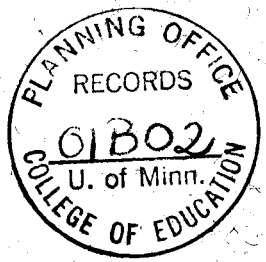


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University of Minnesota BIENNIAL REPORT

1972 - 1974



June 30, 1974

University of Minnesota

BIENNIAL REPORT

of the President and the Board of Regents

1972 - 1974

to the
Legislature of the State of Minnesota

Approved and Adopted by the Board of Regents

June 30, 1974

THE BOARD OF REGENTS

As of June 30, 1974

The Honorable Elmer L. Andersen, St. Paul
Chairman

The Honorable Neil C. Sherburne, Lakeland Township
Vice Chairman

The Honorable Fred A. Cina, Aurora

The Honorable Lauris D. Krenik, Madison Lake

The Honorable L. J. Lee, Bagley

The Honorable Lester A. Malkerson, Minneapolis

The Honorable Wenda Moore, Minneapolis
(Mrs. Cornell L. Moore)

The Honorable George W. Rauenhorst, Olivia

The Honorable Loanne R. Thrane, Chanhassen
(Mrs. Ralph Thrane)

The Honorable David C. Utz, M.D., Rochester

The Honorable Kathryn Vander Kooi, Luverne
(Mrs. Benjamin Vander Kooi)

The Honorable John A. Yngve, Plymouth

The University of Minnesota adheres to the principle that all persons shall have equal opportunity and access to its educational facilities, activities, and employment without regard to race, creed, sex, age, or national origin.

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To the Legislature of the State of Minnesota:

The Board of Regents of the University of Minnesota is pleased to transmit this 1972-74 *Biennial Report* to you.

The statutory requirement for this report is found in the Territorial Laws of 1851, enacted by the Legislative Assembly of the Territory of Minnesota. Chapter III of these laws, which provides for the establishment of the University of Minnesota, was perpetuated in the Minnesota Constitution as Article VIII.

The Board of Regents will be glad to provide additional information at your request.

A handwritten signature in cursive script, appearing to read "Glenn Sanderson".

Chairman

Minneapolis, Minnesota
June 30, 1974

Board of Regents

Elmer L. Andersen, *Chairman*

Personnel—The 1972-74 biennium was marked by many changes in the Board of Regents. L. J. Lee of the Sixth Congressional District was appointed to fill the vacancy created by the death of Regent Lyman A. Brink on September 18, 1972.

The 1973 Legislature did not meet in joint convention for the purpose of electing members to the Board of Regents. Because of this, Governor Wendell Anderson made four appointments to the Board in May of 1973, following the adjournment of the 1973 session. Regents Elmer L. Andersen and L. J. Lee were reappointed by the Governor to continue serving as Regents from the Fourth and Sixth Congressional Districts. Dr. David C. Utz and Lauris D. Krenik were appointed Regents from the First and Second Congressional Districts, succeeding Regents Daniel C. Gaaney and Herb L. Huffington, who did not seek reelection.

Wenda Moore (Mrs. Cornell L. Moore) of Minneapolis and Kathryn Vander Kooi (Mrs. Benjamin Vander Kooi) of Luverne were both appointed by the Governor in November 1973 to fill out the unexpired terms of Regents Josie R. Johnson and Fred J. Hughes who resigned.

Presidential Election—The most important activity of the biennium was the election of a new Chancellor (President) of the University. The Regents' Presidential Search Committee, chaired by Regent Neil Sherburne, developed a model search process that included involvement of the broadest and largest cross section of faculty, student, and community representation ever. The search culminated in the election in April 1974 of Dr. C. Peter Magrath as President from a total list of over 400 nominees and candidates.

Committees—The new Student Concerns Standing Committee was appointed July 1, 1973, and has served as a forum for students to express their concerns directly to a Regents' committee. This committee expects to meet with students on all University campuses during the next year.

A Regents' ad hoc committee began the development of a Mission Statement for the University. It will generally delineate the responsibilities and goals of the various units within the University. The statement should be completed early in 1975 after broad reviews within and outside the University.

Open Meetings—The Board of Regents opened all committee meetings and Board meetings to the public a year before the open meeting law became effective. Prior to that, only the Executive Committee of the Board of Regents was closed to the public, for the review of personnel and other sensitive items.

Coordinate Campus Visits—The Board of Regents made official visits to the University Experiment Station at Grand Rapids and to Rochester during the biennium. Plans are to visit all coordinate campuses during the 1974-75 year.

Office of the President

Malcolm Moos, *President*

A number of major appointments in the administration of the University were made during the 1972-74 biennium. Late in 1973, following President Moos's election to succeed Robert Hutchins on July 1, 1974, as chief executive officer of the Center for the Study of Democratic Institutions, a Regents' search committee for a successor was set up. That group worked closely with the University's Consultative Committee of faculty and student members. In April 1974 C. Peter Magrath, President of the State University of New York at Binghamton, was named University President by the Board of Regents. E. W. Ziebarth, former dean of the College of Liberal Arts, was named interim President of the University by the Regents to oversee the transition between President Moos and President-elect Magrath. Ziebarth became President on June 17, 1974, and will serve until Magrath assumes the position on September 1, 1974.

