



*cartographic perspectives*

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North American Cartographic Information Society

volume 1 number 1 March 1989

# cartographic perspectives

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## *President's remarks*

When the North American Cartographic Information Society (NACIS) was founded in 1980, one of its main objectives was to promote communication, coordination and cooperation among the producers, disseminators, curators and users of cartographic information. Since our founding, *Map Gap* and the more recent *Cartographic Information* quarterly newsletters have served as an effective link in disseminating information among the Society's members.

With greater recognition of NACIS in the cartographic community and an increasing membership of diverse backgrounds, a newsletter format can no longer represent the Society or keep our readers properly informed of new developments in North, Central, and South America.

This new publication, *Cartographic Perspectives*, Bulletin of the North American Cartographic Information Society, is intended to expand on its successful predecessors by publishing more original contributions about cartographic activities in the Americas. In particular, each quarterly bulletin will feature a solicited original article chosen by the NACIS

Publications Committee. As with the newsletters, this bulletin can serve as an effective link between NACIS's various constituencies if it is used as a "bulletin board" to which a range of members contribute regularly.

We hope the combined efforts of our contributors, through this bulletin, provide you with new cartographic perspectives.

Juan José Valdés  
President

Cuando la Sociedad de Información Cartográfica Norte Americana (NACIS) fue fundada en 1980, uno de sus primeros objetivos fue el desarrollo de mejorar la comunicación, la coordinación y la cooperación entre los productores, diseminadores, curadores y aquellos que utilizan la información cartográfica. Desde nuestra fundación las gacetas trimestral *Map Gap* y la más reciente *Cartographic Information* han diseminado información eficientemente entre los miembros de la Sociedad.

El reconocimiento de NACIS por la mayor comunidad cartográfica y el acrecentamiento de miembros de variadas calificaciones ha causado un cambio en el formato de nuestra publicación. El formato de gaceta actualmente no está al servicio de informar sobre nuevos desarrollos cartográficos en las Américas.

Esta nueva publicación, *Perspectivas Cartográfica*, Boletín de la Sociedad de Información Cartográfica Norte Americana (NACIS), proponerse ha ensanchar las exitosas gacetas publicando contribuciones más originales sobre actividades cartográficas en las Américas. En particular, cada boletín trimestral va a incluir un artículo original solicitado y seleccionado por el comité de publicación de NACIS. Como las gacetas, este boletín puede servir como un enlace entre los varios constituyentes de la sociedad si es

usado como un tablero para noticias donde nuestros miembros pueden contribuir regularmente.

Esperamos que con los esfuerzos de nuestros contribuidores este boletín, *Perspectivas Cartográficas* enriquece su carrera profesional.

Juan José Valdés  
Presidente

### message from the Editors

Welcome to the first *CP*.

As a rookie editor, I am fortunate and grateful to have the assistance of Karl Proehl, who edited twenty-three issues of the original NACIS publication, *Map Gap*. We now face the unenviable task of taking over for Ruth Anderson Rowles, skillful editor of eight issues of *Cartographic Information*. This is a case in which two men are required to replace one competent woman.

*CP*'s purpose seems clear. As Marsha Selmer (a NACIS Publications Committee member) put it so succinctly, "*CP*'s purpose should be to publish papers and information that support the stated objectives of the Society and to serve as a record of the Society's activities." This is a good statement of what ought to be done, but something remains to be said about how we ought to do it.

It seems to me that some of the most rewarding cartographic information exchanges occur in person, between old friends and new acquaintances at the annual meetings. These exchanges are rich because everyone involved feels comfortable expressing themselves in their own way. My goal for *CP* is that it be a forum every member feels comfortable contributing to, and that each issue contain a variety of contributions from several members. All are encouraged to submit reviews,

reports, abstracts of "fugitive cartographic literature," notices, open letters, comments or complaints. There is a place in this Bulletin for a range of prose forms, from the formal solicited article to the informal notice posted on the "Cart Lab Bulletin Board." Graphical submissions are also welcome (see Instructions for Contributors elsewhere in this issue).

Please don't hesitate to let Karl and me know what you think of *CP*. We aim to make it a publication that NACIS members will find useful, be proud of, and most important, be part of.

David DiBiase  
Co-Editor

P.S. Thanks to Alan MacEachren, whose patience and help has made the transition to *CP* easier than it otherwise would have been.

### cartographic perspectives on the news

#### LANDSAT SHUTDOWN AVERTED?

Vice President Dan Quayle announced March 6 that he had gained a commitment of funds to keep Landsat -- the United States civil earth observation system -- operational. The announcement was termed "premature," however, by a spokesperson of the Earth Observation Satellite Company (EOSAT), the company that operates Landsat archives and data processing equipment.

Quayle's announcement notwithstanding, the Landsat archives at the EROS Data Center in Sioux Falls, South Dakota are slated to cease accepting orders for Landsat data as of March 15. *CP* contacted Debby Williams of the EOSAT Public Affairs office March 9. Williams stated that EOSAT "requires an assurance

from the Department of Commerce" that the \$9.4 million necessary to maintain the system for the balance of fiscal year 1989 will be forthcoming. "Then we will still have fiscal year 1990 to worry about," she added. Federal legislation mandates that the Landsat program must be fully privatized by 1991.

The crisis arose when the National Oceanic and Atmospheric Administration (NOAA) -- the federal agency responsible for administering the Landsat program until 1991 -- announced it could no longer afford the \$20 million annual monitoring and maintenance of the satellites. "We simply do not have the funds at this point to continue their operation beyond the end of the month," said Thomas N. Pyke Jr., head of NOAA's satellite office.

"We have gone to the other federal agencies who make use of Landsat data ..., but as of today we have received no additional funds from any source." Unless some sort of funding assistance is forthcoming, Landsats 4 and 5 will be set adrift on March 31. The U.S. government has promised that Landsat 6 will be in orbit by the end of 1991, but the threatened shutdown could force Landsat users to rely on France's SPOT satellite. The shutdown is also likely to result in layoffs of remote sensing specialists by EOSAT.

EOSAT, of Lanham, Maryland, is a joint venture formed of Hughes Aircraft and General Electric Company. The company was formed in response to a ten-year-old U.S. policy of privatization of its civil earth observation operations. EOSAT vice president Peter Norris has criticized the decision to pull the plug on Landsats 4 and 5 as "outlandish" and illogical, claiming that the satellites are "robust" and could work until 1991. But he says it would be "out of order" for EOSAT to pay operational costs.

The crisis has refueled controversy over the wisdom of the Landsat commercialization strategy. A study by the Analytic Sciences Corporation of Reading, Massachusetts reportedly concludes that "Projected market revenues will not support a fully viable commercial Civil Earth Remote Sensing System during the 1990s." Perhaps the market will become viable "early in the next century," it says. A NOAA report on a proposed joint Landsat-SPOT venture is due in June. In the meantime, scientists and mappers who rely on remotely-sensed imagery may have to look overseas for a reliable source.

(additional sources: *Science*, 2/24/89; *Philadelphia Inquirer*, 3/9/89)

#### MARS: THE MOVIE

The Jet Propulsion Laboratory of Pasadena, California has recently completed a five-minute simulation of a six hundred mile-per-second "fly-by" of the surface of Mars.

According to Jim Doyle, JPL public information officer, the simulation is the result of months of work by project leader Kevin Hussey and his team. Hussey used data collected in 1976 by the Viking orbiter to model the imaginary flyby. The simulation was processed on two minicomputers running twenty-four hours a day for thirty-seven days. When asked by *CP* to estimate the cost of such a computer run, Doyle quipped, "Good question. Nobody's ever asked us that before."

"Mars: The Movie" is the fourth simulation of its kind produced by JPL. Their first production was "LA: The Movie," a flyby of Los Angeles climaxing in a nose dive into the Rose Bowl. "Miranda: The Movie" simulates a flyby of one of the five moons of Uranus. "Earth: The Movie" is a visualization of global atmospheric circulation. A fifth simulation is likely to

arise from data generated in August, 1989, during the space probe Voyager's close encounter with Triton, the largest moon of Venus.

All four of the existing simulations are available to educators at no cost. Send a formal request on official letterhead, along with a new high-quality VHS video tape, to: Teacher Resources, Jet Propulsion Laboratory, Pasadena, CA 91109. Allow six weeks for delivery.

#### COMPUTER-ASSISTED GERRYMANDERING

Chicago -- At least ten private vendors and consultants are working on computer programs that will allow politicians, their aides and special interest groups as well as official redistricting commissions to use even personal home computers to produce their own detailed versions of proposed election districts.

In the most sophisticated systems, a legislator using computer graphics will be able to call up his district on a screen, shift a boundary and get instant readouts of what the voting behavior, racial composition and other population characteristics would be in the newly drawn district.

In 1980, the computer system New York legislators used in redistricting was regarded as the most sophisticated in the nation. But Lewis Hoppe, an official with the New York Legislature's reapportionment study group, said it still took up to fourteen hours to extract all the population data for a single district in Brooklyn. "Now we can do it in minutes," he said. (*New York Times*, 1/10/89)

#### GREAT LAKES SHORELINE MAPPING PROGRAM

In the closing hours of the last Congress, Public Law 100-200, which contained the "Great Lakes Shoreline Mapping Act of 1987,"

was passed and signed by the President. This Act requires the Director of the Office of Charting and Geodetic Services, NOAA, in consultation with the Director of the U.S. Geological Survey (USGS), to submit to the Congress a plan for preparing maps of the shoreline of the Great Lakes.

The plan will define the responsibilities of NOAA and USGS, set up a mapping schedule, with high-risk areas (erosion or flooding) given first priority, a completion date, and recommended funding. The committee set up by NOAA and USGS expects to complete their report to Congress during the next year. For further information, contact: Mr. Dennis Carroll at (301) 443-8742. (*C&GS Update*, Winter 1989)

#### TOWARD A REDEFINITION OF CARTOGRAPHY

The International Cartographic Association (ICA) is soliciting views on a redefinition of "cartography" for its forthcoming Dictionary of Cartographic Terms. The British Cartographic Society offers the following:

"...in defining cartography we are speaking to more than just ICA but to many other interested parties. In the light of the recent BCS Council policy to broaden the appeal of cartography to both prospective members and the general public as a whole we have included two further definitions, one for professional cartographers and the other for the public at large.

"A definition for use in communication with the general public and prospective members not yet engaged in cartography:

**Cartography is the art, science and technology of making maps.**

A definition for practicing cartographers:

**Cartography is the science and technology of analyzing and interpreting geographic relationships, and communicating the results by means of maps.**

A definition suitable for the ICA Dictionary:

**Cartography is the science and technology of analyzing, interpreting and communicating spatial relationships normally by means of maps."**

(*BCS Newsletter Number 1, 1989*)

*Editors note: One wonders why the BCS is willing to admit to the general public -- but not to "practicing cartographers" or the ICA -- that cartography is as much an art as a science or a set of technologies.*

#### LETTER TO THE EDITOR

January 4, 1989

Professor Ruth A. Rowles, Editor  
*Cartographic Information*

Dear Ruth:

I have just read with interest, and much profit, the issue No. 31, December, 1988. It is an informative and useful publication. There are three items on which I wish to comment.

