Front Matter
THE OHIO JOURNAL OF

SCIENCE

Vol. 82  April Program Abstracts  No. 2

91st Annual Meeting
April 23, 24, 25, 1982
THE OHIO STATE UNIVERSITY

Theme: Women in Science

Please bring this Program to the meeting.
Single issues for Academy members and subscribers: $5; others: $7.
EDITORIAL POLICY

THE OHIO JOURNAL OF SCIENCE considers original contributions from members and nonmembers of the Academy in all fields of science. Special consideration will be given to Ohioana. All manuscripts will be critically reviewed. It should be understood that the opinions expressed by the reviewers are their own, and do not represent the views of the Ohio Academy of Science or THE OHIO JOURNAL OF SCIENCE. Manuscripts and illustrations should be prepared in triplicate and submitted to Dr. Tim M. Berra, Editor, THE OHIO JOURNAL OF SCIENCE, Department of Zoology, Ohio State University at Mansfield, 1680 University Drive, Mansfield, OH 44906.

Publication in THE OHIO JOURNAL OF SCIENCE requires consideration of editorial costs. These will be assessed at $40 per page for members and $60 per page for non-members for the first 12 printed pages and $93 per page (full production costs) for each page in excess of 12. Additional charges will be added to cover the cost of cuts in papers with 3 or more figures and in Brief Notes with 2 or more figures. Payments should be made to the Ohio Academy of Science, 445 King Avenue, Columbus, Ohio 43201; Telephone: (614) 424-6045.

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The Ohio State University  
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GENERAL SCHEDULE

Friday, April 23, 1982

8:00 a.m. - Emerging Technologies Symposium: Economic Interactions
4:30 p.m. Fawcett Center for Tomorrow
2400 Olentangy River Road
Columbus, Ohio

8:00 a.m. - Registration - Junior Academy
9:30 a.m. Knight's Inn
3160 Olentangy River Road
Columbus, Ohio

9:30 a.m. - Tours of Local Industries and Businesses
12:00 noon for Junior Academy and teachers
12:30 p.m. - Women in Science Workshop for High School Students
5:30 p.m. Ohio Union and various locations

5:00 p.m. - Late Registration for Junior Academy
6:00 p.m. Knight's Inn
6:30 p.m. - Junior Academy Dinner Program
9:00 p.m. Ohio Union Terrace Room

8:00 p.m. - Annual Council Meeting
10:00 p.m. The Ohio Academy of Science
Fawcett Center for Tomorrow

Ohio Biological Survey Advisory Board Meeting
Business meeting and panel discussion:
"Appropriateness and Feasibility of Computerization
of Museum Records of Ohio Biota"
Fawcett Center for Tomorrow

Saturday, April 24, 1982

8:00 a.m. - Registration, Exhibits, Coffee
3:00 p.m. Ohio Union
West Ballroom Lobby

8:30 a.m. - Technical Sessions, including Poster Sessions
11:00 a.m. Denney Hall

11:00 a.m. - All-Academy Lecture
12:00 noon Mershon Auditorium

Welcome and Introduction by
Dr. John L. Crites, President
The Ohio Academy of Science

and

Dr. W. Ann Reynolds, Provost
The Ohio State University

Speaker: Dr. Rosalyn S. Yalow, Nobel Laureate
Senior Medical Investigator
U.S. Veterans Administration
Bronx Medical Center, N.Y.

"Radioactivity in the Service of Humanity"

12:00 noon - Women in Science Luncheon
1:30 p.m. Ohio Union, West Ballroom
Speaker: Dr. Shirley M. Malcolm, Head
Office of Opportunities in Science
The American Association for the Advancement
of Science
Washington, D.C.

1:30 p.m.  Business Meetings for all Technical Sections
Denney Hall

2:00 p.m. -  Technical Sections and Special Symposia including
5:00 p.m.  Women in Science, Robotics and more
Denney Hall

5:00 p.m. -  Public Reception (Cash Bar) for Dr. Rosalyn Yalow
6:00 p.m.  Fawcett Center for Tomorrow

6:30 p.m.  Annual Banquet
Fawcett Center for Tomorrow

Toastmaster:  Dr. Joseph H. Oshins
Associate Vice Provost
The Ohio State University

Greetings:  Dr. W. Ann Reynolds, Provost
The Ohio State University

Response:  Dr. T. Richard Fisher, Past President
The Ohio Academy of Science

Awards and Recognitions:

President's Address:  "Diversity and Commonality"
Dr. John L. Crites, Chairperson
Department of Zoology
The Ohio State University

9:00 p.m.  Annual Business Meeting and Election of Officers

Sunday, April 25, 1982

7:00 a.m. -  Field Trip at Green Lawn Cemetery.  See description
8:30 a.m.  elsewhere in program.