Earlier in the biennium, Stanley B. Kegler, special assistant to the President, was named vice president for administration; Rodney Briggs was named executive assistant to the President; and Harold W. Chase was named acting vice president for academic administration, succeeding William G. Shepherd, who returned to teaching. In 1974 Stanley Wenberg, vice president for state and federal relations, resigned his post to become a University consultant, and Jean Schlemmer, administrative assistant to the President, left her position. A committee of 10 faculty members and three students was named to seek a vice president for academic administration and a dean of the Graduate School. Another search committee was established for a vice president for student affairs to succeed Paul Cashman, who announced his intention to return to teaching at the end of the year.

Several new administrative bodies were established during the two-year period. The President's Executive Advisory Council, which met monthly, was formed to generate University policy and improve communication with collegiate and campus officers. It included the senior officers, four deans, and two provosts. The Council of Academic Officers included 20 deans, the senior academic officers of the coordinate campuses, and three directors. The Coordinate Campus Council consisted of the provosts of the coordinate campuses and their colleagues, who met with the President and his representatives.

Three new positions in administration were created during the biennium. The post of director of personnel was filled by Roy Richardson. Lillian Williams was named director of the Office of Equal Opportunity and Affirmative Action. In 1973, the Regents approved the title change for the chief administrative officer of the Institute of Agriculture to deputy vice president for agriculture, forestry, and home economics.

During the biennium, plans were laid for development of the next request to the state Legislature. Regents and administrators began to develop long-term goals and to determine what steps would have to be taken in 1975 to meet them. An academic policy planning group was created to advise, develop, and implement a plan that would assist units in developing mission statements and planning goals, help coordinate the academic planning effort with the legislative request, and prepare for long-term academic planning.

During 1973-74 an ad hoc Committee on Faculty Accountability was appointed to develop a policy on professional consulting, service activities, and other outside work. A draft of the proposed policy was first presented to the University Senate in April 1974. Debate commenced and was continued at subsequent meetings and into 1974-75.

OFFICE OF THE DIRECTOR OF DEVELOPMENT

Robert J. Odegard, *Director*

The Office of Development is responsible for the coordination of all University development activities seeking private support. The staff also provides support to the University of Minnesota Foundation.

Major activities during the 1972-74 biennium were varied. The development staff was expanded and organized into three major program areas: major gifts, deferred giving, and annual giving. Responsibility for the annual solicitation of gifts from the alumni and friends of the University, formerly called the Alumni Fund, was transferred from the Department of

Alumni Relations to the Office of Development. A central receipting and acknowledging process for all gifts to the University was developed. As part of this program, an improved computer information file has been developed.

The responsibilities for internal screening of research and training proposals to foundations and corporations has been transferred from the Development Committee to the Administrative Development Committee. The Administrative Development Committee is chaired by the vice president for academic administration and includes the vice president for finance, planning, and operations; the vice president for health sciences; the dean of the Graduate School; and the director of development.

OFFICE OF EQUAL OPPORTUNITY AND AFFIRMATIVE ACTION

Lillian H. Williams, *Director*

Several changes in the civil rights laws as they relate to institutions of higher education have required policy and procedural changes. Changes in the laws, federal rules, and regulations are reviewed continuously and procedures are changed when necessary to implement the Regents' policies and to meet federal requirements. Guidelines on equal opportunity for faculty women have been approved by the Regents, and nepotism and maternity policies were changed to comply with legal requirements.

Data has been collected and put to use in several areas. Employment data were analyzed and distributed to each vice president and University department. Recruitment and availability data were provided for each department in 1973, and will be updated annually. Data on applicant flow, including interviews, referrals, and hires, were submitted quarterly to this office by the Personnel Department for monitoring purposes. Presidential forms 16 and 17 were put into effect in order to monitor academic vacancies and hires, and all hiring procedures for full-time academic positions were reviewed. This information was compiled into the Annual Report and submitted to the Department of Health, Education, and Welfare (HEW).

The University's Affirmative Action Plan was rewritten and submitted to HEW, and was also made available to 111 higher education institutions.

Each college, school, and coordinate campus now has an equal opportunity officer and has submitted an Affirmative Action Plan to the Equal Opportunity Office. These plans have been reviewed and assistance was given where needed.

The office investigated and informally resolved 87 discrimination complaints during 1972-74. These complaints included alleged race, sex, and salary discriminations. Several complaints and charges are pending action by the State Department of Human Rights, the Equal Employment Opportunity Commission, and the Department of Health, Education, and Welfare.

During the biennium, an affirmative action workshop was held for the President, vice presidents, provosts, deans, directors, and departmental affirmative action officers. Speakers were federal, state, and national authorities on civil rights laws and the requirements for compliance. The 167 persons who attended were given detailed information on the federal laws and the University's requirements.

In 1973 the Equal Opportunity Office organized and sponsored a special class for minority contractors. The class met two nights a week for 16 weeks, with the purpose of improving and upgrading the potential of minority construction businessmen. Of the 25 persons who enrolled in the class, 22 completed the 16-week course, which included estimating and blueprint reading. The classes were taught by individuals who had experience in construction. The Minneapolis Vocational School and the University's Engineering and Construction Department participated in the effort.