First, Alan MacEachren's piece on "Renewed Interest in Map Projections" is very well done, and I hope he is right. One small item: he stated that the Robinson projection was patented in 1963. Devised then, yes; but patented, no. Van der Grinten's projection was patented in ca. 1903, but sometime later I believe the Patent Office declined to accept patent applications for projections. Also map projections cannot be copyrighted, but of course, maps can. In any case, the Robinson projection has been in the public domain ever since it was devised.

Second, I compliment you on

your reply to Mr. Grigar of Texas. That leads into the third item. In that letter you list the prices for single copies of *Which Map Is Best?* and *Choosing a World Map*. But that reminded me of a fact less well-known, namely that *Choosing a World Map* is available at a discount when 10 or more copies are ordered, made possible by generous grants from several cartographic/geographic organizations. The prices are as follows:

#### Copies Cost

10-19	\$2.00
20-29	\$1.50
30-39	\$1.25
40-49	\$1.10
50+	\$1.00

Plus \$2.00 shipping and handling for all orders. This was done with the hope that schools might find it a useful resource.

Very best regards,  
Arthur H. Robinson

#### NEW VISUALIZATION CENTER

The State of California has given the San Diego Supercomputer Center \$6 million to develop a scientific visualization facility that the state hopes will help attract high-technology business.

Scientific visualization uses graphics to express information -- particularly complex dynamic systems with complicated time scales, flow patterns, and spatial relationships -- with which scientists often work. It requires sophisticated software and powerful computers to manipulate the data, and specialists who understand how to represent numeric data using form, line, and color.

The supercomputer center, located at the University of California at San Diego, is supported by the National Science Foundation. (*Chronicle of Higher Education*, 2/15/89)

## featured article

The Aeronautical Charting Division (ACD), National Ocean Service (NOS), National Oceanic and Atmospheric Administration (NOAA) produces the Radar Video Maps (RVM's) used by air traffic controllers to monitor and control the Nation's airspace. These complex maps depict the local Federal Aviation Administration (FAA) airspace definition and show airways, intersections, holding patterns, selected navigational aids, special-use airspace boundaries, and other radar display elements critical to the traffic controller's radar scope displays. Previously produced by tedious manual methods, the ACD's Aeronautical Chart Automated Production (ACAP) system now provides the tools for automated production of this integral part of the FAA air traffic control system.

Prior to 1967, Radar Video Maps (RVM's) were constructed individually by cartographers at FAA Air Route Traffic Control Centers (ARTCC's) and towers. The cartographers prepared inked compilations (drawings) on various media, using several different projections and scales. These compilations were taken to local contractors for reduction and processing into negatives which were then trimmed to the required sizes and placed between two pieces of glass or plastic. The composite plates were then oriented to the traffic controller's radar scope.

There were many problems with these early plates. Some scales and projections used were not suitable for the map areas covered. The compilations were prepared on paper rather than dimensionally stable mylar. The symbology varied and line weights were not uniform. Overlapping areas did not match and frequently revisions were not received when needed. As a result of these and other problems, the FAA, realizing the need for establishing a program for Radar Video Maps, assigned the U.S. Coast and Geodetic Survey (U.S.C&GS, the predecessor of NOAA) the task of Radar Video Map production in 1967.

The current Radar Video Map final product is in the form of a negative map image (Figure 1) depicted on either 2.3 or 3.0 inch square plastic plates, depending upon the type of Airport Surveillance Radar (ASR) equipment. As many as five slides can be mounted in the ASR equipment at one time, and projected on the video screen through multichannel display. The plates cover 10 to 60 nautical miles in range and are depicted at scales from 1:100,000 to 1:400,000. The choice of data to be depicted on each map is left to the discretion of the FAA requesting facility. These data might consist of obstructions, landmark features, control zones, vectoring altitudes, geographic boundaries, or any other features that the traffic controller feels might assist in the traffic control for that particular ARTCC.

Currently, 95 percent of all compilation is being performed using the automated procedures. Special or unusual requests are still being handled by manual operating procedures. Under the manual operating procedures, the production process is initiated when a request Form 7910-1 for a new RVM is submitted by the FAA. This request specifies the type of video display, plate size, quantity, map range, radar site coordinates, and data to be depicted on the map. All requested data are verified and obtained either directly from support units within the Aeronautical Chart Branch (ACB), or through terminal queries of the

## Automated Radar Video Map Production at NOS

*Ronald M. Bolton  
and  
Russell A. Hoover*

### INTRODUCTION AND BACKGROUND

*Ronald M. Bolton is Chief of the Aeronautical Chart Branch, and Russell A. Hoover is Staff Cartographer with the Aeronautical Charting Division, National Ocean Service, NOAA, 6010 Executive Boulevard, Rockville, MD 20852*

### MANUAL PROCEDURES

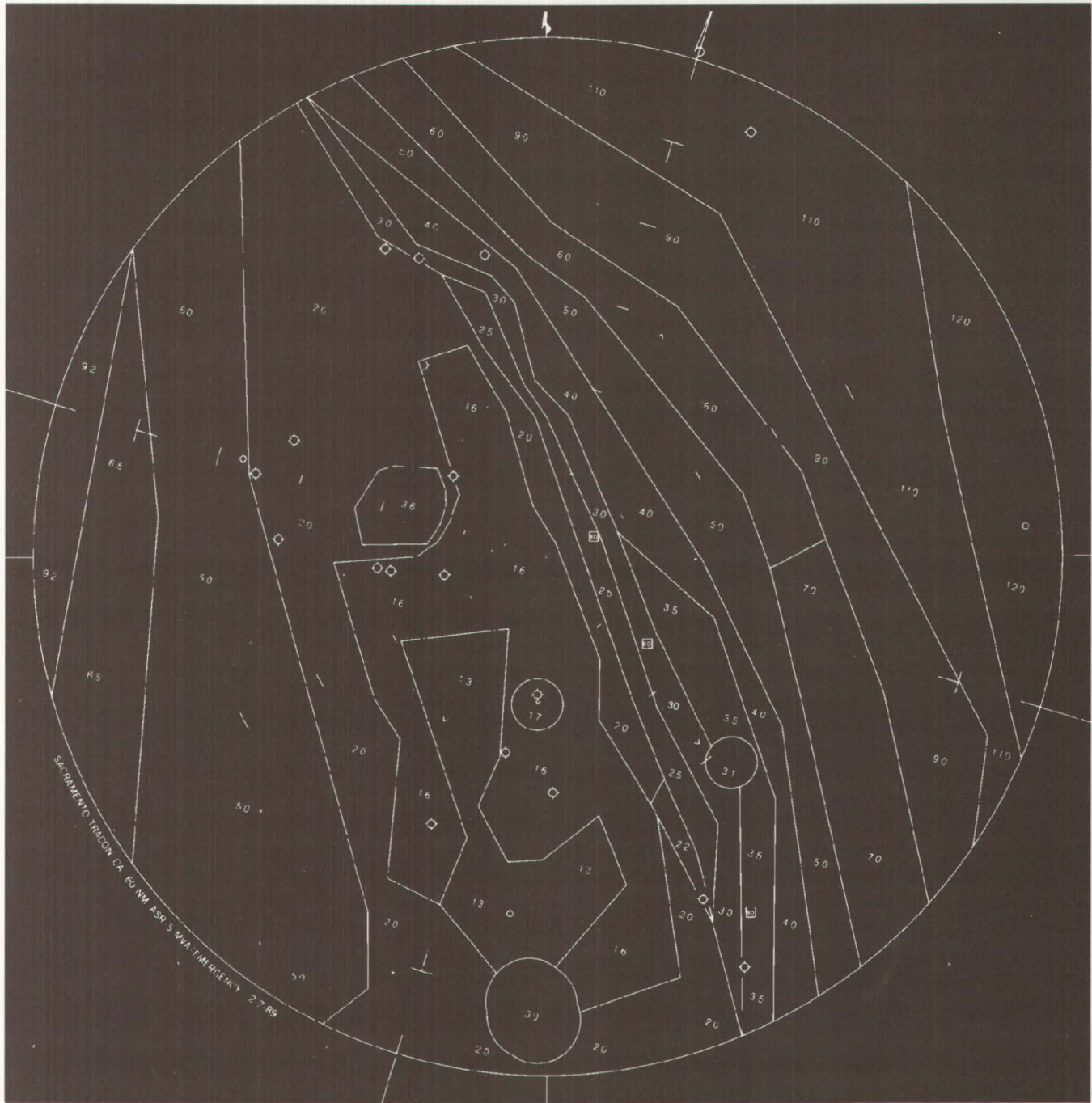
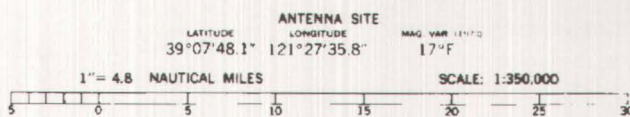


Figure 1: Radar Video Map and legend detail.



FEDERAL AVIATION ADMINISTRATION			
SACRAMENTO TRACON, CA ASR-5 60 NM VIDEO MAP MVA-EMERGENCY			
FAA APPROVED	NAME	TITLE	DATE
PREPARED BY THE NATIONAL OCEAN SURVEY AT THE DIRECTION OF THE FEDERAL AVIATION ADMINISTRATION			DRAWING NO. WP-OK-T3 1

ACAP aeronautical database. Once all the necessary data have been defined and collected, they are manually key-entered through remote terminals to create Map Definition Language (MDL) sets for creating rough computer generated pen plots of the map. A typical RVM plate may require one hundred to two hundred manual data entries. Some requests may take up to one thousand data entries. Cultural features such as rivers, shorelines, or major roads must be drawn manually.

Two compilation plots are produced on dimensionally stable mylar. The first plot depicts only data requested by the FAA facility, the second plot contains all data generated to produce the final map such as projection, extra obstructions, and other miscellaneous data. After the compilation plots are reviewed, they are sent to the NOS Reproduction Branch where they are transferred to scribing material which is engraved with lines of between .012 to .018 inches in width. A contact-type paper proof of the final engraved artwork is sent to the RVM Unit for review where it is checked for accuracy. Errors are identified and the marked proof is returned to the Reproduction Branch for correction to the final engraving. Another paper proof of the corrected linework is sent back to the RVM Unit for review. This cycle continues until a final proof is certified to be correct. An Ozalid copy of the final map is sent to the FAA requestor for final approval, and upon acceptance by the FAA, the engraved image is reduced six to ten times on a high precision Deacon III micro camera designed and constructed especially for Radar Video Maps (Figure 2). This sophisticated camera assures repeatability and eliminates distortion between the original engraved copy and the final RVM negative plate. Two plates, five Ozalid paper prints at compilation scale, and one 8.5 by 10 inch film positive are then sent to the FAA requestor.

As early as 1973 (Boger, 1973), it was realized that automation of RVM production could result in considerable cost savings over manual methods. A feasibility study performed in June 1975 (Bolton, 1974) revealed that automation would result in an annual savings of \$100,000.

The main problem of implementing an automated RVM system, even during the mid-seventies, was not the interactive graphic editing, nor was it the production of the final graphic output. The main problem was developing a database to depict the necessary aeronautical data (Pendleton, 1974). The RVM depicts over eighteen unique types of aeronautical data, much of which may or may not be employed, depending upon the individual traffic controller's needs. There was no simple algorithmic approach to access these data in a purely automated mode. Also, development of an appropriate database for a single product such as the RVM would be cost-prohibitive. Such a database would require on-line storage of all data elements describing the National Airspace System, even though only a small fraction of these elements would ever be used for any given RVM.