9:00 a.m.  Glacial Geology Field Trip to Fairfield County.
Meet in parking lot behind Mendenhall Lab on OSU Campus.
See description elsewhere in program.

9:00 a.m. -  Field Trip beginning on front steps of State House, downtown
12:00 noon  Columbus.  See description elsewhere in program.

10:00 a.m. -  Director's Tour of Research at
12:00 noon  The Columbus Zoo
Assemble at Zoo entrance
9990 Riverside Drive

Parking

Friday, April 23, 1982

Parking for the Emerging Technologies Symposium sponsored by the Economics
Section will be at the Fawcett Center for Tomorrow, 2400 Olentangy River Road,
Columbus, Ohio.  No charge.  Parking for the Junior Academy morning program will
be at the Knight's Inn, 3160 Olentangy River Road, Columbus, Ohio.  Campus visi-
tors for the afternoon Junior Academy Program (Women in Science Workshop) may
park in the Ohio Union and Mershon Parking Garages just north of the Ohio Union.
A reduced charge of $1.50 per car is payable at the garage provided driver indi-
cates to the attendant that you are attending a program of the Ohio Academy of
Science.
Parking will be available at the Ohio Union and Mershon Parking Garages just North of the Ohio Union. To receive a waiver of parking fees, the driver must have his or her ticket validated at the Registration Desk in the Ohio Union upon registration for the meeting.

REGISTRATION

Friday, April 23, 1982

A special registration fee ($15) is required for the Emerging Technologies Symposium at the Fawcett Center for Tomorrow. For teachers (grades 7-12) and students participating in the Friday morning, afternoon, and evening program, a special registration is required covering the entire day and the overnight lodging. See registration form. There is no charge for students participating only in the afternoon Women in Science Workshop.

Saturday, April 24, 1982

Except for the All-Academy Public Lecture, registration is required for all Saturday activities (exhibits, poster sessions, meals, technical sessions, and special symposia). Registration will be in the hallway outside the West Ballroom of the Ohio Union.

Please send registrations to meet the April 16, 1982, deadline for planning of meals. On site registration is permitted, but meal reservations cannot be guaranteed. Registration is $3.00 for full time students and $6.00 for professionals. Make checks payable to The Ohio State University and mail to:

Phone (614) 422-8571 91st Annual Meeting, OAS
Continuing Education Non-Credit Programs
The Ohio State University
Fawcett Center for Tomorrow
2400 Olentangy River Road
Columbus, Ohio 43210

MEALS

Friday, April 23, 1982

Lunch is included in the $15 registration fee for the Emerging Technologies Symposium at the Fawcett Center for Tomorrow.

Junior Academy students and teachers are on their own for lunch. For Junior Academy students and teachers staying overnight, a special dinner is being hosted by The Ohio State University at no additional cost.

Saturday, April 24, 1982

The Women in Science Luncheon will be served from 12:00 noon - 1:30 in the West Ballroom of the Ohio Union. Price: $7.00. All meeting registrants are welcome since there will be no other separate luncheons.

The Academy's Annual Banquet will be held at the Fawcett Center for Tomorrow beginning at 6:30 p.m. Price: $8.50.

Registrants without meal reservations may eat in the Ohio Union, the Fawcett Center for Tomorrow, or at the numerous facilities on High Street and Olentangy River Road.

HOUSING

Except for Junior Academy students and teachers who will be staying during the weekend at the Knight's Inn, 3160 Olentangy River Road, all others must make their own accommodations. See Contents page for location of list of nearby motels.
EXHIBITS AND COFFEE

Saturday, April 24, 1982

The work of the Ohio Academy of Science receives the support of many of Ohio's finest corporations, institutions, and organizations whose exhibits may be viewed near the Registration Desk outside the West Ballroom of the Ohio Union. The BMI Federal Credit Union will have an exhibit to enable Academy members in good standing to join on the spot. Coffee will also be served here for all meeting registrants.

