Tom Mason from the National Cancer Institute and Dave Slaby from the National Center for Health Statistics ably chaired two sessions on epidemiology. Dr. Louis Masse of the French National School of Public Health presented "Cartography and Computing: Applications for Epidemiological Research in Brittany". His paper reflects on the evolution of computer assisted mapping in epidemiolgical studies in Brittany. Both the large scale and the large amount of data collected clearly reveals the need for the computer in data collection and analysis. The complex relationships between biological sampling and spatial phenomenology requires not only computational, but also analytical support.

Deanne Merrill from Lawrence Berkeley Laboratory presented "PAREP: Populations at Risk to Environmental Pollution" The paper discusses the integrated county level data base for the U.S.; its principal components are age-adjusted mortality data; socio-econ-omic characteristics and, air quality estimates. This file is being used to investigate ecological patterns of disease, in relation to socioeconomic characteristics and air quality. A seperate data file for the San Fransisco-Oakland SMSA has also been constructed, containing cancer incidence case records from the Third National Cancer Survey. This file is being used to study (a) relationships between air quality, socioeconomic characteristics and cancer incidence; and (b) the association of socio-demographic measurements and histologic type for eight cancer sites.

William Nisen from Harvard University presented "Dual Techniques for the Determination of Spatial Clustering of Mortality in Montreal, Quebec - 1972". The paper focuses on the intra-urban patterns of cause-specific mortality in Montreal, Quebec. Two techniques were used to determine if spatial clustering of cause-specific mortality was present. While the visual analysis revealed a slightly clustered pattern, no statistically significant (0.05) clustering was discovered.

Gerald Pyle from the University of Akron gave a paper titled "Monitoring Disease Diffusion Within an Automated Mapping Frame-work". This paper illustrates some applications of these system-atic linkages in an examination of the diffusion of infectious hepatitis within Akron, Ohio for the time period 1970-1978. Various temporal cycles of the disease are displayed and tested statistically through use of automated cartographic techniques. The process is shown to have applications for certain other infectious diseases in different urban locations, and the results of this

research suggest it is possible to provide important information to those making policy decisions in the area of disease control and prevention.

Rulon Rawson from the Bonneville Center for Cancer Prevention, discussed his paper "The Geochemistry of Disease: A Reawakening of a Multidisciplinary Approach to Disease Prevention". His paper strongly urges that epidemiologists committed to the identification of disease causes would find it advantageous to collaborate with geochemists and students of epidemiology and of normal physiology. This may lead to new and exciting frontiers for research on the epidemiology of health. Recent maps of cancer mortality and interdisciplinary research efforts provide ample evidence for collaborative efforts.

Herbert I. Sauer of Sauer Associates in Missouri, presented "Assembly-Line Research--With Quality Control". His paper reflects that for generating and testing hypotheses regarding the effect of the environment upon human health, the task of collecting data competently is difficult and in many instances prohibitively expensive. Are we, the users of these data, paying as much attention to quality control as the purchaser of an automobile? Much has been and is being done in specifying the quality of data, so that the user can recognize both their value and their limitations. More work along these lines seems most desirable, but it can also be difficult to carry out. Obviously there is a need for the investigator to participate in the quality control process.

Robert Cromley from the University of Kentucky gave a paper titled "Bring Out Yer Dead!: A Cartographic Analysis of the Spread of the Black Death in London, England, 1665". The paper presents a preliminary spatial analysis of the diffusion of deaths from the bubonic plague in London, England in 1665. Data were obtained from the London Bills of Mortality. These data reflect the number of deaths by week for 130 parishes in London. The recorded plague deaths are aggregated for selected time segments and cartographically displayed using computer mapping algorithms which depict the diffusion and final spatial patterns of mortality. These spatial patterns are compared with contemporary narratives of the epidemic. The potential for computer-assisted cartographic representation and analysis of early epidemics is discussed along with problems in data acquisition and accuracy.

Howard Hopps from the University of Missouri at Columbia discussed problems in correlating geographic association with causality. He emphasized that: cancer is a group of diseases, each with multiple interacting causal factors, both genetic and environmental; the time interval between initiating cause and overt cancer is often

on the order of 20-30 years. He stated that problems with relia-
bility of data are not limited to inaccurate reporting, but in-
clude inadequate characterization of the cancer under study-
precise anatomic site of origin within the affected organ and
tissue, also histopathologic characteristics.

The final presentation, "An Interactive Mapping and Analysis
System for Use with Environmental and Health Data" was by
Lawrence Milask from Sigma Data Computing. The paper is about an
interactive English-language prompted computer program which can
be used for data manipulation, statistical analysis and graphical
display including mapping. UPGRADE has been designed for easy and
direct use by the analyst who does not have to learn a computer
language in order to use it. Maps can be specified interactively
and displayed on a terminal screen or drawn on a plotter. One
database developed for use with UPGRADE consists of data on a
county level. Variables include mortality rates, demographic and
socioeconomic data, water quality parameters, and veterans infor-
mation.