It was not until 1985-86 when the ACAP chart-independent, dictionary-driven aeronautical database was implemented, that automation of the RVM could become a reality. The ACAP database contains 12 active files consisting of over 240,000 records. This database was implemented to support the 8,180 aeronautical charts and 26 publications produced by the NOS for recreational, military, and commercial aviation.

Access to this database is based upon single point, polygon, or circle searches of the particular data elements. The data elements are those items needed to describe the National Airspace System, such as airports, navigation aids, obstacles, air routes, fixes, etc., and they are the lowest

*The main problem  
was developing  
a database*

## AUTOMATION CONCEPT AND OPERATION DATABASE



level in the data structure. Each record contains record identifiers peculiar to that item or record. For example, an obstacle record contains such identifiers as State, height above mean sea level, and number code. Retrieval is conducted using remote terminals and consists of keying-in the search commands for each category or particular items falling within the RVM boundaries. Once the necessary data elements for the RVM have been retrieved, they are stored in separate files for input to the Map Definition Language (MDL) set that will be used to generate the digital design file. This digital design file produces the graphic.

The ACAP aeronautical databases and the graphics software (OMNI-PLOT) is resident on both a Digital Equipment Corporation (DEC) VAX 751, and a VAX 785. The interactive graphics system utilizes the in-house OMNI-PLOT software as well as Intergraph Corporation Interact and WMS software. The workstations are Intergraph 6800 dual-screen CRT with 60-inch format, high resolution (+/- .0025 inches) digitizing tables.

## CONSTRUCTING A VIDEO MAP

The first step in automated RVM construction begins with receipt of the FAA Form 7910-1 from the requesting facility. The cartographer accesses the ACAP FIND system resident on the VAX through either on-site or remote alpha-numeric terminals. All of the essential data elements for the particular RVM are retrieved and stored in separate "plot" files. A Map Definition Language (MDL) set that defines the cartographic parameters of the map is generated. This MDL set contains such things as projection, scale, standard parallels, radar site coordinates, neatline, and legend notes. The MDL set also contains the filenames of the previously retrieved data elements.

The MDL set is then processed by the OMNI-PLOT graphics system to generate the vector formatted graphics file. This graphics file is processed through the Intergraph translator software (UNPLOT) to create a master format design file. From the design file, an exact depiction of the RVM and the complete set of unedited data elements is displayed on the CRT screen for editing. The cartographer performs the edit, eliminating unnecessary obstructions, moving landmark features, resolving clutter problems, and performing any cosmetic operations necessary to create an accurate, legible product.

Once the CRT image "compilation" has been reviewed by a senior cartographer, a pen proof is generated and sent immediately to the FAA region for acceptance, additions, deletions, or comments. Further editing is performed if necessary, and another proof is delivered to the FAA. This cycle continues as often as necessary. Upon acceptance of the proof copy, the final design file is used as input to drive a high precision Gerber photo-scribing plotter. A photo-scribed negative possessing the exact .012 to .018 inch line widths is produced and after thorough inspection and review, it is sent to the Reproduction Branch for photo-processing on the Deacon III micro camera. The final Radar Video Plates are then sent to the requesting FAA Region.

The design files are archived on system disc and backed-up on tape, resulting in a permanent record of each RVM. Update or revision of existing RVMs is a simple task of retrieving the design file and performing interactive editing to produce a new RVM. Both the new RVM and the old RVM will be maintained in order to keep a historical record.

## UPDATE OF EXISTING RVMs

As of fiscal year 1989, approximately two thousand Radar Video Maps are in use by the FAA Regions. In order for the NOS to keep the full economic benefits of the automated RVM system, it will be essential to digitize all existing manually generated maps. Once design files have

been created, upkeep and revision of the existing maps will take only hours as compared to days. In-house digitizing efforts have shown that the average time per RVM is four to eight staff hours. The number of staff hours estimated to construct a complete RVM database of the existing maps is twelve thousand hours. Efforts are currently underway to begin this digitization, either through private contracting or inter-agency cooperative agreement.

During fiscal year 1987 there were 3,100 RVM revisions, and 100 original RVM compilations. The cost savings based upon this annual production rate and implementation of the automated procedures would be well over \$300,000 per year. However, the real benefit to NOAA will be customer satisfaction. The elapsed time for the production of a new video plate will drop from four to six weeks to one to two weeks. The customer -- FAA -- will be able to get proof copies within a week for revision and approval.

In addition, the automated procedures will provide the digital data in support of the FAA's Advanced Automation System (AAS) which is currently being developed by the IBM Corporation. This \$3.6 billion effort will upgrade the current air traffic control automation system to handle traffic loads well into the next century. The NOS will supply the digital data for the 2,340 Tower Control Position consoles and the 7,500 Terminal/Enroute consoles. These systems will be implemented in the field beginning in 1991 and should be completely installed by 2001. The digital data requirements of the FAA's AAS will be massive and will require the NOS to supply high quality digital data on a rigid fifty-six day cycle.

In summary, the RVM automation effort has not only cut production costs, it will reduce elapsed time for deliveries of the RVM's to the air traffic controller, thus resulting in a more up-to-date product. This reduction in elapsed time between receipt of new information and application to the air traffic control system will result in increased safety for the air traveler. The automation capability will also enable NOS to provide the FAA and other users with the digital data essential to operate the sophisticated air traffic control systems that will be in use through the next century.

**Boger, Lewis** (October 1973) "Video map project study," NOS/NOAA.

**Pendleton, Dave** (June 1974) "Computer assisted map production system," NOS/NOAA.

**Bolton, Ronald F. and Niedermair, Robert** (June 1975) "Feasibility study for a video map system," NOS/NOAA.

## ADVANTAGES OF AUTOMATION

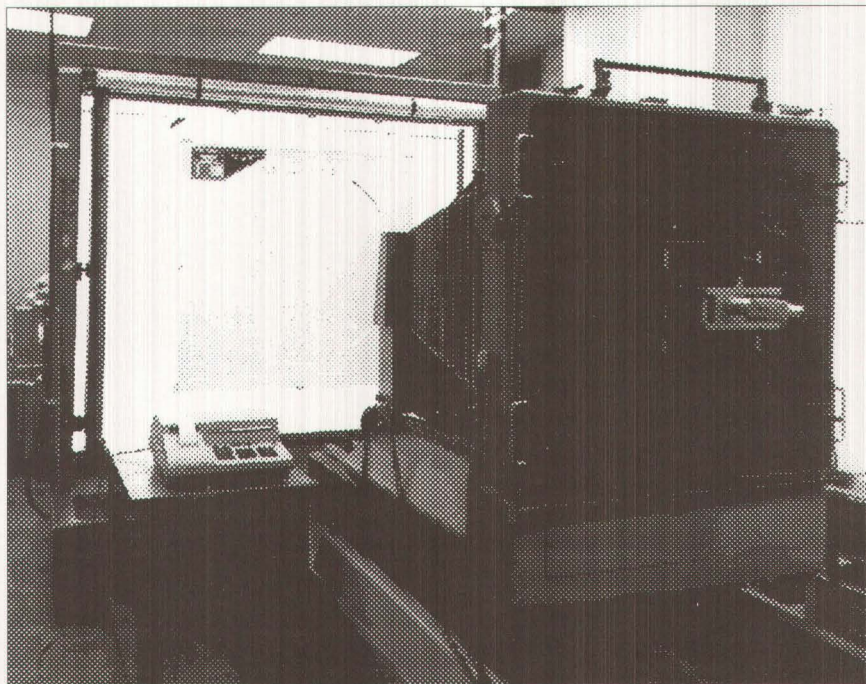


Figure 2: Deacon III micro camera.

## REFERENCES

## Produccion de Mapas Automatizados por Radar Video en la NOS

Extracto

La División de Carta Aeronáutica (ACD), del Servicio Océano Nacional (NOS), de la Administración Atmosférica y Oceánica Nacional (NOAA) de los Estados Unidos de America produce los Mapas por el Radar Video (RVM) usado por los contralores de tráfico aéreo. Estos compuestos de mapas retratan la definición local de la Administración de Aviación Federal (FAA) y definen vías aéreas, intersecciones aéreas, separaciones de vías aéreas, selecciones de auxiliares de navegación, limites de espacio aéreo para usos específicos, y otros elementos de presentación radar en las pantallas usadas por los contralores. Previamente producido por métodos manual tedioso, el systema de Producción de Carta Aeronáutica Automatizada de la ACD ahora provee los instrumentos para la producción de mapas automatizados y forma una parte integral del systema de control de trafico aéreo de la FAA.

### *criteria for featured papers*

All featured papers will be *solicited* by the NACIS Publications Committee. The goals of the solicitation procedure will be to select high quality papers that provide a balanced representation of the divers interests of the membership. The primary mechanism for soliciting featured papers will be a paper competition held in conjunction with the Annual Meeting. All papers prepared for the meeting and submitted in written and /or digital form will be considered. Three of these will be selected to appear in *Cartographic Perspectives* during the next year.

In addition to the competition winners, the Publications Committee (in consultation with the editors) will solicit one or more papers each year from other sources. The goal here is to ensure that all aspects of the membership are served and to attract some thought-provoking ideas from authors who may not be able to attend the Annual Meeting.

Authors of selected papers will be given an opportunity to respond to suggestions of the Publications Committee or meeting participants before submitting as final version. The writing quality must adhere to high professional standards. Due to the interdisciplinary nature of the organization, it is particularly important that papers are carefully structured with ideas presented succinctly. The editors reserve the right to make editorial changes to ensure clarity and consistency of style.

Papers ranging from the theoretical/ philosophical to methodological/ applied topics will be considered providing that ideas are presented in a manner that will interest more than a narrow spectrum of members.

To be considered for the paper competition, papers should be prepared exclusively for NACIS, with no major portion previously published elsewhere.

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## cartographic techniques

### THE MAPPING SOFTWARE MARKET

In the February, 1989 issue of *Computer Graphics Review*, Lisa G. Thorell, a market analyst with Dataquest of San Jose, California, comments on trends in the mapping software market. In general, she notes that the mapping market has emerged as a growth leader in the CAD/CAM arena. "From 1987's \$495 million revenue base, the industry grew 28 percent to \$635 million. All the excitement is centered at the low-end, where PC mapping systems grew from \$35 million in 1987 to \$57 million, a walloping 65 percent growth rate. Vendor products, such as Environmental Systems Research Institute's PC/ArcInfo and Autodesk's AutoCAD, are pushing the front of this wave."

Thorell observes three complementary trends that account for the 1988 growth in mapping system sales. First is the availability of "good graphics performance and sufficient main memory on PCs to support the requirements of the classical and GIS mapping software products." Second is the increasing availability of "off-the-shelf" map databases. Third, she notes, is the growth of PC Local Area Networks, which allow PCs to connect "not only to main-frame-based mapping software, but also to corporate databases."