SYMPOSIA, FIELD TRIPS AND TOURS

Friday, April 23, 1982

8:00 a.m. - 4:30 p.m.  EMERGING TECHNOLOGIES: ECONOMIC INTERACTIONS. Arranged by the Section of Economics. The purpose of this symposium is to provide better definition of technical and economic interactions of new technologies with the near future business and industrial environment and to explore the evolving financial structure required to underwrite this developing technological wave. See abstracts for further information.


12:30 p.m. - 5:30 p.m.  WOMEN IN SCIENCE. Two workshops for students (grades 7-12) exploring the possibility of a career in science. Sponsored by The Ohio Academy of Science, The Ohio State University and AWISCO—The Association for Women in Science of Central Ohio. Write for separate brochure.

Saturday, April 24, 1982

9:00 a.m. - 10:00 a.m.  FUTURE ISSUES IN PUBLIC ADMINISTRATION AND PLANNING. Arranged by the Administrative Sciences and Planning Section. See abstracts.

10:00 a.m. - 11:00 a.m.  COMMEMORATIVE SESSION ON OHIO GEOGRAPHY: 1932-1982. Arranged by the Geography Section to commemorate the 50th Anniversary of the Founding of the Section F. Geography. See abstracts.

2:00 p.m. - 5:00 p.m.  THE HERBARIUM RESOURCES OF OHIO: PRESENT STATUS AND FUTURE DIRECTIONS. Symposium arranged by Plant Sciences Section. See abstracts.

BIOMEDICAL ENGINEERING. A series of papers on the subject presented in the Medical Sciences Section. See abstracts.

SETTLEMENT/SUBSISTENCE ARCHAEOLOGY IN OHIO. Symposium arranged by the Anthropology and Sociology Section in cooperation with The Ohio Historical Society and other museums. See abstracts.

The CONSERVATION SECTION is sponsoring tours of the new Agronomy, Natural Resources, and Plant Pathology building at The Ohio State University. The building is located on the Agriculture Campus just west of the Olentangy River and is within convenient walking distance of the general meeting areas on the main campus. This new building provides essential modern teaching and research laboratories, classrooms, headhouse and greenhouse space, faculty and administrative offices, and other support facilities. Housed in this facility are offices for the School of Natural Resources, the Department of Agronomy, the Department of Plant Pathology, and the Office of Information and Applied Communications of the college of Agriculture and Home Economics. The Agronomy, Natural Resources, Plant
Pathology Building is a four-story structure of brick, concrete, and limestone. A portion of the headhouse plus a glass greenhouse extends on the south side of the structure. Other features of interest include an electron microscope facility, soils museum, teaching and research laboratories, and an energy conservation system designed for the heating and cooling of only those areas that are in use.

Self-guided tours of the building will begin in the main lobby. Visitors may proceed at their own pace and visit those areas in which they are particularly interested.

ROBOTICS SYMPOSIUM. Arranged by the Engineering Section. See abstracts.

EVALUATION OF HUMAN SERVICES DELIVERY. Arranged by the Administrative Sciences and Planning Section. See abstracts.

WOMEN IN SCIENCE SYMPOSIUM. Arranged by the Women in Science Committee. See abstracts. Writing in the 18 Dec 1981 issue of Science, Dr. Betty M. Vetter, Executive Director of the Scientific Manpower Commission said: "Women have made tremendous strides in educational attainment in science and engineering over the past decade, increasing their proportion of doctorate awards in these fields from 7 percent in 1965 to 23 percent in 1980. But they still have higher unemployment rates and lower salaries than men in all fields of science and engineering, at all degree levels, and at all levels of experience; and the disparities between men and women widen with higher degree levels and with years of experience. Graduate enrollments indicate continuing increases over at least the next several years in degree awards to women, but their access to equal employment and advancement opportunities is not yet assured."

This symposium is designed to explore these and other issues in the context of Ohio and the Midwestern economy and institutional settings.