The office also participated in community affirmative action programs. The director was appointed to the Governor's Executive Affirmative Action Committee for the state of Minnesota and serves on the executive board of the National Affirmative Action Officers' Association.

OFFICE OF THE DIRECTOR OF PERSONNEL

Roy Richardson, *Director*

The 1972-74 biennium saw a major change in both the organization and philosophy of the University's Personnel Department. Creation of the position of director of University personnel signaled the administration's intent to make personnel services available to both the civil service and academic segments of the University. Accordingly, the position of director of civil service personnel was eliminated and the Personnel Department restructured to provide assistant directors for compensation, employee benefits, employee relations, and human resources development.

The overall philosophy of the department also underwent a significant change. In prior years the Personnel Department had been looked upon both by employees and administrators as the enforcer of civil service rules. During the biennium it consciously sought to change its image to that of a facilitator that would assist departments in implementing rules and assist employees in securing their rights.

COMPENSATION DIVISION

Implementation of a major change in compensation philosophy was begun during this biennium. This shift was from the traditional lock-step system utilized by the state of Minnesota to a system of pay for performance. While the level of legislative appropriations remained the same as under the state plan, the University for the first time was able to implement compensation practices based on internally developed policies. There are a number of reasons such a change was necessary. Since the state plan is a negotiated settlement, requiring the University to follow its provisions means University employees and management would be governed by a contract that they did not negotiate. Also, because the state of Minnesota has never developed a consistent compensation system and changes are made every two years, employees have lost a sense of what they are being paid for. And, more importantly, the state's compensation systems have not been primarily based on the principle of pay for performance, but rather have rewarded length of service.

A set of compensation principles was developed and approved by the Board of Regents. These will provide a consistent basis for future compensation procedures. Three separate and distinct dimensions that are provided for are (1) salary ranges will increase to reflect changes in the external labor market (the conversion increase); (2) salary ranges will increase to reflect the University's desire to help insure that employees remain economically secure (the cost-of-living increase); and (3) employees in the same classification can earn differing salaries based on performance (the equalization increase).

The conversion increase is determined by salary surveys of relevant labor markets, and the cost-of-living increase is determined by a formula based on the local Consumer Price Index. The equalization increase is based on the assumption that, due to past compensation practices, employees have not been paid at levels commensurate with their performances. Therefore, the first step in instituting a pay-for-performance system was to bring levels of pay into balance with levels of performance.

Staff assistance was provided for the first time during this biennium to the vice president for academic administration in preparing the legislative request for academic salaries. This assistance involved interpreting market data, outlining principles, meeting with the academic vice president and interested faculty groups, assessing appropriate cost-of-living delivery systems, and writing proposals for both magnitude of request and delivery systems.

EMPLOYEE BENEFITS DEPARTMENT

With the appointment of Roy Richardson as director of personnel in December 1972, the Department of Insurance and Retirement was merged into the overall personnel operations. The department was reorganized and will be renamed the Employee Benefits Department, effective July 1, 1974. The reorganization has included the appointment of three staff members to the positions of employee benefits managers, with each manager assigned the responsibility for administering certain programs.

An increase in the total retirement allowances of certain retired staff members and certain widows of retired staff members, given on July 1, 1973, is to be repeated on July 1, 1974.

EMPLOYEE RELATIONS SECTION

Employment—Most of the activity in this area related to civil service and student employment, although some assistance was given to certain departments in recruiting non-faculty academic staff.

Nearly 10,000 full-time openings were filled in the University civil service system over the biennium and close to double that figure in student positions.

Labor Relations—Contracts ranging from 12 to 24 months were negotiated with five bargaining units. Of approximately 9,000 civil service employees, 2,000 were covered by union contracts.

A new civil service grievance procedure, which was put into effect during the biennium, proved both innovative and responsive to resolving employee complaints.

Significant time and effort were directed toward assisting academic administration in handling union organizing efforts among both faculty and graduate assistants. This included representing the University at numerous hearings before the State Bureau of Mediation Services and counseling both central administration officers and Regents in the provisions of Minnesota Labor Law.

Affirmative Action—The Personnel Department implemented a new computer reporting procedure designed to monitor its success in recruiting minorities and females for positions in which they had been traditionally under-represented. An increased number of females and minorities were also employed within the department itself at all job levels.

HUMAN RESOURCES DEVELOPMENT

During the biennium the Personnel Department began to broaden its concept of staff development from one of providing skills training to one encompassing organizational development and total human resources development. At the beginning of 1973, the position of assistant director of personnel for organization and human resources development was established. The primary functions of the position include the updating of skills and supervisory training programs, the evolution of a management development system, and the provision of organization development programs and related services.

The existing skills and supervisory training programs were updated in content and revised in methods of presentation toward more participative formats, and several new programs were designed. A policy memorandum outlining possible programs in a system of management development was circulated to administrators, managers, and interested groups of staff and faculty during the last months of the biennium. Feedback led to a revision of some of the plans and by the end of the biennium the programs in several of the seven areas had been designed and were being tested. Most notable, perhaps, was the design of a 30-hour Management Self-Development Workshop, which was tested with a pilot group during the closing months of the biennium. In addition, a specially designed Women in Management Workshop was organized and presented to two groups of women at the University.

