalles sheet.

In 1899, Hawkins established control for the Marathon and Wausau special sheets with a long traverse connecting a station near Madison with a station near Green Bay.[41]

In this manner, until 1920, the U.S.G.S. provided almost all of its own control. The Coast and Geodetic Survey remained almost inactive in Wisconsin. The control provided by the Geological Survey never became a part of the basic first-order control network of the state. It served to supplement the higher order U.S.C.G.S. surveys by providing control for individual topographic maps.

In 1920 the Coast and Geodetic Survey reactivated its survey work in Wisconsin, but not in direct support of Wisconsin's mapping program. At that time, J.S. Bilby was in charge of running a precise traverse from south to north through the center of Illinois. In the south, it was readily connected, as planned, to the triangulation along the 39th parallel. In the north, it was intended to connect to Professor Davies' net. The stations could not, however, be recovered because the ravages of time had destroyed Davies' monumentation. Therefore it was necessary for the line to be run eastward to connect with the Lake Survey. Thus, Professor Davies' years of effort lost any subsequent significance.[42]

In 1921 and 1926, the Coast and Geodetic Survey ran traverses at the request of the Geological Survey. These were, however, the last primary traverses to be run in the state. Three developments occurred which launched Wisconsin, and the nation, into the modern era of geodetic control.

The first was the development of the Bilby steel tower in 1927. These portable towers for triangulation greatly quickened the pace of the work, and cut costs by as much as 40%.[43] The second development was the completion of the first-order triangulation network in the western part of the U.S. This freed the surveyors for work elsewhere, and enabled the establishment of the datum of 1927.[44] The last, but not least, development was greatly augmented by a

(continued next page)

WISCONSIN MAPPING, continued

budget for surveying beginning in 1930.[45] Since 1930, work progressed steadily, with an intermission during the war years. Wisconsin's first-order control network was complete within two decades of World War II.

Post-War Topographic Mapping

Though the planimetric mapping program progressed in full swing even through the war years from 1938 through 1959, Wisconsin's topographic mapping program limped through the 1920's, crawled through the 1930's, and was given up for dead throughout half of the 1940's. Toward the end of the war, in February 1945, State Geologist Bean wrote to the U.S.G.S. in Washington that "there is renewed interest in topographic mapping" in Wisconsin.[46] This apparently stimulated topographic mapping, for beginning in 1946, production resumed at the rate of three to four per year.

These new maps, however, differed fundamentally from their pre-war relatives. Topography was now represented with mathematical precision, the interpretive eye of the topographer no longer intervened between the landscape and the map reader. Stereophotogrammetry had come of age, and was at last introduced into Wisconsin topographic maps.

Map technology was, thus, firmly under control. Maps, with the topography represented more accurately than ever before, were being produced on a control network of the highest precision. By this time the eastern half of the U.S. had been adjusted to the 1927 datum.

This new technology also had the effect of rendering all of the state's earlier topographic maps obsolete. Wisconsin's mapping program was, in a sense, back to square one, and with only three to four maps produced yearly, completion was a long way off.

The slow pace continued into the early 1950's. At about the time that George F. Hansen superseded Bean as State Geologist, topographic mapping activity began to increase, and a new element entered the picture. This new element was the 7½-minute, 1:24,000-scale quadrangle, and from the time of its introduction in 1952[47] until its final adoption as the standard scale in 1969, Wisconsin map coverage became a curious combination of the two scales.

Beginning in 1952, Wisconsin's cooperative program was aided by two federal mapping programs. So, in that year, in addition to the three cooperative 15-minute sheets, the federal government surveyed a total of twelve 7½-minute quadrangles, covering 3/4 of the old 30-minute Mineral Point quadrangle. This was part of a cooperative geological investigation project. The cost of the geological investigation was assumed jointly, but the mapping was done at federal expense.[48] At this time, apparently very little thought was given to changing the scale of Wisconsin's proposed map coverage, but these twelve 7½-minute quadrangles were never converted to 15-minute sheets in the interest of series unity. It appears that the money which was available was allocated to new surveys.