"Many exciting mapping developments" are predicted for 1989. Thorell points out that "Intergraph's much-awaited TIGRIS GIS, a full-scale object-oriented product, will debut. Fleet management products, such as ETAK's Navigator, will begin to attract the attention of commercial distributors and the transportation industry.

"Apple Computer, who coined the term 'desktop mapping,' will create a new low-tier market

segment—one closely associated with presentation graphics. Apple's ties to DEC places the Macintosh in a strong position to leverage the many mapping applications on DEC platforms, as well as within the VAX-based commercial database world. And, the GIS market should get a major boost from the impact of U.S. government GIS purchases to support the 1990 census." (*Computer Graphics Review*, February, 1989)

### SOFTWARE REVIEW

Software reviews will normally be solicited by the editors, but unsolicited reviews are invited for consideration. If you are using a piece of software useful in working with map information, and are interested in contributing a review, please communicate this interest to the editors.

**MapMaker** Version 3.0.  
reviewed by John B. Krygier,  
*University of Wisconsin-Madison*

**Select Micro Systems, Inc, 40 Triangle Center, Suite 211, Yorktown Heights, NY 10598. List Price: \$349.00 new, \$50.00 for upgrade. Choroplethic mapping program for the Apple Macintosh. Includes program disk and three 800k data disks containing boundary files (U.S. states, counties, and metropolitan centroids; world national boundaries and capital points) and data files (U.S. state income, population, retail sales, market statistics, county population and world population). Other boundary and data files available, \$50.00 - \$7500.00. Requires Apple Macintosh with at least 512k; drives Apple ImageWriter and LaserWriter printers; limited color capabilities. Pros: easy to learn and use, easy to import custom boundary and data files. Cons: limited graphic manipulation capabilities.**

Select Micro Systems' Map-

Maker is one of the first commercial Macintosh software packages designed specifically for making maps. In this review I will not go into specifics on certain aspects of MapMaker which have been covered in previous MapMaker reviews (See Eugene Turner's evaluation of MapMaker in *The American Cartographer*, 15:1, 1988; also, a comparison of MapMaker and GeoQuery, another commercial desktop mapping package, in *MacUser*, 12/88). Instead I will look at several aspects of MapMaker which seem to be important in evaluating its usefulness for actual cartographic design and production. I will start with an investigation of MapMaker's capabilities for importing custom boundary and data files and then conclude with an evaluation of MapMaker's data and graphics manipulation capabilities.

While there are nearly 2.5 megabytes of boundary and census data bundled with MapMaker, it is obvious that the capability to import custom boundary and data files is important for cartographic production purposes. MapMaker seems to have been designed to allow such importing with relative ease.

There are two ways to bring boundary data into MapMaker: by importing graphics files or importing coordinate files.

MapMaker allows you to import MacPaint files and convert them to object-oriented files with a "Trace New Object" function. This function converts the areas of the MacPaint bitmap into "objects" which can be assigned values. The problem with this approach is that the resolution of the new MapMaker file is the same as the imported MacPaint file it was created from (72 dpi). This results in the jagged linework that characterizes MacPaint graphics and does not take advantage of MapMaker's 300 dpi

resolution. These files are also somewhat larger and therefore slower to manipulate than "true" MapMaker boundary files.

An alternative is to import coordinate files into MapMaker from some other software or from a digitizer. MapMaker can convert files in TEXT format into MapMaker boundary files. This has several advantages: the resolution of the boundary files is higher (300 dpi), the level of detail contained in the boundary file can be varied to suit the requirements of a particular project, and, if the TEXT file contains coordinates which have already been projected, MapMaker will preserve the projection through the conversion to MapMaker boundary file format.

MapMaker accepts latitude/longitude coordinates or projected x/y coordinates. Latitude/longitude coordinates can be brought into MapMaker without modification or they can be projected. Albers Equal Area Conic, Miller Cylindrical, or Mercator projections can be generated within MapMaker. Previously projected x/y coordinates can be brought in without modification.

Custom data files are even easier to import. Again, correctly formatted TEXT files can be imported or files from spreadsheet software such as Microsoft Excel can be used. Formats for boundary and data files are clearly explained in the MapMaker documentation.

MapMaker's data and graphics manipulation capabilities are relatively restricted. To be fair, MapMaker does not purport to be capable of high level statistics and graphics. The basics are there, but not much more.

MapMaker offers three ways to classify the data for mapping: equal intervals, N-tiles (equal number in each division) or manual entry for custom classifications. Summary statistics such

as count, total, lowest, highest, range, mean, variance, and standard deviation are available for the total data set and for each of the data divisions.

MapMaker graphic display is also quite basic. Two graphic elements--points and areas--are available. Both points and areas can have values, and both work in a similar manner. Points can be "symbols" or graduated shapes. A limited palette of several dozen symbol types are available. Graduated shapes can be either circles or squares, and can be displayed as an outline, solid or filled with a pattern. Areas refer to the "units" in the boundary files: counties, states, etc. Three options are available: choroplethic (several dozen fills are available), area cartogram, and dot density. These three can be used alone or in any combination. The dot density option seems to be rather useless. It fills an area (eg., a state) with a number of dots (user specifies diameter, value, and maximum number of dots) in a random manner. Available patterns and symbols are very limited and cannot be customized. Also, it is difficult to construct a series of patterns or symbols that denote a quantitative scale. Most of the available symbols and patterns seem useful only for qualitative distinctions.

MapMaker's text capabilities are limited; for example, they allow for text on one horizontal line at a time only. The boundary linewidths are not adjustable. The map legend, which automatically pops up when a new map is created, allows some flexibility but is more or less a fixed entity on the map. There are also no graphic tools (like those in MacPaint) to allow the drawing of lines or squares or other graphic elements on the MapMaker map. Six hues are available: green, magenta, blue, yellow, red, and cyan; these will print on the Apple Image

Writer (if a color ribbon is used), and show up on a Mac II color monitor.

To summarize, MapMaker's data and graphics manipulation capabilities are in most cases limited. In some cases the flexibility to overcome these limitations exists, such as with the manual entry option for setting data classification limits. In other cases the flexibility is nonexistent, such as with the limited and non-customizable symbol and pattern palettes and fixed boundary linewidth. Such problems limit the usefulness of MapMaker in the context of a cartographic production facility.

Although MapMaker was designed specifically for making maps, it is marketed as a "business map making system," not as a tool for production cartographers. However, in the microcomputer environment, cartographers have become accustomed to adapting (or adapting to) software not designed expressly for their needs. MapMaker's relative ease of use and its capability to import custom boundary and data files are advantages that outweigh its limitations. Given its modest list price, MapMaker would probably be a worthwhile addition to many cartographic labs.

#### INDIANA UNIVERSITY OF PENNSYLVANIA SOFTWARE DEVELOPMENTS

The Department of Geography and Regional Planning at Indiana University of Pennsylvania has announced the publication of several software packages. These packages are designed for either research or instruction. They run on IBM and compatible computers and require EGA/VGA video and hard disk drives.

The **Populated Places Register** will plot the location of populated places in the United States. Users can request places by name, by

partial name, within a latitude and longitude search window, or by ZIP code. Search criteria can be combined. Price \$99.95, site license \$149.95.

**TIGERview** is a demonstration program that shows users what they can expect from the U.S. Census Bureau's TIGER system. It provides a graphic display of the Boone County, Missouri TIGER file (the only one released to date). TIGERview will be modified to work with other TIGER files as they become available. This program has the same capacity as other advertised software that sells for \$250. The program includes the Boone County data files which the Census Bureau sells for \$60. The program and data files are distributed on high density diskettes for \$5.

For more information contact: Kevin Hunter, Department of Geography and Regional Planning, IUP, Indiana, PA 15705, (412) 357-2251.  
(AAG/MSG Newsletter 5:1, 2/89)

#### AAG/MSG DISK EXCHANGE LIBRARY

The Microcomputer Specialty Group of the Association of American Geographers maintains an 817-disk library of public domain software. To follow is a list of the geography-related software for IBM and compatible computers available through MSG. The software is available for \$1.00 except as noted.

- G1** U.S. County Data Base (includes county name, county seat, FIPS, latitude, longitude, date of creation, ICPSR code)
- G2** Digital Terrain Analysis (uses digital elevation data for line of sight, 3-D oblique views, slope categorization and tinted elevation maps; written in pascal, includes source code)
- G3** Weather Prediction, Koppen Climate Classification, and climograph drawing programs

**G4** Landsat (by S. Loomer; image processing package for MSS and data; requires EGA; \$4.00)

**G5** UMDS (by V. Robinson; GIS program written for the United Nations)

**G6** Cartographic Utilities (normalize, convert minutes and seconds to decimal, nearest neighbor analysis)

**G7** Barchan Sand Dune Model (by P. Fisher)

**G8** Mortality Analysis (U.N. mortality analysis package; \$3.00)

**G9** World Map Display (primitive zoom and display of world map)

**G10** Statistical Consultant (by R. Sechrist; \$5.00)

**G11** Habitat Evaluation Procedures and Habitat Suitability Index (\$3.00)

**G12** Iterative Proportional Fitting (by A. Krmeneć)

**G13** Census Bureau State and Metro Area Data Book

**G14** Age-Sex Pyramids (by D. Noonan)

**G15** Spatial Autocorrelation Classroom Exercise (by D. Griffith)

**G16** Boone County TIGER files and Display Program (by J. Taylor; two high-density disks; requires EGA; \$5.00)

**G17** Census Bureau County and City Data Book, 1988 Sampler

**G18** Census Bureau County and City Data Book, 1983 State files (\$3.00)

**G19** PC-Mapro (by F. Gossette; map projection software; \$2.00)

To order IBM software, or for further information or a complete library listing, contact Robert Sechrist, Department of Geography and Regional Planning, Indiana University of Pennsylvania, Indiana, PA 15705. BITNET: RPSECRST@IUP. For information on public domain software for the Apple Macintosh, contact John M. Morgan III, Department of Geography and Environmental Planning, Towson State University, Baltimore MD 21204. Inquiries

about software for the Apple II should be directed to Jim Hughes, Department of Geography, Slippery Rock University, Slippery Rock PA 16057-9989.  
(AAG/MSG Newsletter 5:1, 2/89)

#### CCA AUTOMATION GROUP DISK LIBRARY

The Canadian Cartographic Association offers a library of cartographic software and data at nominal cost, including:

**P1** A special enhanced version of the program set described in the December, 1987 issue of BYTE for programming map projections. MS-DOS. 2 disks, \$20.

**P2** A single disk version of P1 that only requires 360k disks. MS-DOS. \$10.

**P3** A line generalization program contributed by Ron Eastman. MS-DOS. \$10.

For further information, contact Prof. J. Ronald Eastman, Graduate School of Geography, Clark University, 950 Main Street, Worcester, MA 01610.  
(CCA Newsletter 14:3, 1989)

#### TERRABASE

TERRABASE is the latest contribution from the Department of Geography and Computer Science at West Point. The program combines the features and capacities of TERRANAL and LANDSAT plus much more. Included are data files from several areas including West Point, Washington D.C., and Leavenworth, Kansas. DTED (Digital Terrain and Elevation Data), TTADB (Tactical Terrain Analysis Data Base), and historical climatological data can be manipulated in combination. For a copy send twenty blank diskettes to Major Clark Ray, Department of Geography and Computer Science, USMA, West Point, NY 10996-1695.