Enrollment in the existing orientation and skills training programs offered by the Personnel Department climbed to 4,355 for the biennium, almost double the 2,321 who attended in the 1970-72 biennium. This was due to increases in both course offerings and staff turnover.

Central Training Programs

Orientation for New Employees—In addition to the orientation sessions previously offered to office staff, a new session for other service staff was offered during 1973-74. In these sessions, the organization and purpose of the University were explained, rights and obligations of employees were discussed, and employees were familiarized with benefits and sources of information. Telephone and receptionist techniques were also demonstrated and reviewed in the clerical sessions. A total of 1,215 employees attended these sessions during the biennium.

University Business Procedures—This course was attended by 428 employees during the biennium, plus others who attended specialized departmental sessions. The *Manual of Business Procedures* was again revised each year of the biennium.

Typing Refresher—Of the 178 employees who enrolled in this course, 75 percent were certified at civil service standards and half of those certified were promoted within the year after completing the course.

Shorthand Refresher—Of the 114 employees who enrolled in this course, 80 percent were certified at civil service standards and 75 percent of those certified were promoted.

Office Communications Seminar—The 68 staff members who enrolled in this course learned how to empathize with students, faculty, and staff; how to meet daily communications challenges; and how to become effective communicators on the telephone and in the office.

Medical Terminology—This course for medical secretaries and technicians was offered at least three times a year. The enrollment dropped to 79 from 105 the previous biennium.

Laboratory Animal Care—These courses were suspended during the biennium due to the departure of the veterinarian employed by the Medical School. They will be resumed and the courses completely revised as soon as another veterinarian is appointed as director of Research Animal Resources.

Supervision—This course was completely revised during the biennium to provide a participative learning format and was first presented in January 1974. Enrollment for the biennium was 127.

Hazards in the Biomedical Laboratory—Bacteriological, radiological, chemical, physical, and other hazards existing in laboratories and corrective safety measures were emphasized in this new course given to 144 employees during the biennium. The course was prompted by the Occupational Safety and Health Act, and will be offered on a continuing basis.

Short Courses—These may be single or multiple sessions, workshops, or seminars lasting one or two days. Total attendance at these meetings was 1,869, nearly three times as high as during the previous biennium. Courses offered included Psychological Blocks to Effective Management (for women), Course Inventory Preparation and Room Scheduling Procedures, Elements of Human Behavior, Interpersonal Communication on the Job for Executive Secretaries, Summer Session Budget Preparation, Research Contracts and Grants, Current Postal Regulations, and Employment of the Handicapped.

Departmental Training Programs—A major project during the biennium was a complete revision of the *Work Methods for Building Caretakers Manual*, which is the basic training aid for custodians at the University of Minnesota and is also used in educational institutions across the country.

Individual Development Programs—These programs, which include the Regents' Scholarship Program, Trainee Programs, and the Supervisors' Information Service, continued as in the previous biennium.

UNIVERSITY OF MINNESOTA, DULUTH

Raymond W. Darland, *Provost*

Progress was made at the University of Minnesota, Duluth (UMD), in a number of significant areas during the biennium, pointing toward the expanding role of the Duluth campus in higher education for all of Minnesota. Three new professional programs—medicine, social work, and dental hygiene—were historic milestones in the development of the campus. Each represented a response by the University to a community need for service and professional skills. The opening of the Lake Superior Basin Studies program and the development of the Lake Superior Association of Colleges and Universities also reflected UMD's commitment to service to the region.

Rising enrollments during both years, more liberal admission requirements for freshmen and transfer students, and the completion of four major buildings valued at \$12.6 million were equally significant.

Enrollment—Fall 1972 enrollment was 5,488, an increase of 2.3 percent from the previous year. The figure included 5,322 undergraduate, 142 graduate, and 24 medical students. In fall 1973, enrollment was up another 2.6 percent, with 5,377 undergraduate, 135 graduate, 48 medical, 35 dental hygiene, and 37 social work students.

Admissions—The admission policy for freshmen was changed to make all students in the upper 50 percent of their high school class automatically admissible, regardless of residence, while students not in the upper 50 percent may be admitted if they submit evidence (such as test scores, counselor recommendations, or other information) that indicates probable success in college. Other students may be admitted after participation in a diagnostic assessment test through UMD Supportive Services.

For admission with advanced standing, a student must have successfully completed 39 or more credits with passing grades and an average grade of C, and have successfully completed 75 percent or more of all work attempted. The policy applies to nonresidents as well as to Minnesotans. Students from institutions that do not record grades below C will be admitted if they were in good academic standing. If the institution has only pass/no-credit grading, students will be admitted if they have passed a minimum of 75 percent of all work attempted. Transfer students who do not qualify under the other provisions will be considered on an individual basis, which may take into account high school records and test scores.