THE OHIO STATE UNIV. LIBRARIES has had an on-line circulation system for more than ten years. This Library Control System (LCS) was augmented with full bibliographic information in 1978, and the capability to search by subject was implemented at that time. During the current year authority control and cross references are being added to the system; the addition of these capabilities will allow the closing of the card catalog before year's end. Section S. Information and Library Sciences will take advantage of the location of this year's meeting and build its program around demonstrations of this pioneer library system, and discussions with key staff members involved in its development and use. This program is scheduled from 2:00 p.m. to 4:00 p.m. on Saturday, April 24; interested individuals should report to Room 122 in the Main University Library. There will be a formal presentation at 2:00 p.m. followed by demonstrations of the systems capabilities. Attendees will also be able to use the system directly on terminals which are available for public use.

Sunday, April 25, 1982

9:00 a.m. - 3:00 p.m. GEOLOGY FIELD TRIP. The annual Ohio Academy of Science field trip will deal primarily with glacial deposits of Fairfield County, Ohio. The trip will be conducted by Sidney E. White and Russell O. Utgard, both of the Department of Geology and Mineralogy at The Ohio State University. Exposures of glacial gravel deposits, e.g. kames, kame terraces, and valley outwash material, will be examined and compared. Pleistocene lake sediments near North Berne, Ohio also will be examined. Time permitting, outcrops of Mississippian bedrock of the region will be examined and discussed.

The field trip will leave from the parking lot behind Mendenhall Laboratory on the OSU campus at 9:00 a.m. on Sunday,
April 25. Transportation will be by private car, however, carpooling is encouraged to reduce parking problems at stops. A lunch stop will be made en route; participants will be responsible for their own lunches. This trip should return to Columbus by 4:00 p.m., but participants may elect to depart from near Lancaster, Ohio about 3:00 p.m.

IN THE FOOTSTEPS OF ELIZA SULLIVANT: FROM FRANKLINTON TO COLUMBUS.

Two field trips, planned by the "Women in Science" steering committee, using an interdisciplinary approach, explore the interaction of people with their environment.

7:00 a.m. - GREEN LAWN CEMETERY. Take I-71 to Exit 105, Greenlawn Avenue; go west to the main (iron) gate. Park at the gate.

Green Lawn Cemetery is one of the major cemeteries in the city of Columbus; it also is one of the earliest. It is located in Franklinton, the community founded by Lucas Sullivant in 1797 at the junction of the Scioto and Olentangy Rivers. Franklinton soon was overshadowed by the city of Columbus, sited in 1816 on the high bank of the Scioto to the east.

Much of the human and natural history of an area can be reconstructed in a cemetery where often original patterns of vegetation and land formations can be seen. From the siting of the cemetery and the grave stones themselves, religious attitudes, economic conditions, migration patterns, medical history, effects of wars and epidemics and social organization can be discovered.

The grave sites of William Starling Sullivant (1808-1873), son of Lucas Sullivant, and his family are located in Green Lawn Cemetery. William Starling Sullivant was an eminent bryologist, having written two books on the mosses of the eastern United States. Although lesser known, Eliza Griscom Wheeler Sullivant, second wife of William, with her husband, made important contributions to the development of the emerging discipline of botany. Eliza Sullivant is Ohio's first woman botanist and perhaps, discoverer of a species, Sullivantia sullivantii.

Resource people for the trip, Ron Stuckey, Buggie Markham, Charles King and Janet Jenks will share in reading the landscape as it has changed from the early 1800s to the present and in describing the life and work of Eliza Sullivant.

Note: Green Lawn Cemetery is an excellent birding spot and the spring migration should be peaking. There will be opportunity to bird watch on this field trip.

9:00 a.m. - THE MAKING OF A CITY. Meet on the west steps of the Statehouse.

This field trip will explore the making of the city of Columbus extending the physical (geological) and historical heritage begun during the earlier field trip. Starting with two of the oldest buildings, St. Joseph Cathedral and Trinity Episcopal Church found at the very heart of the city, the participants will examine the Statehouse, the Ohio Theatre, the Center of Science and Industry and more recent structures. The geologic problems and the fascinating building materials, together with the history and architecture, will create a new urban awareness, not only for the Columbus area, but for all cities subsequently visited. Arranged and conducted by Ruth W. Melvin.