(AAG/MSG Newsletter 5:1, 2/89)

#### MAP II

MAP II is a map processor for the

Apple Macintosh family of micro-computers. It is a grid-based software package designed for viewing, marking, measuring, analyzing, and making maps. In addition to cartographic image processing, MAP II has digital image processing capabilities.

MAP II manipulates information on both a visual and a quantitative level. It departs from traditional geographic information systems by its ease of input, its emphasis on map visualization and its ability to enter, edit, enhance, mark, measure and analyze maps using screen tools as well as map operation.

MAP II is currently under development at the University of Manitoba in collaboration with the Ohio State University. The program is scheduled for release by John Wiley and Sons, Inc. in Spring, 1989. The recommended configuration is a Macintosh Plus, SE or II with 2 mb RAM and a hard disk. It is anticipated that the cost of the program will be under \$100. For further information, contact: Micha Pazner, MAP II Project Director, Department of Geography, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2; (204) 474-6602. (*AAG/MSG Newsletter* 5:1, 2/89)

### 3-D CAD

AutoCAD Release 10 is currently being shipped by Autodesk (Sausalito, CA). Release 10 offers 3-D wireframe modeling, surface modeling, multiple viewports, and new data extraction capabilities. According to *Computer Graphics Today* (5:11,11/88), "The new version represents Autodesk's desire to monopolize the burgeoning world of 3-D PC CAD, as it has the 2-D world. The company's 2-D products represent a 50 percent market share [170,000 users]." Competitors in the 3-D PC CAD arena include PC Anvil 5000, DesignCAD 3D, Solution 3000, MicroStation, CADKey, and

RoboSolids.

The upgrade is available to users in the United States and Canada with IBM PC/XT/AT, PS/2, and 100 percent compatible computers. A similar version for the Macintosh II has also been announced. The suggested retail price for release 10 is \$3000. No site licensing is offered.

### DESKTOP MAPPING NETWORK

The Desktop Mapping Network is a public forum on Connect Inc.'s Professional Information Network, an electronic information service. The service is accessible from Apple Macintosh computers, and from any IBM PC, PS/2 or compatible that can run Microsoft Windows.

The main purpose of the network is to facilitate sharing of information of geographical analysis and mapping on personal computer systems. To join the Desktop Mapping Network, call your software source or Connect Inc. at (409) 973-0110 ext PC or 1-800-2MACNET (U.S. only). (*CCA Newsletter* 14:3, 1989).

### ADOBE ILLUSTRATOR FOR THE PC

Adobe Systems has developed Adobe Illustrator, Windows version for the IBM PC and compatibles. The object-oriented software offers autotrace, pen tool, freehand drawing, zoom, preview, constrain, copy and page, and other advanced drawing functions.

Minimum requirements for the new Adobe Illustrator are 640k standard memory, 256k expanded memory, a hard disk plus one floppy drive, and EGA, VGA or Hercules monochrome interface and display. Drawing files (EPS format) can be sent to any PostScript output device for printing. (*Pre- 1:1, 1/89*)

### VOYAGER 1.0

Voyager 1.0 is an "interactive desktop planetarium" designed and developed by a professional astronomer for the Apple Macintosh. A database of astronomical information is accessible at the click of a mouse on any of the thousands of objects displayed on a "sky chart." The package facilitates views of the galaxy from other planets, and exploration of the constellations. Voyager retails for \$99.95 from Carina Software, 830 Williams Street, San Leandro, CA 94577; (415) 352-7328. (*MacUser*, 2/89)

### ROOTS

ROOTS is a computer program intended to simplify the data input and editing process necessary to create map overlays. These overlays, each representing a unique geographic characteristic, collectively form a cartographic data base. This program is NOT designed to analyze overlays, nor to manipulate or display final map products. Those are tasks for other software tools such as the Map Analysis Package or the ODYSSEY Geographic Information System.

ROOTS is an extension of an earlier program named TRACE and was developed to perform all the tasks necessary for the creation of an accurate cartographic data base, from initial map digitizing through generation of a topologically correct and fully labelled map data file. Most mapping systems perform each step in the process of digitizing in a separate program, requiring the user first to digitize, then check, then edit, then recheck, and finally label the map file. Less sophisticated programs provide no error-checking at all and assume that user has accurately matched all end points or even traced common polygon boundaries precisely the same for both bordering polygons. Experi-

ence at Harvard and elsewhere indicates that as much as 80 percent of the time required for computer-based analysis of a cartographic data base is consumed in the input and editing phases of a project. ROOTS has been developed to provide graphic feedback and topological structuring and labeling as an integral part of the digitizing process, so that a complete map overlay can be created in a single pass. In addition, ROOTS includes vector to raster conversion software to support output to analysis programs such as the Map Analysis Package, IDRISI, and GRASS.

ROOTS has been written for the Apple Macintosh and for the Harris/MASSCOMP UNIX workstation. The program will work on any Macintosh of at least 512K of memory, including the Mac Plus, the SE, and the Macintosh II. A version for the IBM-PC/XT/AT and true compatibles is also now available. Other versions may be developed independently at other sites. Contact the Laboratory for Computer Graphics & Spatial Analysis, Harvard University Graduate School of Design, for information on the status and availability of such conversions.

#### SUPERMAP

SUPERMAP consists of a single CD-ROM which contains data for the 1980 United States census of population and housing, as well as a wide variety of other social and economic data. In addition, SUPERMAP software retrieves, manipulates, and displays graphically, data subsets as selected by the user. The entire system is now available through the use of a desktop computer. Chadwyck-Healey, Inc., 1101 King Street, Alexandria, VA 22314. (800) 752-0515. \$990.00 for County level census data and mapping for the entire U.S. (regional sets also available).

### cart lab bulletin board

This forum is offered to encourage communication among practitioners at a time of rapid technological transition. Questions, comments, and announcements of approximately two hundred words in length are invited.

The arrival of Macintosh hardware and Adobe Illustrator software has had a significant impact on production procedures at the University of Wisconsin Cartographic Laboratory, as it has in many other facilities. We are currently confronting two main problems, and would appreciate hearing from others with similar concerns.

First, the lack of map projection software for the Mac forces us to deal with the problem of reformatting files generated by the World map projections package for the IBM PC into Illustrator's EPS format. It would also be very useful to be able to edit AutoCAD drawing files in Illustrator. Has anyone out there solved this already?

Secondly, we have been generating some Illustrator products via a local vendor's Linotype 300, but are just beginning to experiment with Illustrator 88's color separating functions. We would like to talk with anyone experienced in such matters.

Contact: University of Wisconsin Cartographic Lab, 550 N. Park St., Madison, WI 53706 (608) 262-1366/0688.

#### USGS MEMBERSHIP IN INTER-AGENCY COMMUNICATIONS COMMITTEE

The USGS recently was selected for membership in the Federal Research Internet Coordinating Committee. Other organizations represented on the Committee are the Defense Advanced Research Projects Agency, the Department of Energy, the Department of

Health and Human Services, the National Aeronautics and Space Administration, and the National Science Foundation.

The principal goal of the Committee is to develop electronic communications interfaces and protocols that will enable the universal exchange of information on research activities throughout the United States. Such a network could speed the exchange and application of research results and data and help avoid duplication of effort. The Department of the Interior's GEONET communications network that is operated by the USGS may play a significant role in attaining this goal.

(*New Publications of the U.S. Geological Survey*, 11/88)

### fugitive cartographic literature

Interesting articles about cartographic information often appear in unexpected outlets. The goal of this section is to bring those publications to the attention of our readership. We invite synopses (or abstracts) of papers appearing in journals other than those devoted to cartography, geography, and map librarianship. Contributions of this kind should be limited to five hundred words.

**Yamahira, Takuya; Kasahara, Yutaka; and Tsurutani, Tateyuki (1985). How map designers can represent their ideas in thematic maps.** *The Visual Computer*, 1:174-184.

reviewed by Alan M. MacEachren,  
Penn State University

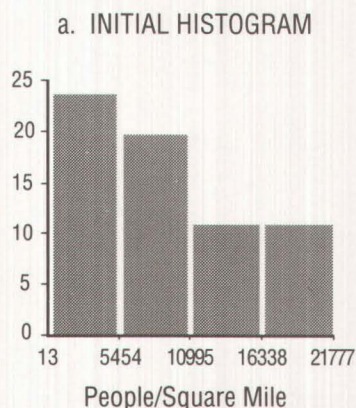
In this paper the authors (from NEC Corp. Laboratories) outline a user interface they have devised to assist planners in creating choropleth maps. Their system is a data classification aid that allows users to interactively manipulate data class limits depicted on a frequency histogram. The system appears to begin by presenting a histogram of the data using four equal value steps. New class



break points can be inserted and class breaks can be moved or removed by pointing to positions on the x axis of the histogram.

The article, which includes numerous color illustrations, begins with some rather unsophisticated comments about choropleth mapping that demonstrate limited knowledge of cartography. The first maps they show, for example, are of *raw population totals* rather than standardized data. The main thesis of their system is also somewhat at odds with accepted practice. They view the role of a choropleth map as being to "convey the planner's intentions to map viewers" rather than to communicate the data accurately.

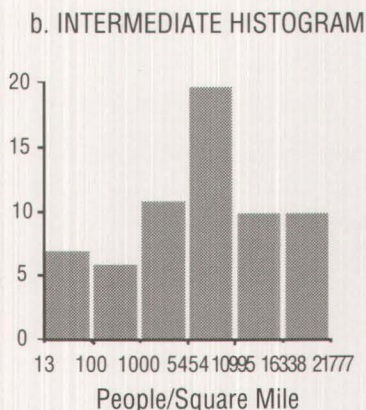
In spite of these weaknesses, the system they describe along with its potential application provides some food for thought. The most interesting example in the paper involves an application in which a choropleth is used in planning for regional development. They describe a situation in which a planner "well recognizes the tendencies that the eastern areas in the Tokyo region have excessively dense populations and the population density becomes sparser closer to the western area." The sequence of steps (taken from Table 2 of the paper) are listed below along with reproductions of a series of three histograms generated.



Intention: Understand the rough statistical distribution tendencies.

Operation: Divide the statistical data into four groups.

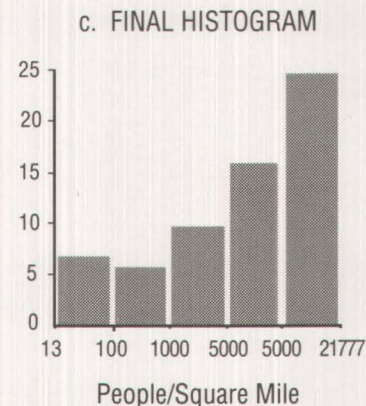
Impression: It is difficult to understand the characteristics of the areas in the lowest class.



Intention: Classify the areas in the lowest class into several classes so that the characteristics in the western area can be expressed.

Operation: Select 100 and 1,000 people/sq. km. as the boundaries.

Impression: The areas belonging to the fourth class are considered as the object for development. The higher classes are too detailed, since the areas in these classes are not objects for development.



Intention: Emphasize that the most crowded areas are spreading over a wide area.

Operation: Delete two higher boundaries and select 10,000

people/ sq. km. as an appropriate boundary.