Beginning in fall 1974, transfer students who are otherwise admissible to UMD and who have completed an Associate in Arts degree will not have to complete UMD's liberal education distribution requirements if they have completed a minimum of 45 credits in courses comparable to the liberal education requirements at UMD.

Construction—Building construction completed during the biennium included the Residence Hall Dining Center (\$3.7 million), the Marshall Performing Arts Center (\$2.6 million), the Classroom-Laboratory Building (\$3.5 million), and a 312-student apartment-style housing complex (\$2.8 million). Construction was begun on the \$1.4 million Physical Education Facility.

Other projects included a study of facilities utilization, a boiler addition to the heating plant, remodeling of the science building, and other campus improvements. Planning also began on the health sciences addition to the Library.

Organization and Administration—Among major appointments at UMD were Dr. Robert L. Heller as associate provost, Dr. Alvin W. Ollenburger as chairman of the Division of Education and Psychology, Dr. Roy O. Hoover as associate professor and director of special programs, Dr. Thomas B. Thielen as vice provost for student affairs, Dr. Wayland R. Swain as interim director of the Lake Superior Basin Studies Center, and Patricia Ann Fleming as the first female police officer on the campus.

Curriculum and Degrees—Three new professional programs were started at UMD in the fall of 1972: the two-year UMD School of Medicine, with 24 students, dedicated to increasing the number of family physicians in the area and state; the Graduate School of Social Work, with 23 students, which trains men and women for careers in regional and national social development; and the two-year Dental Hygiene Program, with 16 students, dedicated to increasing the supply of paraprofessionals in the area. In April 1973, the dental program opened its public clinic on campus.

In fall 1973 the Regents approved the new Master of Education degree, the first at UMD outside the Graduate School. The M.Ed. allows in-service teachers, in particular, to work with UMD faculty in planning a degree program tailored to their professional needs.

Curriculum development led to the offering of several new degrees and certificates, including the Associate in Vocational Teacher Education degree, the Bachelor of Social Development degree, the Associate in Science in Dental Hygiene degree, the Bachelor of Arts in Earth Science degree, the Bachelor of Arts in Interdisciplinary Studies degree, and certification programs for nursery school teachers and in special education.

The Lake Superior Basin Studies Center was initiated at UMD in fall 1973, with Dr. Wayland R. Swain as director. The center is dedicated to the initiation and coordination of research, education, and public service in the physical, chemical, geological, biological, public health, geographical, sociological, and economic aspects of Lake Superior and its surrounding basin region.

During this reporting period, four major externally funded research projects were undertaken for the U.S. Army Corps of Engineers, the Office of Technical Assistance of the Economic Development Administration, the Arrowhead Regional Development Commission, and the Upper Great Lakes Regional Commission. Cooperative arrangements for

graduate-level instruction of students were planned and a summer sequence of course work was offered in water quality investigation and research techniques.

New in the fall of 1973 was a cross-registration program between daytime and evening classes. It allowed daytime students to take some classes in the evening on a space-available basis; conversely, night school students could take some classes in the daytime. The goal of the new program is to widen the choice of courses open to all students.

Exchange Programs—The seven-campus Lake Superior Association of Colleges and Universities made possible the first faculty exchange between UMD and Lakehead University: Larry Joseph, lecturer in political studies, taught a winter-quarter course on government and politics in Canada.

The UMD Campus Assembly approved a student- and faculty-exchange proposal between UMD and the University of Regensburg in Germany. This proposal was formally approved by the heads of both campuses.

Campus-Community Programs—One highlight of the biennium was the dedication on February 3, 1974, of the Marshall Performing Arts Center. More than 500 persons attended the dedication ceremonies, which honored the four Duluth women who made major contributions toward the \$2.6 million facility. The center includes two theaters, a dance studio, classrooms, faculty offices, dressing rooms, a prop workshop, and storage rooms. Tours included a visit to the nearby Tweed Museum of Art for a special show of props and costumes from 25 Guthrie Theatre productions.

The Shrine football game on September 8, 1973, was preceded by the renaming of the Classroom Building to A. B. Anderson Hall, in honor of the late Minnesota Legislator from the 57th District. Warren Moore, Duluth, a former Legislator and long-time friend of Anderson, spoke. Ceremonies honoring the Anderson family of Duluth also were held at half time at the UMD-UWS game at Griggs Field.

On May 22, 1974, the Education Building was renamed Bohannon Hall in honor of Dr. Eugene W. Bohannon who served as president of Duluth State Teachers College and Duluth State Normal School for 37 years. The name plate was unveiled by George Bohannon, son of the former president, before 250 guests.

Other events that drew the campus and community closer were the first Elizabethan Dinners, April 23-25, 1974. They featured food, wandering minstrels, madrigals by the Elizabethan Singers, and a court and jesters, all of which were under the direction of Dr. Vernon Opheim.

The Finnish Experience in the Western Great Lakes Region: New Perspectives, held April 25-27, 1974, drew more than 700 registrants to hear 15 scholars present papers at the Marshall Performing Arts Center. The conference, the first in a series featuring the experiences of different nationality groups, was sponsored by the Minnesota Humanities Commission, UMD, and the Twin Cities campus Center for Immigration Studies.