In the year of Hansen's takeover, map production dropped to a single quadrangle. This, however, can be viewed as the end of the old era. The next few years saw a sharp rise in map production. In only four years' time, 60 additional cooperative 15-minute quadrangles were produced. A number of these were surveyed at the expense of the federal government. Beginning in 1954, the survey of Wisconsin's "coastal perimeter" was begun as a defense measure by the federal government.[49] This survey was conducted at 1:24,000 accuracy standards, and the maps were published at that scale, but the state, with a view to completing the 15-minute series, had these maps reduced to the 1:62,500 scale (four 7½ minute quadrangles equal one 15 minute quadrangle).[50]

Through 1957, all cooperative surveys were conducted at 1:62,500 accuracy standards, but beginning in 1958, all surveys were conducted at 1:24,000 accuracy standards.[51] Though all quadrangles surveyed beyond this date were eventually published as 7½-minute sheets at the expense of the federal government, the state, however, adhered to the 15-minute quadrangle coverage plan, and continued to have 15-minute quadrangles published.[52] In the next

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decade, a great deal of mapping was accomplished. Between 1958 and 1968 about 120 15-minute quadrangles were surveyed. Since all of these, and a sizable number previously surveyed, were being published as 7½-minute maps by the U.S.G.S., the question of whether to convert the state's proposed coverage to the larger scale and drop the smaller one was asked for many years.

As early as 1962, Hansen and the Wisconsin Geological Survey were recommending 7½-minute mapping,[53] but it wasn't until 1969 that the state finally opted to go along with the majority of other states, and change its master plan[54] to 7½-minute map coverage. Hence, 1968 saw the final 15-minute map produced.

Since 1970 an average of about 65 new 7½-minute quadrangles have been surveyed yearly, and the completion date for the project has been conservatively placed at 1983.[55] (Editor's Note: Actually only two years off.)

Present-day funding of the project comes from three state agencies in addition to the federal government. Since 1964, the state has contributed $206,000 yearly. The Wisconsin Department of Transportation contributes by far the largest amount at $155,000. The Department of Natural Resources comes next with $31,000, and the Geological and Natural History Survey, $20,000.[56] The federal government matches these, and usually provides some additional funding.

The next season's mapping projects are determined at a meeting of the representatives of the three involved state agencies. When the list is compiled, the U.S.G.S. usually provides additional quadrangles that they find convenient to do at the time.[57] Overall supervision and coordination of the project are handled by the Wisconsin Geological and Natural History Survey, which has been under the supervision of State Geologist Meredith Ostrom since 1972.

Editor's Note: Since 1974 the State Cartographer has participated in these meetings.

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41 U.S.G.S., Annual Report (1900), p. 265.

42 U.S. Coast and Geodetic Survey, Annual Report (1921), p. 107.

43 Idem, Annual Report (1931), pp. 9-10.

44 Idem, Annual Report (1927), p. 4.

45 Idem, Annual Report (1931), p. 9.

46 E.F. Bean to T.P. Pendleton, Chief Topographic Engineer, U.S.G.S., Madison, 10 February 1945, in files of Wisconsin Geological and Natural History Survey.

47 This is not strictly correct, the Gogebic special sheets, which covered the Gogebic Iron Range were done at this scale.

48 George F. Hansen, Wisconsin State Geologist, to David Carley, Dept. of Research Development, Madison, 7 July 1960, in files of Wisconsin Geological and Natural History Survey.

49 Ibid.

50 L.H. Borgerding, personal letter.

51 Ibid.

52 Ibid.

53 George F. Hansen, letter, 21 June 1962, in files of Wisconsin Geological and Natural History Survey.

54 L.H. Borgerding, personal letter.

55 Meredith Ostrom, Wisconsin State Geologist, interview, Madison, November 1977.

56 Ibid.

57 Ibid.

(end of third installment)

What does the future have in store for the 7½-minute topo program? Stay tuned for the last installment coming in October.