The paper concludes with some comments concerning the need to pay more attention to selection of the appropriate thematic symbolization for phenomena being mapped and a brief mention of the problems of data classification when maps in a time series are to be compared. This later issue is one that needs more attention by cartographers.

Roselle, Marsha and Deller, Howard (1988). *Maps of the imagination*. *School Arts*, September 1988; pp. 40-42,78. reviewed by Debra Dags, Penn State University

Roselle and Deller present an exciting art project which introduces students of Cedarburg (Wisconsin) High School to the history of cartography and encourages individual creativity. The project is so rich with educational potential that I am reluctant to state what students "should" learn as they design and create decorative maps. Through the instructional sequence, students certainly will gain an appreciation of decorative maps and the process of scholarly research. Highlighting period style as Roselle and Deller recommend, for example, teaches students to attend to graphic material in a new and more informed way; such a simple but significant lesson may extend well beyond this art project. Further, by selecting different styles and themes, students will generate a range of decorative maps, materials required to discuss changes in representational technique over time between artist-cartographers.

Roselle, an art teacher, and Deller, a map historian, bring appropriate expertise to bear on this project. They provide a list of

resources, however, to assist those with backgrounds different than their own. Included in the bibliography, for example, is Post's *Atlas of Fantasy* (1979), which is suggestive of the ways English teachers might adapt the project. In fact, as Roselle and Deller indicate, the project lends itself to an interdisciplinary approach. The actual configuration can be molded by your imagination.

**Horne, Mike; Roberts, Jonathan and Rose, Douglas (1986, 87). Getting there: an assessment of London Transport's endeavour to improve bus passenger information literature for central London, 1979-1985. *Information Design Journal* 5:1, 2.**

Abstract: "This paper discusses the problems of putting across information about bus travel in London. In Part 1 the authors describe the basic needs of bus users,

**The new  
Central London Bus Map.  
So simple a  
child could read it.**



referring to the development of the conventional bus map over recent years. The steps by which various redesigns were proposed and tested are recounted, leading to a proposal by Roger Graef and Andrew Holmes for a radical rethink of the whole concept of bus route cartography. The development of a new bus map for central London, launched in 1981, is described in detail. In Part 2, reactions to the new map are described and the new design is analyzed, with an examination of cartographic problems such as complex routing, road naming, railway station location and one-way streets."

## cartographic artifacts

### HISTORICAL ATLAS GIVEAWAY

Thirty-five thousand schools across the country will receive a free edition of the Society's new *Historical Atlas of the United States* this year. The value of this gift to the nation's students is approximately one million dollars.

This cartographic guide to the discovery, exploration, and growth of the United States contains more than six hundred antique, period, specialized, and original maps, as well as hundreds of photographs, illustrations, charts, and graphs, many specially commissioned by the Society. (*NGS Update, fall 1988, no. 12*)

### NASA OFFERS SHUTTLE PHOTOS

In the course of the first 24 space shuttle missions from April, 1981 to January, 1986, astronauts exposed over 32,000 hand-held photographs of earth. NASA's Space Shuttle Earth Observations Office has announced the availability of indexes and catalogs of these photographs. For a brochure describing the photo program, prices, availability and how and where to catalogs, write: EDC, Mail Code SN15, NASA JSC, Houston, TX 77258.

### LITERATURE IN CARTOGRAPHY: 1988

The following is a progress report in cartography by Michael Blakemore entitled "Cartography and Geographic Information Systems" in *Progress in Human Geography* 12 (December 1988) 525-537. He writes that progress continues into 1988, with widening international horizons and an ever-growing literature. A total of 106 publications--books and journal articles--are cited. Four areas are

emphasized: research, commerce and government; history of cartography; digital mapping and GIS; storage and dissemination. Quoting: "That cartography is in a buoyant state in North America is indicated by the numbers of researchers being trained in the field. The set of essays in honor of George Jenks (Gilmartin, 1987) illustrates how one individual can have a considerable impact in the development of the discipline."

### GEOGRAPHICAL ABSTRACTS

*Geo Abstracts G: Remote Sensing, Photogrammetry and Cartography* is no longer a separate publication. It has been incorporated into *Geographical Abstracts: Physical Geography*. This monthly abstracting publication will also include the following sections: landforms and the quaternary, climatology and hydrology, and sedimentology.

There appears to be two reasons for this change in arrangement. There is a need to increase the number of abstracts published in line with the continued expansion of available material; and, an investigation of subscription patterns revealed that the majority of subscribers have already subdivided the seven existing sections into two major sections of physical geography and human geography. Additional information can be obtained by writing to Elsevier/Geo Abstracts, Crown House, Linton Road, Barking, Essex IG11 8JU, United Kingdom.

## new maps

**WORLD.** The European Community and the Third World: a network of cooperative agreements. Luxembourg: Office for Official Publications of the European Community, 1988.

WORLD. World base map. Reston, VA: U.S. Geological Survey, 1988. Scale 1:40,053,700. Van der Griten proj.

CANADA. Canada - electricity, 1987. (National Atlas of Canada, 5th Edition--MCR 4144). Ottawa: Geographical Services Division, Energy, Mines and Resources Canada, 1988. Scale 1:7,500,000.

CANADA. Canada - farm types. (National Atlas of Canada, 5th edition--MCR 4109). Ottawa: Geographical Services Division, Energy, Mines and Resources Canada, 1988. Scale 1:7,500,000.

CANADA. Canada - land capability for forestry. (National Atlas of Canada, 5th ed. -- MCR 4079). Ottawa: Geographical Services Division, Energy, Mines, and Resources Canada, 1988. Scale 1:7,500,000.

CANADA. Canada - native peoples, 1630. (National Atlas of Canada, 5th ed.--MCR 4054). Ottawa: Geographical Services Division, Energy, Mines and Resources Canada, 1988. Scale 1:7,500,000.

CANADA. Results of the 34th Federal election November 21, 1988. Ottawa: Geographical Services Division, Energy, Mines and Resources Canada, 1988. Scale 1:7,500,000.

CANADA. Canada - settlement patterns. (National Atlas of Canada, 5th ed. -- MCR 4132). Ottawa: Geographical Services Division, Energy, Mines and Resources Canada, 1988. Scale 1:7,500,000.

UNITED STATES. Landforms of the United States by Raisz. (Jigsaw puzzle). Oneonta, NY: Map Puzzles. One map includes two separate puzzles (each 551 pieces 18" by 24") of eastern U.S. and

western U.S. \$17.95 (Map Puzzles, 89 Elm Street, Oneonta, NY 13820).

UNITED STATES. Presidential elections: 1789-1984. (National Atlas of the United States sheet). Reston, VA: U.S. Geological Survey, 1988. \$3.10.

UNITED STATES. United States and world population. Wellesley, MA: World Eagle, Inc., 1989. Laminated. \$9.95.

ALASKA. Aleutians Map. Edmonds, WA: Alaska Northwest Books, 1988. \$3.95 (Alaska Northwest Books, 130 Second Avenue, South, Edmonds, WA 98020).

CALIFORNIA. Aerial view map of Los Angeles. Los Angeles: Space Shot, 1987. \$14.95.

GREAT BRITAIN. The Ordnance Survey inland waterways of Great Britain. London: Robert Nicholson Publications and the Ordnance Survey, 1985. £2.95.

## new atlases

*Access America: an Atlas and Guide to the National Parks for Visitors with Disabilities.* Burlington, VT: Northern Cartographic, 1988. \$89.95.

Antheaume, Benoit. *Atlas des Iles et Etats du Pacifique.* Montpellier, France: G.I.P. Reclus, 1988. 182 F (G.I.P. Reclus, 17 rue Abbe de l'Epee, 3400 Montpellier, France).

*An Atlas of Mortality in Scotland: Including the Geography of Selected Socio-economic Characteristics.* London: Croom Helm, 1987. £65.

*Atlas par Arrondissements.* Paris: Pneu Michelin, 1989. \$11.95 (Michelin Travel Publications, P.O.

Box 3305, Spartanburg, SC 29304-3305).

Bunge, William. *The Nuclear War Atlas.* New York: Basil Blackwell, Inc., 1988.

Chaussade, Jean. *Atlas des Peches et Cultures Marine en France.* Montpellier, France: G.I.P. Reclus, 1988. 154 F.

Cliff, A.D. *Atlas of Disease Distribution.* New York: Basil Blackwell, Inc., 1988.

Ferras, Robert. *Atlas d'Espagne.* Montpellier, France: Fayard/Reclus, 1986. 95F.

Gentelle, Pierre. *Atlas de Chine.* Montpellier, France: Fayard/Reclus, 1987. 180F.

Griffin, T. (ed.). *Atlas of South Australia.* Adelaide: South Australian Government Printing Division and Wakefield Press, 1986. \$195.

*Historical Atlas of the United States.* Washington: National Geographic Society, 1988.

Jones, Barri. *The Blackwell Atlas of Roman Britain.* New York: Basil Blackwell, Inc., 1988.

Lack, P. *Atlas of Wintering Birds in Britain and Ireland.* Stoke-on-Trent: T.&A.T. Poyser, 1986. £19.

Mathieu, Daniel. *Atlas des Sports en France.* Montpellier, France: Fayard/Reclus, 1987. 140F.

*Michelin's Road Atlas of Europe.* Paris: Pneu Michelin, 1989. \$19.95.

*National Atlas of Cuba.* 2nd ed. Habana: Instituto de Geografia, 1989. \$225.

Sivin, Nathan (ed.). *Contemporary Atlas of China.* Boston: Houghton

Mifflin Co., 1988. \$39.95.

Socolofsky, Homer E. *Historical Atlas of Kansas*. 2nd ed. Norman: University of Oklahoma Press, 1988. \$24.95.

Stoddart, D.R. *A Biogeographical Atlas of Corals, Seagrasses and Mangroves*. New York: Basil Blackwell, Inc., 1989.

Tamsma, R. *The Netherlands in Fifty Maps*. Amsterdam: Koninklijk Nederlands Aardrijkskundig Genootschap, 1988.

Thery, Herve. *Atlas du Bresil*. Montpellier, France: Fayard/Reclus, 1986. 79F.

## cartographic events

### AWARDS CALENDAR

The following is a first attempt at a comprehensive listing of awards offered specifically to practitioners and students of cartography. Although it is offered a bit late to be useful in 1989, all of the awards are annual affairs, and dates noted here are likely to apply in 1990.

#### ACSM Annual Map Design Competition

The American Congress on Surveying and Mapping has designed this event to promote interest in map design and to recognize significant design advances in cartography. Categories: General (open to all mapmakers in the U.S. and Canada), R.R. Donnelley and Sons Co. (best student map design in a diploma/certificate program, best student map design in a degree granting program), National Geographic Society (best computer-assisted map designed by a student), Rand McNally & Co. (best student travel map, best student orientation map), Time, The Weekly Magazine (outstanding map design published in the media). All submissions should

be accompanied by a brief statement of design objectives. Entries must be received no later than **January 15**. Contact: Joseph W. Weidel, Department of Geography, University of Maryland, College Park, MD 20742.

#### National Geographic Scholarship

The Cartographic Specialty Group of the Association of American Geographers has announced its annual National Geographic Society Scholarship in Cartography. The Scholarship is open to juniors and seniors. Deadline for application is **February 10**. Contact Barbara Buttenfield, Geography Department, SUNY Buffalo, Amherst, NY 14260.