10:00 a.m. - DIRECTOR'S TOUR OF THE COLUMBUS ZOO. This tour is limited to Junior Academy Students and high school teachers interested in finding out about the "behind the scenes" research conducted at the Columbus Zoo. Parents and others may want to meet at noon at the Zoo for a picnic and afternoon visit before heading home.
RADIOACTIVITY IN THE SERVICE OF HUMANITY
by
Rosalyn S. Yalow, Ph.D.
Nobel Laureate
Senior Medical Investigator
Veterans Administration
Bronx Medical Center

Radioimmunoassay (RIA) came into being not by directed design but as a fall-out from investigations into another, apparently unrelated problem, namely, studies of the distribution and metabolism of radioactively labeled insulin. We observed that virtually all insulin-treated subjects develop insulin-binding antibodies. We appreciated that the methods developed for quantifying circulating antibody to insulin could be adapted to the measurement of insulin itself in plasma and other fluids. The concentration of the unknown is determined simply by comparing its inhibition of the binding of labeled antigen to antibody with that of known standards. RIA is a test-tube method now used in thousands of laboratories throughout the world, even in scientifically less-developed countries, to measure the concentrations of hundreds of substances of biologic interest. It was first used in endocrinologic research and clinical diagnosis. Its applications now cover a much broader spectrum. Gastroenterology, neuroendocrinology, pharmacology and toxicology, biochemistry, bacteriology, virology, enzymology -- all have felt the impact of RIA. Radioisotopic methodology, as exemplified by RIA, has shown the potential for opening new vistas in biology and medicine. However, fear of radiation at any level is so pervasive in our society that work employing radioisotopes can be seriously impeded. The lecture will address also some of the concerns with low-level radiation.
Columbus-based Ohio State University is one of the nation’s largest universities, with a combined student-staff population of about 80,000. It confers more than 10,000 degrees annually—but still has a student-teacher ratio of just 20 to one.

Over its 111-year history, Ohio State has grown into one of the top 25 research institutions in the nation and as such is a member of the Association of American Universities. Its 17 colleges offer almost 7,000 courses in 181 undergraduate majors and 108 fields. Most students are Ohio residents, with New York and Pennsylvania sending the most out-of-state students. Among the nearly 58,000 enrolled this year are international students from more than 100 nations.

Ohio State’s lands stretch across 3,255 acres in Columbus and include 3,236 acres elsewhere. To replace its lands and facilities would cost more than a billion dollars. Five of its 442 buildings are listed in the National Register of Historic Places—including Ohio Stadium, completed in 1922.

The many specialized research programs and laboratories at Ohio State include a Theatre Research Institute, Institute for Polar Studies, centers for Medieval and Renaissance Studies, Human Resource Research, Women's Studies, Biomedical Engineering, and one of 18 federally designated Comprehensive Cancer Research and Demonstration Centers, serving a four-state region.

The Cooperative Extension Service of the College of Agriculture and Home Economics provides a statewide network of expertise to Ohio farmers through meetings, television, radio, newspaper and one-on-one assistance and training.

The Ohio State Libraries is one of the most fully automated in the world, with a computerized circulation system offering instant phone access to the entire 3.5-million volume, 36-location collection.

Ohio State has regional campuses in Lima, Mansfield, Marion, and Newark; a graduate center in Dayton, an Agriculture Technical Institute in Wooster, and a national Transportation Research Center in East Liberty.

Health services provided for the community by Ohio State in addition to University Hospitals and emergency room, include a dental clinic, optometry clinic and a veterinary hospital, which also operates an ambulatory service for farm animals, offering treatment and preventive medicine programs.

Endowed chairs and professorships funded by private contributions through the university’s Development Fund provide special support for outstanding faculty. These include several in medicine, law, engineering, and business, the Willard M. Kiplinger Chair in Public Affairs Reporting in the School of Journalism, the Leo Yassenoff Chair in Philosophy and Jewish Studies in the College of the Humanities, and the D.C. Kiplinger Chair in Floriculture. Others are in areas across the university from Chinese literature and culture to chemistry.

Ohio State’s weekend instructional program began in 1980, with regular credit courses taught by university faculty on Saturday and Sunday throughout the quarter to serve growing adult and non-traditional student enrollments. One-quarter of the student body is more than 25 years of age, with 8,500 attending part time and more than 13,500 in the evenings.