UMD continued to provide cultural enrichment to the community through its University Artists Series, the Department of Music, the UMD Theater, the Tweed Museum of Art, and the Alworth Planetarium. The events offered included the Second Biennial Lake Superior National Craft Exhibition at Tweed, which drew more than 9,000 visitors; a lecture by Washington correspondent Jack Anderson; the sold-out productions of "Hello Dolly"; and appearances by such groups as the Dizzy Gillespie Band and the Norman Luboff Choir.

UNIVERSITY OF MINNESOTA, MORRIS

John Q. Imholte, *Provost*

During the 1972-74 biennium, the University of Minnesota, Morris (UMM), continued its effort toward strengthening the liberal arts program of the campus. Particular emphases were placed upon enhancing the quality of its program and upon providing a more complete core curriculum in the liberal arts. Community outreach programs and services were emphasized, and services to economically disadvantaged students were increased. In general, efforts have been devoted to strengthening both the campus academic and service units.

Organization—There were no basic changes in the internal organizational structure or in the administrative relationship between the UMM campus and the central administration of

the University. An office of Continuing Education and Regional Programs was established in January 1973 to enable the campus to more effectively serve the nearby geographic area. This office works closely with all campus units, although it is ultimately responsible to the dean of Continuing Education and Extension (CEE) on the Twin Cities campus. Planning, program, and policy determinations are made jointly by CEE and UMM.

The West Central Experiment Station (WCES) completed its move to its new location one mile east of the UMM campus. Until its space needs are adequately met, WCES will continue to occupy a number of minor structures situated at the northeast corner of the UMM campus.

Enrollment—UMM student enrollment increased to 1,763 for fall quarter 1972, and then declined to 1,656 for fall quarter 1973. Efforts to inform prospective students of the academic program were increased.

During each of the two years in the biennium, the median high school rank for entering freshmen was at the 82nd and 80th percentiles; the median MSAT scores were at the 70th and 66th percentiles; and the median composite ACT scores were 26 and 25.

Student makeup was approximately the same as in the previous biennium. Students came from 320 Minnesota high schools and 83 counties in 1972-73, and from 327 Minnesota high schools and 80 counties in 1973-74. In addition, there were 76 out-of-state students each year of the biennium who came from 65 out-of-state high schools. During the two years of the biennium, there were 8 and 11 foreign students. Approximately one fifth of the total student enrollment came from the seven-county Twin Cities metropolitan area.

Students at UMM continued to represent first-generation attendance at college in their families. Only approximately 30 percent of their parents attended college and 25 percent did not graduate from high school. Although just one third of the parents were employed in professional, semiprofessional, managerial, and technical occupations, two thirds of the UMM graduating class of 1973 are employed in those categories. Also, the unemployment rate of the 1973 graduating class is 1.5 percent, and those employed are pursuing careers related directly to their major interests at UMM. Figures for our 1974 graduates are not available at the time of this writing.

Students at UMM continued to need financial assistance to enable them to attend college. During the 1972-73 academic year, there were 1,310 recipients of financial aid on the campus. The average amount received per student was \$1,258. Similar figures for 1973-74 indicate that there were 1,278 recipients at an average of \$1,560 per student. The forms of financial aid included Basic Educational Opportunity Grants, Supplementary Educational Opportunity Grants, Minnesota State Scholarships and Grants, Work-Study funds, a variety of loans, and other miscellaneous types of financial assistance.

A total of 2,069 students have graduated from the University of Minnesota, Morris, since the first graduating class of 1964. The 1974 class, with 292 graduates, was the largest class thus far. The UMM Alumni Association had an active membership of 286 at the end of the biennium.

The Minority Student Program was expanded during the biennium. There were 54 minority students enrolled in 1973-74, including 38 black, 12 Native American, 2 Asian-American, and 1 Spanish-surnamed.

Academic Programs—Program additions in the academic area were few in number and modest in scope during the biennium. Additions that did occur were usually the result of redeployment of existing resources rather than the result of additional support. Again, primary concern and emphases were placed upon improving the quality and expanding the scope of existing programs.

Examples of changes in academic programs included the introduction of majors in European studies and in the social sciences (mainly for prospective secondary school teachers), and increases in the number and variety of interdisciplinary offerings and in computer use and instruction. The College Level Examination Program (CLEP), initiated during the biennium, enabled students to earn credit by examination for college-level accomplishments from a source other than completed college courses. A program providing assistance to Native American students interested in pursuing careers in the health sciences was offered.

Summer and evening instructional programs continued to be offered with modest but essentially stable enrollments. These offerings were placed under the direction of Continuing Education and Regional Programs, which was also responsible for a number of outreach

programs. Many of the 14 projects carried out under a West Minnesota Consortium Title I project involved faculty members and students in community problem-solving efforts. Members of the consortium included one private college, a state college, a community college, an area vocational-technical institute, and UMM.