#### Exemplary Systems in Government (ESIG) Competition

A Program of the Urban and Regional Information Systems Association (URISA). ESIG awards are given annually at URISA's international conference. The conference recognizes a variety of innovations including land records, natural resources, public works, administration, transportation, education and planning. Award categories include: Operations Automation: integrating an existing or automated systems into a combined systems; Corporate Systems: providing accessibility to comprehensive information throughout the organization; International: achievements by URISA's overseas members; Small Municipalities: recognition for jurisdiction having a population of 100,000 or fewer. Public officials wishing to nominate a system send a letter of intent by **March 1**. For further information contact URISA, 319 C St. S.E., Washington, D.C. 20003.

#### CCA President's Prize Competition

Sponsored by the Canadian Cartographic Association, this competition is open to students of

post-secondary institutions and to persons occupying junior positions in places of employment where maps are made or used. Categories: Monochrome Map (formal or journalistic style), Printed Map in Color (or taken to the proof stage), Best 'Journalistic' Map design (sponsored by Time Magazine), Computer Algorithm (specific to a cartographic problem). Entries should include a brief statement on the design objectives of the map or mapping problem. Submissions due **April 20**. Contact CCA, c/o Department of Geography, Memorial University of Newfoundland, St. John's Newfoundland A1B 3X9.

#### British Cartographic Society Awards

The Society presents five awards annually within various cartographic fields. Categories: British Cartographic Society Design Award (awarded for most outstanding map produced by a member of the Society; closing date **April 30**), John Bartholomew Award (for excellence in the field of small scale thematic cartography; closing date **April 30**), Laser Scan Award (for meritorious work by students of digital cartography; closing date **April 14**), The Keuffel and Esser Awards (for meritorious work by students of cartography; closing date **July 19**). Entry forms and further information can be obtained from Olive Pearson, 33 Swinburne Road, Abingdon, Oxon, OX14 2HG, England.

### EVENTS CALENDAR

April 10-13: **AM/FM International Annual Conference XII**, New Orleans, LA. Contact: AM/FM International, Conference XII Desk, 8775 East Orchard Road, Suite 820, Englewood, CO 80111; (303) 770-8320, FAX: (303) 779-8343.

April 16-20: **NCGA '89**, sponsored by the National Computer Graphics Association, Philadelphia Civic Center. Contact: NCGA, 2722 Merrilee Dr., Suite 200, Fairfax, VA 22031; (703) 698-9600.

April 26-28: **MacWorld Expo**, Washington, DC Convention Center. Contact: Mike Hallal, Mitch Hall Associates, P.O. Box 155, 1200 E. St., Westwood, MA 02090; (617) 329-7466.

June 7-9: **Canadian Cartographic Association Annual Meeting**, Halifax, Nova Scotia. Contact: Cliff Wood, Department of Geography, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X9; (709) 737-8988.

June 24-29: **Map and Geography Round Table of the American Library Association Conference**, Dallas, TX. Contact: Mary Anne Waltz, Geography and Map Librarian, Syracuse University Library, Syracuse, NY 13244; (315) 423-4158.

June 26-July 1: **13th International Conference on the History of Cartography**, Amsterdam, The Netherlands. Contact: Marc Hemeleers, Faculty of the Geographical Sciences, University of Utrecht, P.O. Box 80115, 3508 TC Utrecht, The Netherlands.

July 31-August 4: **SIGGRAPH '89** (Special Interest Group on Computer Graphics), Association for Computing Machinery Annual Conference, Boston, MA. Contact: SIGGRAPH Conference Office, 111 East Walker Drive, Chicago, IL 60601.

August 6-10: **URISA 27th Annual Conference**. Boston Marriot Copley Place, Boston, MA. Contact: Tom Palmerlee, Executive Director, URISA, 319 C Street SE, Washington, DC 20003;

(202) 543-7141.

August 17-24: **ICA International Cartographic Conference 1989**, Budapest, Hungary. Contact: Ernő Csáti, Institute of Geodesy, Cartography and Remote Sensing, H-1373, Budapest, POB 546, Hungary.

September 17-22: **ACSM/ASPRS Fall Convention**, Cleveland, OH. Contact: John E. Daily, Suite 100, The Honeywell Building, 925 Keynote Circle, Cleveland, OH 44131.

September 20-23: **International Map Dealers Association Annual Conference and Trade Show**, Kansas City, MO. Contact: Nancy Edwards, Office Manager, International Map Dealers Association, P.O. Box 1789, Kankakee, IL 60901.

October 11-14: **North American Cartographic Information Society Ninth Annual Meeting**, Ann Arbor, Michigan. Contact: Diana Rivera, University Libraries, Michigan State University, East Lansing, MI, 48824-1048 (517) 353-4737/4593.

#### CONGRESSIONAL ELECTIONS 1789-1989

A cartographic exhibition, displaying maps of congressional elections from 1789-1989, went on display in the main foyer of the James Madison Memorial Building of the Library of Congress on February 8. "The Tides of Party Politics: Two Centuries of Congressional Elections, 1789-1989" is the first event in the two-year celebration of the 200th anniversary of the Congress sponsored by the Library of Congress. Dramatizing the births, deaths, and shifts of political parties from national to sectional groupings and back again, the one hundred maps reflect the political choices of the

American people as they have gone to the polls every two years to elect their representatives to the U.S. Congress. To show the interplay between elections and political issues, the maps are supplemented by political cartoons and broadsides. The maps in this exhibition are from *The Historical Atlas of Political Parties in the United States Congress: 1789-1989*, Kenneth C. Martis, author and editor, Ruth Anderson Rowles, cartographer, and Gyula Pauer, production cartographer (Macmillan, 1989, \$190). A short video presentation with a case study of the New Deal era narrated by Cokie Roberts, political commentator for the Public Broadcast System and National Public Radio, introduces the maps and dramatically demonstrates how the political landscape changes over time. The exhibition will be open to the public daily, 8:30am-6pm Monday through Friday, and 8:30am-6pm Saturdays and Sundays, at least through July 1989. For more information contact The Library of Congress, Information Office, Washington, D.C. 20504, 202/707-2905.

#### LIBRARY OF CONGRESS CIVIL WAR MAP EXHIBIT

An exhibition of maps relating to the American Civil War is now on display outside the reading room of the Geography and Map Division at the Library of Congress.

The 60 maps in the exhibit, part of a total of 2,317 cartographic items in the Library's collections pertaining to the Civil War, show scenes of battles, bird's-eye views of troop deployments, panoramic views, and the topography of many regions of the country that were involved in the conflict.

The exhibit is divided into two  
*continued on page 22 ...*

NUEVAS PERSPECTIVAS  
NOUVELLE PERSPECTIVES  
NEW PERSPECTIVES

Ninth Annual Meeting of the  
NORTH AMERICAN  
CARTOGRAPHIC INFORMATION SOCIETY

ANN ARBOR, MICHIGAN  
OCTOBER 11 - 14, 1989

*call for papers*

The NACIS Program Committee invites papers on various aspects of cartographic information and, in particular, those papers which relate to the theme of this year's meeting: *New Perspectives*. Suggested topics include:

- \* Atlases--Concepts to Production
- \* Canadian Cartography
- \* Cartographic Design
- \* Cartographic Education
- \* Cartographic Software
- \* Cognitive Cartography
- \* Computer Mapping
- \* GIS
- \* Geological Mapping
- \* Government Mapping Programs
- \* Historical Cartography
- \* Latin American Cartography
- \* Map Librarianship
- \* Mapping Water Resources
- \* Marketing Cartographic Information
- \* Navigation
- \* Remote Sensing
- \* Statistical Mapping
- \* Techniques in Map Production
- \* The Cart Lab: Issues and Problems

Those persons interested in presenting a paper, poster session or display, should submit a title and abstract/proposal, not to exceed 300 words, no later than **May 15, 1989**. Program participants will be notified by June 30, 1989 of acceptance of their abstracts and proposals. GOVERNMENT EMPLOYEES MAY WISH TO CONTACT THE PROGRAM CHAIR FOR SPECIFIC QUESTIONS REGARDING DEADLINES.

The NACIS IX conference site will be the Ann Arbor Inn in the heart of the city's business district. It provides easy access to over 40 restaurants, shops and the University of Michigan. Various cultural activities such as museums, galleries, gardens and libraries are also close by. Known as the "City of Trees", Ann Arbor displays a wide array of colorful leaves in October. Temperatures are mild and range between 40 and 60 degrees. Registration and accommodations information will be made available in early summer.

*Conference information:*

Diana Rivera  
University Libraries  
Michigan State University  
East Lansing, MI 48824-1048  
(517) 353-4737

*Poster Session information:*

Craig Remington  
Department of Geography  
University of Alabama  
University, AL 35486  
(205) 348-1536

*Exhibit information:*

Charles E. Harrington  
NOAA/NOS  
6001 Executive Boulevard  
Rockville, MD 20872  
(301) 443-8360

major sections: maps for the military and maps for the people. Examples of both Union and Confederate mapping are shown in the first section; maps published for sale to the general public, including commercial battlefield maps, panoramic maps, and maps printed in the journals and newspapers of the day, are presented in the second section.

In conjunction with this exhibit, the Library of Congress is publishing a second edition of *Civil War Maps: An Annotated List of Maps and Atlases in the Library of Congress*. Compiled by Richard W. Stephenson and scheduled for release in early spring 1989, *Civil War Maps* is a comprehensive guide to one of the finest collections of United States Civil War maps in existence. Price and ordering information may be obtained by writing to: Ms. M. Wagner, Library of Congress, Publishing Office, Washington, DC 20540.

#### CONGRESS OF CARTOGRAPHIC INFORMATION SPECIALIST ASSOCIATIONS

Twenty-seven representatives from eleven cartographic-related organizations met at the Newberry Library in Chicago November 9-10, 1988. Present were delegates from the American Congress on Surveying and Mapping (ASCM), Association of Canadian Map Librarians and Archivists (ACMLA), Committee of Southern Map Librarians (CSML), Curators of Early Maps (CEM), Geography and Map Division--Special Libraries Association (G&M), Geoscience Information Society (GIS), North East Mapusers Organization (NEMO), Map Online Users Group (MOUG), Map and Geography Roundtable--American Library Association (MAGERT), North American Cartographic Information Society (NACIS), and Western Association of Map Libraries

(WAML).

The Congress was convened to discuss several issues: improved communication between members of cartographic information specialist organizations; elimination of duplication of effort; and rapid dissemination of professional news of common interest. Alberta Auringer Wood, from the Memorial University of Newfoundland, gave the keynote address on Wednesday morning, and in following sessions delegates described the aims and activities of their organizations. Particular attention was given to the problem of competing publications serving an identical purpose, and to the multiple duplication of basic professional news--meeting dates, exhibits, job notices, awards, grants, etc.

