

MONDAY PLENARY SESSIONS

The opening plenary session chaired by the Conference Chairman started with brief words of welcome by William A. Radlinski and William D. French, the Executive Directors of the American Congress on Surveying and Mapping and the American Society of Photogrammetry, respectively.

The first presentation was by William T. Riordan, honorary co-chairperson for AUTO-CARTO IV. He presented "Lessons Learned in Establishing Automated Cartographic Digital Data Bases". It notes that developing an automated data bank is both complex and expensive. Expensive because the digitizing, editing, and evaluation of the digital data is still very labor intensive. Complex because of the large number of items that must be considered from full scale digitizing systems to the specific items that have to be collected. Because of this complexity and expense it is important that anyone contemplating the establishment of an automated digital data base benefit as much as possible from the experiences of others. The lessons learned and presented cover basic areas such as the need for definitions, the kind and degree of standardization, the types of formats required and last but not least the need for emphasis on quality control. It is hoped that these lessons and the exchange specifications discussed may benefit the cartographic community as a whole.

Professor Arthur Robinson discussed "The Beginnings of Medical Mapping". He stated that significant medical mapping only started at a relatively late time near the end of the 18th century. Although some maps having to do with yellow fever in the United States were made around 1800, important medical mapping began with the cholera epidemics that began to occur in Europe in the 1830's. The cause of cholera was not known, but environmental conditions were suspected. Many maps were made relating incidence of the disease to elevation, water supply, sanitation, air quality, etc., in the hope of discovering some significant correlations. These can be classed as "hypothesis seeking" maps. A second category of maps comprises those which were made to test an hypothesis. Examples and background information on each category are presented. Featured are two maps by the well known physician Dr. John Snow, one

being his well-known dot map and the other his little known, but equally impressive, maps relating differences in water supply to the incidence of cholera.

Paul Leaverton discussed "Automated Mapping in Epidemiology". The National Center for Health Statistics (NCHS) is mandated by law to monitor the nation's health. Several data systems are operated for this purpose including a complete inventory of mortality and several national surveys which estimate different kinds of morbidity rates. In addition to the various tabular publications, the Center has embarked on a major research activity to establish better, more sensitive and more systematic mortality and morbidity monitoring. Developments in detecting space and time clusters are underway. Computer produced mapping is a major component of this activity. Examples from the forthcoming Atlas of Mortality were presented.

Thomas J. Mason presented "A Mechanism for Selecting Communities at High Risk for Cancer". In 1975, the National Cancer Institute published an Atlas of Cancer Mortality for U.S. Counties. This atlas presented for the first time, the spatial distribution of mortality from major types of malignancy at the county level. At that time, perhaps the greatest value of the maps would be to designate high-risk communities for analytical epidemiologic studies which might detect specific carcinogenic hazards. This paper focuses on the development of the capability to assess the magnitude of cancer mortality at the county level in the United States, the development of an in-house automated cartographic approach and the results of several field investigations which have followed the publication of this atlas and its companions.

Alan Schmidt chaired the Plenary Session on Future Hardware Systems. Carlo Infante presented "Display Technologies in Computer Aided Applications". The pervasiveness of the computer into the modern world is a truism. It is hard to think of an important activity such as business administration, scientific investigation, engineering design, office information flow or even home management in which the computer does not play an essential role. The reason for this state of affairs has been ascribed to the explosion of solid state technology that has made possible circuits of increasing complexity at ever diminishing sizes and

costs. While this is for the most part true, there has been an accompanying explosion of display technology, that has allowed ever increasing sophistication in the manner in which computerized information can be accessed by human beings. In this paper an assessment of the state of display technology will be made.

Ray Boyle discusses "Cartography in 1990". An understanding of the present techniques, methods, hardware and software at present in development, together with an appreciation of the demands to be made of cartography in the next few years, allows this to be done with a reasonable chance of success. The greatest change will result from the availability of cartographic data in digital form, directly associated with a large amount of attribute information, much more than could ever be presented on a drawn map. The cartographer will be able to use his selectivity, his artistry and his ability to communicate ideas in a pictorial manner as never before, and he will be aided by support devices such as fast interactive displays and hard copy systems to enable him to do his work easily and economically.

Jim George presented "Future Directions of Computer Graphics". Current activities in computer graphics software and hardware were reviewed. In particular, the graphic standards effort was discussed and analyzed for its effect on the field. Recent products in hardware and software were reviewed for the current directions of the field in a perspective question, "What can be expected in 1 to 3 years, in hardware and software?"