The University Without Walls Program was established to enable persons who hold regular employment or who have special full-time responsibilities and commitments to earn a University degree. An Older Americans Program for senior citizens was developed to provide a variety of needed services in a three-county area. The Institute for Creative Study, which took place during June and July of 1974, provided stimulating learning opportunities for gifted junior high school and senior high school students attending schools within an approximate 50-mile radius of Morris. Each year of the biennium symposia on Life in Small Towns and Rural America were held in a number of west central Minnesota communities. Other programs held on the campus involved diverse groups of participants, such as senior high school administrators and teachers of social studies from throughout the nation, bankers from the midwest, Head Start-Home Start teachers and teacher aides, and elementary and secondary school teachers and administrators.

Over 50 percent of UMM faculty members have doctoral degrees, and a high percentage of the remainder have completed all requirements for the doctorate except for the dissertation. The total numbers of teaching faculty during the two years of the biennium were 88 and 89, respectively; the total numbers of teaching and nonteaching individuals were 96 and 98. The student/teaching-faculty ratio for 1972-73 was 20:1, and for 1973-74 was 18.4:1. A strong commitment to teaching and a dedication to professional growth and scholarly contribution continued to be a characteristic of the UMM faculty. Close working relationships between faculty members and students were strengthened.

Each year of the biennium, a UMM faculty member was awarded a Horace T. Morse-Standard Oil Award for outstanding teaching and advising.

Books, articles, essays, and papers authored by faculty members were numerous, and many received national and international attention. An increasing number of published articles listed students as coauthors. Research in many professional and educational areas was ongoing and expanded. Service commitments of faculty members, both on and off campus, also increased markedly.

Buildings—Three major construction projects were completed during the biennium. In December 1973 a new Humanities-Fine Arts Building was finished. The new building houses the studio art, art history, theatre, speech, and music disciplines. Earlier in 1973, Phase II of the Physical Education Center was completed. The new facility includes an eight-lane swimming pool, a diving tank, and seating for spectators. At the end of the biennium, the second and final phase of the library was completed.

Funding was provided during the 1973 legislative session for the remodeling of a classroom building. Because of budgetary difficulties, the project was not initiated during the biennium. A number of landscaping and repair projects have been started and completed.

Activities—A large number of varied special activities took place on the campus. Many were of general interest and appeal, while others were directed toward special audiences. Some examples include art shows; theatre projects; choral, band, and orchestral concerts; and two film series. Coffeehouses, convocations, homecoming events, special lectures, and conferences continued to provide opportunities for involvement and enrichment.

A number of student-operated enterprises were established. These included a radio station (KUMM), a student store, a shuttle service, and an off-campus housing informational service. A Black Student Union and a Women's Commission were started. A Heritage Weekend, stressing historical and contemporary contributions from various ethnic and racial groups, was held in May 1974. During the biennium, many outstanding performers, performing groups, and speakers visited the campus.

Intercollegiate athletics and intramurals continued as important participant and spectator activities. Intercollegiate competition in women's track and field events was added during the biennium. An AAU swimming club was organized in cooperation with the Morris community. Bicycling and hiking became increasingly popular activities for students, faculty, and staff.

Despite financial stringencies, the University of Minnesota, Morris, continued its efforts during the 1972-74 biennium to strengthen the entire campus program. Faculty, students, and staff worked toward fulfilling as fully as possible UMM's pledge of excellence and commitment to students.

UNIVERSITY OF MINNESOTA TECHNICAL COLLEGE, CROOKSTON

Stanley D. Sahlstrom, *Provost*

At the close of the 1972-74 biennium, the University of Minnesota Technical College, Crookston (UMC), was providing two-year courses of study in four degree-granting divisions. Associate in Applied Science degrees were conferred upon students fulfilling requirements within the Divisions of Agriculture, Business, Home and Family Services, and Hotel, Restaurant, and Institutional Management. A fifth division, General Education, functioned as a support unit for the other four academic areas.

Enrollment—Enrollees during the biennium came from more than 280 Minnesota communities in 74 counties. Thirty-three percent of the students came from home towns within a 50-mile radius of Crookston, while 28 percent came from beyond a 200-mile radius. Men and women from 15 other states and three other nations also attended UMC.

Fifty-six percent of the students resided in campus dormitories, which have consistently operated at capacity. Space was at a premium in dormitories during 1972-74.

UMC has continued to show marked growth in enrollment. The initial registration of 187 in fall of 1966 rose to 660 in the fall of 1972, and 765 in the fall of 1973. The ratio of full-time to part-time and adult special students was about 10:1 in 1972-74. Male enrollees outnumbered females by approximately 3:1.

Over 210 of the 1972-73 sophomores participated in commencement exercises; in the next school year, 225 took part.

Admissions—The admissions policy developed at UMC requires applicants to have received their high school diplomas or the equivalent (a G.E.D. certificate). No college entrance examinations have been mandated.

Financial Aid—Many of those students accepted for entrance to UMC qualified for financial assistance. The Financial Aid Office granted supplementary funds to 51 percent of 1972-73 students and to 55 percent of 1973-74 students. During the biennium an average of 40.5 percent of UMC students received loans, and 6.5 percent received scholarships contributed by private donors. The Work-Study Program, a major form of financial aid, employed a total of 258 students, or 19 percent of those enrolled.