Ohio State’s annual budget tops $500 million; its nationally recognized and imitated energy conservation program has saved the university $15.5 million since 1975. University funding comes from local, state and federal sources, student charges, private donors and sponsored research. The National Science Foundation alone commits approximately $6 million annually to research at Ohio State.

Varsity sports, 13 women’s intercollegiate teams and more than 4,200 women’s, men’s and co-rec intramural and recreation teams offer activities for students of all ages and abilities. World-class athletes in sports from diving to golf attend Ohio State, and the track in Ohio Stadium was recently named for one of the university’s most famous alumni, the late Olympian, Jesse Owens.

There is also a highly developed University Honors Program for the hundreds of top scholars who choose Ohio State each year. Through the individualized honors options available in the various colleges, academic challenge for the very best students occurs within the land-grant university commitment to broad opportunities for quality higher education for all.
## Local Section Hosts

Dr. W. Ann Reynolds, Provost  
The Ohio State University  

Dr. Charles C. King, Chairperson  
Local Arrangements  
and  
Executive Director, Ohio Biological Survey

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<td>Ms. Elizabeth J. Sawyers</td>
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### Other Resource People

Mr. Earle M. Holland, Graduate School and Office of Public Affairs  
Ms. Rosemary Kullman, Ohio Biological Survey  
Dr. Joseph H. Oshins, Continuing Education  
Mr. Kenneth D. Ostrand, Continuing Education  
Dr. Margaret Duber Snyder, OSU Research Foundation and AWISCO
Welcome and Opening Remarks by Dr. Herman J. Eichel, President, Adria Laboratories Inc.; and Vice President, Economics Section, The Ohio Academy of Science.


The Joint Economic Committee recently conducted a mail survey of over 2,000 high technology companies throughout the United States. Why high technology companies locate where they do has important implications for State and local development strategies in the 1980's.

The cost and availability of labor, scientific and professional, was listed as the dominant factor in location choices. The traditional factors of proximity to markets and raw materials are not important factors in the location choices of high technology companies, nor are cultural amenities, transportation, climate or energy costs. The study places major focus on the role of the university system in attracting high technology companies. Most of the respondents stated that proximity to university research facilities, scientists, libraries and engineering and sciences students was a factor in their location decisions, but they also stressed that their relationship to the university system is symbiotic.

Finally, the study found that traditional State and local development tools have little effect on the growth and location choices of high technology companies. State and local governments wishing to cash in on the high growth industries will be required to encourage industry-development initiatives and establish new institutional processes to improve the transfer of technical knowledge into the marketplace.

IMPACT OF TECHNOLOGY — ALTERNATIVE STRATEGIES. Jules J. Duga, Ph.D., Principal Researcher, Resource Management & Economic Analyses Department. Battelle Columbus Division. 505 King Avenue, Columbus, Ohio 43201.

A study of potential impacts and relationships among various sectors of the economy provides a powerful tool for planning, particularly in the areas of economic forecasting, capital requirements of industry, manpower planning, curricular development, and the more general area of resource utilization.

The investigation of impacts of technology outside the realm of traditional microeconomic market studies does not lead to precise predictions of the future. It does provide guidance into those concerns that are beyond mere technological forecasting. It provides a means of considering factors that will affect the social and political forces that come into play and raises questions and potential alternatives with sufficient lead time that strategies for dealing with different options can be developed and implemented.

STRATEGIC PLANNING OF TECHNOLOGY TRANSFER. Warren H. Groff, Vice President for Academic Affairs, North Central Technical College, 2441 Kenwood Circle, Mansfield, Ohio 44901

Technology transfer is a means to facilitate economic development, increase productivity, and stimulate job growth. What is needed to accomplish technology transfer are models which efficiently and effectively reduce the lag between production of R & D and its application. Major producers of R & D include the more than 200 Federal R & D laboratories and centers representing 11 Federal agencies in the Federal agencies in the Federal Laboratory Consortium.

The Ohio Board of Regents obtained funding for the Ohio Technology Transfer Organization beginning with the 1979-1981 biennium. This state-wide network consisting of The Ohio State University and two-year institutions working with state and federal agencies is intended to provide small business and industry access to information, advice, and services essential to economic development and job growth. In addition, the Division of Vocational Ed-
ucation of the Ohio Department of Education initiated a program to link Ohio's extensive public vocational-technical education system to regional and state-level economic development. Local Vocational/Technical Resource Consortia were initiated during 1980 in 23 regions throughout the state. At the state level the program is coordinated with the Ohio Department of Economic and Community Development, the Ohio Chamber of Commerce, the State Labor Council and other business and labor groups.