At a wrap-up round table discussion on Thursday afternoon the delegates voted on three resolutions: 1) to develop a mechanism (possibly electronic) for the pooling and dissemination of information of common interest; 2) to attempt to cease duplication of effort in the production of map library directories; and 3) to convene another Congress of Cartographic Information Specialist associations in 1990, or as soon as possible, and at least every five years thereafter; all members of the associations will be invited, the focus of the Congress will be on map curatorship/librarianship, and the Congress is to include pertinent workshops and exhibitions. The resolutions were accepted by all delegates, MAGERT abstaining. Each delegate will carry the information back to his/her organization for approval and action, which is expected by mid-February, 1989. *Barbara B. McCorkle reporting.*

## NACIS news

CP Editors: David DiBiase & Karl Proehl, Penn State University

Executive Officer: Ronald M. Bolton, NACIS, 6010 Executive Boulevard, Suite 100, Rockville MD 20852; (301) 443-8075

#### NACIS OFFICERS, 1988-89

President: Juan José Valdés, Cartographic Division, National Geographic Society, 1615 M Street, N.W., Washington, D.C. 20036; (202) 775-7873

\*Vice-President: Diana Rivera, Map Librarian, Michigan State University Libraries, East Lansing, MI 48824; (517) 353-4593

Treasurer: Gregory Chu, Dept. of Geography, University of Minnesota, 414 Social Sciences Bldg., Minneapolis, MN 55455; (612) 625-0892

Secretary: Nancy Kandoian, Map Division, New York Public Library, New York, NY; (212) 930-0588

#### BOARD OF DIRECTORS

Johnnie Sutherland (Past President), Map Collection, Science Library, University of Georgia Libraries, Athens, GA 30602; (404) 542-0690

Patricia Gilmartin, Department of Geography, University of South Carolina, Columbia, SC 29208; (803) 777-2989

\*William Schenck, Cartographic Information Center, Delaware Geological Survey, University of Delaware, Newark, DE 19716; (302) 415-8262

#### DUES REMINDER

please send your 1989 dues to Greg Chu, Treasurer  
\$5 student, \$15 individual, \$30 institution

\*Leonard Abrams, Panoramic Studios, 2243 W. Allegheny Avenue, Philadelphia, PA 19132; (215) 233-4235

\*Patrick McHaffie, Kentucky Geological Survey, University of Kentucky, 311 Breckinridge Hall, Lexington, KY 40506-0056; (606) 257-5863

Ellen White, Department of Geography, Michigan State University, East Lansing, MI 48824, (517) 366-4658

## REQUEST FOR NOMINATIONS

Those positions marked by an asterisk are open for nomination for 1989-90.

Three Directors-at-Large, The Vice President and Secretary must be elected by our next annual meeting. Please forward nominations to: Ron Bolton, Room 100, 6010 Executive Blvd., Rockville, MD 20852. Nominations when forwarded should include a letter of acceptance and a short vita for use on the annual ballot.

## EXECUTIVE BOARD MEETING HIGHLIGHTS

FRIDAY, FEBRUARY 24

Ann Arbor, Michigan. Ronald Bolton, Charles Harrington, Nancy Kandoian, Patrick McHaffie, Diana Rivera, Johnnie Sutherland, Juan Valdés, Ellen White present.

## CONFERENCE PLANNING

Diana noted that she and Ellen White have been working with a local arrangements committee consisting of Kathleen Bergen, Carl Longstreth, Bill Stewart, Jerry Thornton, and Tim Utter. They are working on gathering materials for registration packets and planning field trips.

The call for papers was sent out

during the previous week. Two thousand were printed and distributed, and an additional six hundred are being printed now because more are needed. Deadlines have been moved back, with abstracts due May 16, so that a preliminary program can be issued in June.

Diana reported that some individuals have already volunteered to serve as session coordinators. She is trying to develop a hands-on session for the conference. One possibility is Jeffrey Patton's suggestion of use of different types of software for the classroom or cartographic lab.

There followed a discussion of exhibits. Charles Harrington, who will be coordinating exhibits, told us that Roger Payne of USGS's Geographic Names Information System may be able to bring and demonstrate that system. Craig Remington is coordinating the cartographic lab poster sessions.

## OLD BUSINESS

Ellen went over the results of the survey concerning NACIS annual meetings that was distributed with the last newsletter. She received 51 responses that were basically positive. Some major points to address included:

1. getting information about the annual meeting out earlier;
2. providing a list of meeting attendees to those at the conference;
3. reducing the cost of the conference.

On the last point, there does not seem to be a lot we can do, except to let the membership know why we charge what we do, why certain meals are included for everyone, etc.

Juan handed out packets of papers relating to committee memberships and activities, and liaisons. Regarding membership, there have been several requests for membership applications.

Next there was consideration of Billie Swenson's letter inviting

NACIS to appoint a liaison to the Geographic Information Management Systems Committee of ACSM. After much discussion of pros and cons, we decided not to enter into such a relationship directly with this specialized committee.

We have agreed to a formal relationship with the Cartography Specialty Group of the AAG.

Diana looked into setting up our archives at Michigan State University. Before we can get a specific idea of how much it will cost to have the MSU archivist process it and keep it accessible, we will need to know the volume of material. **Juan asks that all former officers and committee chairs to send Diana their NACIS files, after first weeding duplicates out of their own files.**

## NEW BUSINESS

Juan reported that he received a letter from Pergamon Press requesting a NACIS membership list. Ron said that in the past we have sold the list of members only for \$25, but have charged more for mailing labels. Ron mentioned that this maintenance and production of the list has put a large burden on our treasurer. We decided to take this issue up with the membership in October. Juan will respond to Pergamon to this effect.

Ron showed us a book he received recently, *University Curricula in Oceanography and Related Fields*, put out by a small group, the Marine Technology Society. He suggested that NACIS consider publishing something like this for cartography. Interest was expressed by the board members, and there was mention of the similar publication that the AAG publishes for geography.

Ron reported that nominations are needed for 3 directors-at-large, a secretary, and vice president.

Proposed changes to the by-laws, under Part VII, Nominations



and Elections Committee, Section 1, are as follows:

#### CURRENT WORDING

##### VII. Nominations and Elections Committee

Section 1. A Nominating Committee for each election to the Board shall be elected by the Board at their first regular meeting. This committee shall be comprised of at least three Members, no one of whom shall be a member of the Board. The chairperson of the committee shall be designated by the Board.

#### REVISED WORDING

##### VII. Nominations and Elections Committee

Section 1. A Nominating Committee for each election to the Board shall be appointed by the Board at their first regular meeting. This committee shall be comprised of at least three Members. The chairperson of the committee shall be the most recent Past President.

The NACIS membership will vote on these changes at the 1989 Annual Meeting at Ann Arbor.

Ron next raised the subject of future meeting sites. Orlando is set for 1990. Ron passed out matrices prepared in evaluating possible future meeting sites. Investigations have included Milwaukee, Baltimore, and Kansas City. The board voted in favor of Milwaukee for 1991. Bids from Kansas City have been good, so Ron will let their convention and visitors bureau know that we are thinking about it for 1992.

Ron noted with concern that the treasurer's report in the December 1988 newsletter reported approximately \$5,000 in unpaid bills from NACIS VII. He said that it has been our policy not to let bills go unattended that long; that the good record we have built up has helped us in negotiations from year to year.

We went over the latest treas-

urer's report and noted that we have a balance of approximately \$9,000, not including a balance held over by the previous treasurer.

The meeting was adjourned at approximately 5:30 p.m.

#### SATURDAY, FEBRUARY 25

Based on an estimated total expense of \$10,450, and an estimate of 110 registrants, the board voted to charge the following registration fees for our 1989 annual meeting:

	<u>in advance</u>
members	\$95
non-members	115
students	25
	<u>at conference</u>
members	\$115
non-members	135
students	25

The meeting was adjourned at approximately 11:10 a.m.

Respectfully submitted,  
*Nancy A. Kandoian, Secretary*

#### SURVEY COMMENTS

Sorry there is room for so few--more next time.

"I like this organization because its small and responds most closely my professional questions, interests, and goals. I hope to be more active as my children get older and I work more."

"Any way of reducing costs for hotels, etc? Prices seemed high if you're trying to attract students and a more diverse group of individuals (without large expense accounts)."

"I always enjoy the NACIS meeting because of all the new bits of information I learn that make my job easier or more professional. For me, the area I would like to see improved on are some of the paper topics. I have grown weary

of listening to people give papers on how much computer equipment they have in their labs. I would much rather hear about new techniques, materials, and see more finished products with discussions on problems that occurred during production, funding, publication, etc. I am very much for this organization. The people are great."

#### INSTRUCTIONS FOR CONTRIBUTORS

*Cartographic Perspectives* is designed and produced in a microcomputer environment. Therefore, contributions to CP should be submitted in digital form. Text documents processed in WordPerfect are preferred, but Microsoft Word, Windows Write, WriteNow, and ASCII documents are also acceptable. Graphics files in TIFF, EPS, PICT, or AutoCAD PLT formats are usually compatible. Text and graphics files may be submitted on 3.5" or 5.25" double-sided, double- or high-density diskettes, in either DOS or Apple Macintosh formats. Please send paper output along with the disk, in case it is damaged in transit.

For those lacking access to microcomputers, typed submissions will be accepted. Manually produced graphics should be no larger than 11 by 17 inches, designed for scanning at 300 dpi resolution (i.e., avoid fine-grained tint screens). Continuous-tone photographs will also be scanned (see example p. 9). Submissions may be sent to: David DiBiase, Department of Geography, 302 Walker Building, Pennsylvania State University, University Park, PA 16802; (814) 863-4562.

#### COLOPHON

This document was processed at the Deasy GeoGraphics Laboratory, Department of Geography, Pennsylvania State University. An IBM PS/2 model 80 microcomputer was used because a Macintosh IIx wasn't delivered in time. Word processing was accomplished with WordPerfect 5.0; page layout with PageMaker 3.0. Most graphics were scanned from paper originals using an HP 9190 ScanJet desktop scanner (the coarseness of the graphics is an artifact of the current state of the art in affordable, 4 bit, 300 dpi scanners). The PageMaker file was output by a Linotronic 300 at PSU Printing Services. The bulletin was printed by offset lithography on Warren Patina 70# text stock. The type face is Palatino, designed by Herman Zapf.

**The North American Cartographic Information Society** (NACIS) was founded in 1980 in response to the need for a multidisciplinary organization to facilitate communication in the map information community. Principal objectives of NACIS are:

- + to promote communication, coordination, and cooperation among the producers, disseminators, curators, and users of cartographic information;
- + to support and coordinate activities with other professional organizations and institutions involved with cartographic information;
- + to improve the use of cartographic materials through education and to promote graphicacy;
- + to promote and coordinate the acquisition, preservation, and automated retrieval of all types of cartographic material;
- + to influence government policy on cartographic information.

NACIS is a professional society open to specialists from private, academic, and government organizations throughout North America. The society provides an opportunity for Map Makers, Map Keepers, Map Users, Map Educators, and Map Distributors to exchange ideas, coordinate activities, and improve map materials and map use. *Cartographic Perspectives*, the organization's Bulletin, provides a mechanism to facilitate timely dissemination of cartographic information to this diverse constituency. It includes solicited feature articles, synopses of articles appearing in obscure or non-cartographic publications, software reviews, news features, reports (conferences, map exhibits, new map series, government policy, new degree programs, etc.), and listings of published maps and atlases, new computer software, and book reviews.

Department of Geography  
302 Walker Building  
The Pennsylvania State University  
University Park, PA 16802

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