REGIONAL PLANNERS VIEW AUTOCAD

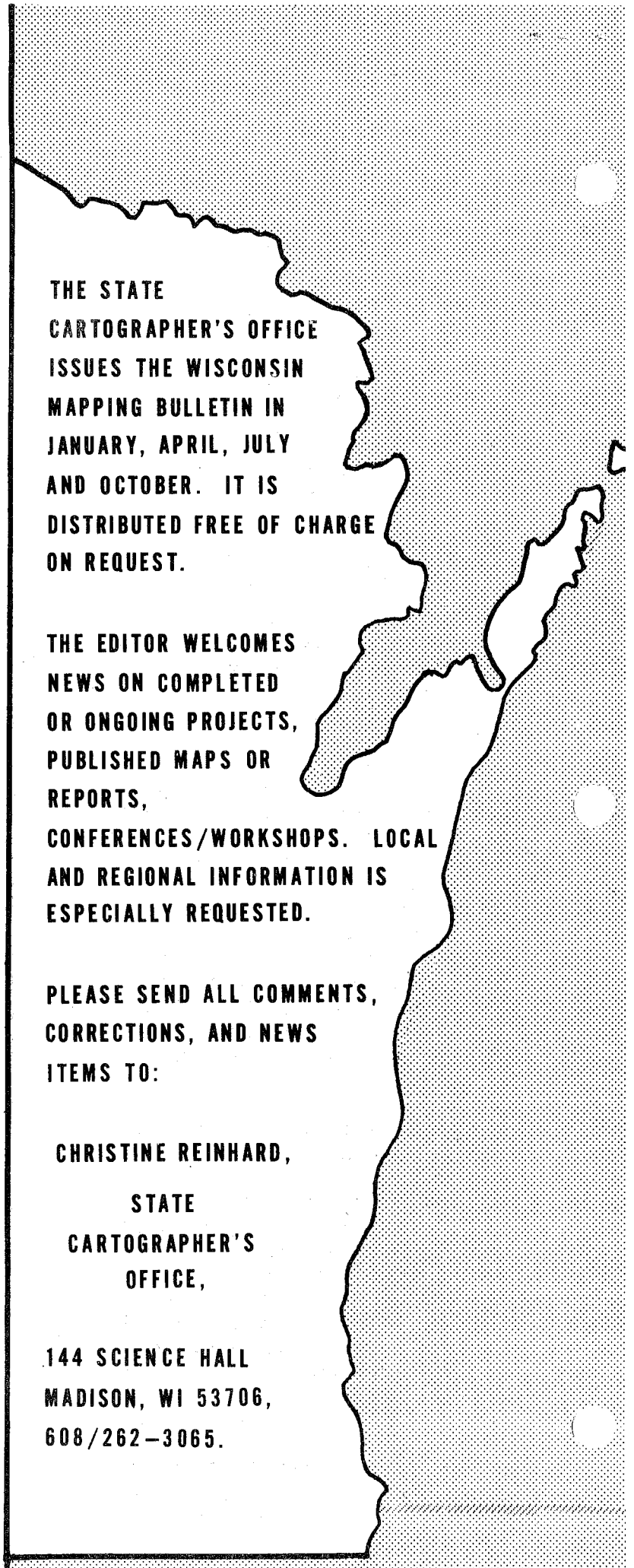
Executive directors and staff members from several of Wisconsin's regional planning commissions (RPCs) met early in June to see demonstrations of microcomputer mapping software. Of special interest was the AutoCAD graphics program. Craig Fonzen of Madison Computerland West and Richard Leaver, DODGE County Surveyor and director of the Dodge County Real Estate Description Department demonstrated this $2,500 computer-aided drafting package on a Texas Instruments Professional P.C. AutoCAD, which runs on the IBM PC/XT/AT and some compatibles, is being used by Dodge County for mapping purposes on the TI PC which contains 768 KB of RAM, an 18 MB hard disk drive, and a 36" x 48" back-lit Hitachi digitizing tablet. They produce hard copy drawings on a Calcomp model 1043, "A" to "E" size, multi-color plotter.

The planners learned how Dodge County copes with the problem of real estate descriptions that display overlapping "common" lines. They programmed the computer to show the lines the way the descriptions read. At large scales, the discrepancies show; at small scales the lines appear as a single common line.

A typical section of land will use 30 to 50 Kilobytes of disk media storage. With many streams or numerous textual descriptions, storage can go up to 200 KB. However, mapped information may be stratified by selectively placing details on an infinite number of available layers. These layers may be turned "on" or "off" for discrete viewing and multi-color plotting.

The group also learned that through the use of special site licensed software, it is possible to transfer data from and to the Dept. of Transportation's system, for use on a suitable microcomputer running a communications package and AutoCAD.

(source: Charles Montemayor, Executive Director, Dane County Regional Planning Commission)



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