This paper will present the brokering model and discuss its economic implications from a strategic planning perspective.

11:20 Discussant: Professor Henry L. Hunker
Department of Geography and School of Public Administration
The Ohio State University

12:00 Lunch (pre-registration required)

STRATEGY FOR ACCELERATING R & D ACTIVITY. Tom Walker, President, Cardinal Development Capital Fund. 155 East Broad Street, Columbus, Ohio, 43215.

1:30 As a state which is a primary center of manufacturing in the nation, we are particularly aware of the importance of developing and preserving our industrial capabilities. Our State's development policies have long been centered on expanding and diversifying our manufacturing facilities. The national economy, however, has made this effort increasingly complicated. Since the mid-60's, sweeping changes have affected our capital markets. Paralleled to these developments, our nation's mature industries experienced a steady decline in industrial innovation.

One important capital ingredient, R & D activity, was not well understood, and in particular the special effects that R & D activity can have on a regional economy. In order to assist in a better understanding of these issues, the Ohio Development Financing Commission undertook a study of the past and current trends and the future possibilities of industrial R & D activity in Ohio. Based on this study, we have assembled a strategy for adoption by our State's government. That strategy is aimed at accelerating R & D activity in Ohio, initially by producing new direct employment, and secondarily increasing the probability that new future-oriented business start-ups will take place and prosper in our region.

DEVELOPING A COMMUNITY'S HIGH TECHNOLOGY RESOURCE BASE: THE DAYTON CASE. John B. Cordrey, Dayton Development Council, 1940 Winters Bank Tower, Dayton, Ohio 45423

2:10 This paper discusses activities that the Dayton Development Council has done or is doing to develop its high technology resources. In the Fall of 1979, the Council undertook a study of the community's high technology resources and recommended actions to increase high technology jobs and firms.

High priority was placed upon assisting local firms. Research revealed that a high percentage of local electronic components, measurement instrument and aviation research and development firms expected to increase employment within 3 years and most were doing some business with the federal government, particularly Wright Patterson Air Force Base (WPAFB).

Labor turn over among scientists and engineers was low, over 70 percent of the firms reported a labor turn over rate less than 5 percent. This is very low compared to U.S. averages thus further research is investigating why scientists and engineers prefer the Dayton area.

An intensive effort is being undertaken to encourage and assist local firms to do business with WPAFB and prime defense contractors.

Two approaches are being considered to assist establishing new businesses. One approach, the incubator process, would help find inventors, evaluate inventions and find resources (money, physical facilities, business and technical assistance) for new business. The second approach would increase the number of entrepreneurs by encouraging major corporations to permit "entrepreneuring" from selected employees. Using research, two industrial prospect trips (Boston and Los Angeles) were conducted. Over 150 firms were contacted.
FINANCING EMERGING TECHNOLOGY. Barry Winslow, Senior Vice President, Huntington National Bank, P. O. Box 1054, Cincinnati, OH 45202

In order to stabilize the economic ease of the Midwest, increased productivity and economic diversity is vital. The means of financing this process must be as unique and varied as the technological advances necessary to stimulate the process. The long-term future of the financial institutions of the region is a function of the economic future of the region. Moreover, the federal government has recently begun to implement a policy of gradual withdrawal from direct involvement in economic development, thus increasing the burden on the private sector.

Consequently, the financial institutions of the regions will have to deal increasingly with the problem of facilitating financing for emerging technology, either as a direct participant or as a catalyst. The key to this participation is the integration of commercial lending techniques with a detailed knowledge of the revised tax laws and effective utilization of such government assistance as may be available. In general, large financial institutions will be required to take a much more entrepreneurial approach to lending. This reality must also be taken into consideration by the banking regulatory authorities, so that banks will have the flexibility required.

3:30 Discusant: Dr. John Blair, Chairman
Department of Economics
College of Business and Administration
Wright State University

4:00 Overview and Closing Remarks
Dr. Herman J. Eichel

HOUSING

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