Policy—Several new policies were formulated to streamline internal administrative organization by broadening administrative responsibilities and functions. Responsibility and control are now vested in a greater number of officials than before. While fewer committees and offices occupy a "staff" role in their relationship with the provost, more areas or administrative-services units report directly to him. This facilitates input and upward communication.

There has also been a concerted effort to involve the faculty in cooperative decision-making at the upper-echelon level. Faculty members were appointed to committees formed to recommend, and in some instances to decide, policy. Also, a number of joint units comprised of faculty, staff, and student representatives were significantly involved in reviewing, reevaluating, and implementing policies and administrative procedures.

Two new support units, Veterans' Services and the American Indian Program, were established and placed under Student Affairs, previously called Student Services. A full-time director was named for each office.

The position of director of continuing education and community services was also created. A search began in spring 1974 and the first director will be appointed in August.

The Campus Assembly, UMC's internal governance council, instituted some major changes in its committee structure and composition during 1972-74. Two grievance panels were created, one for faculty and one for students. Also, membership in the Assembly was extended for the first time to civil service personnel. The Campus Assembly has thus become a truly representative organization in which everyone at the college, employees and students alike, can participate. Although several new Campus Assembly and administrative committees (both standing and ad hoc) were formed, two others were phased out.

Curriculum—In the summer of 1972 the Division of Home and Family Services was established. Three degree programs—services to children, services for seniors, and family and homemaking services—prepare students to perform services within small agricultural communities and in rural homes.

In the Division of Agriculture five new majors were added: rural communications, poultry science, power and machinery, structures and environment, and electrical power and processing. Three programs were deleted: agricultural journalism, radio, and television; agri-business systems analysis and design; and engineering sales and management.

During 1973-74 the Business Division approved programs in small business management and business systems analysis and design. The second program replaces the agri-business systems course sequence.

Facilities—The first floor of Robertson Hall dormitory was remodeled to accommodate the Children's Center, which is part of the services to children program. The center opened in September 1973.

A new wing on the Learning Resources Center complex was completed, providing more space for library studies.

A greenhouse was constructed for use as a laboratory for horticulture and agronomy majors. It houses hundreds of different plants and provides a place for research and instruction.

A custodial maintenance area in Owen Hall, once a Plant Services facility, was remodeled to become a darkroom for the University Relations office. The darkroom has proved of particular value for the rapid development of photographs required by the news media. It also serves as a lab space for student photographers.

In summer 1972 Stephens Hall, a residence hall and office building, was torn down to clear the way for a new food service facility, which has not yet been funded beyond the planning and design stage. The second and third floors of Selvig Hall were remodeled to accommodate the administrative offices formerly in Stephens Hall.

Placement—UMC, through its Placement Office, continues to place a large number of graduates in positions commensurate with the students' academic backgrounds. For example, 83 percent of the 128 students graduating in 1972-73 secured employment, and many of them were placed by UMC. Only 19 percent of these graduates were employed outside Minnesota; over 80 percent remained within the state, thus contributing to the economic livelihood of Minnesota.

While the majority of graduates entered the job market, 15 percent (19 graduates) transferred as upperclassmen to institutions of higher education to work toward baccalaureate degrees. Thirteen of these students majored in agriculture; the others studied some facet of business. Only 2 percent of those graduating joined the military.

The following year, approximately the same proportion of the 146 graduates entered employment instead of continuing their schooling or entering the armed forces. Again, the majority of these stayed within the state. Most were assisted in finding a job through the Placement Office.

Community Outreach—UMC continues to support and cooperate with public and private organizations that wish to hold meetings in campus facilities. During the biennium, the growing community services thrust is best exemplified by the attendance of almost 40,000 people at approximately 650 different events. Groups welcomed to UMC ranged from the cultural to the recreational. Crookston Chamber of Commerce committees, especially those created to foster an ongoing liaison between the college and the community, meet here regularly. Local and area councils of health educators have also made UMC a site for their interagency coordinating meetings.

In the area of leisure activities, UMC physical education facilities accommodated a volleyball league, community recreation nights, swim-and-trim workouts, and an exercise class. The Crookston public school system continued to bus youngsters to the college for water safety instruction and swimming lessons in the community's only indoor pool.

The college continued to arrange for groups of high school students to tour the campus and gain personal insight on college programs. While on campus, the students had the opportunity to meet and ask questions of UMC faculty and instructional supervisors.

To promote coordination among various levels of higher education, the college has conducted many formal and informal conferences. Vocational education officials from the state, as well as the northwest region, have come to UMC frequently to discuss and acquire information about the mission of a technical institution. Guests from area vocational-technical institutes and community colleges have also visited here to help us achieve closer coordination and greater communication between these post-secondary schools and the college.

These endeavors illustrate the philosophy of the college that community services must be pervasive to be truly effective. Community services must do more than bring citizens to our campus. The college has tried, during the 1972-74 biennium, to broaden and diversify its continuing education classes. For example, popular courses developed by the Business Division included secretarial refresher courses and Project Update, a sequence offering practical learning experiences ranging from classes in interior design to workshops on consumer problems and anti-shoplifting measures. The Agriculture Division furnished instruction in horseback riding and in flying. The Division of General Education developed classes on techniques for improving reading comprehension and on conversational skills in foreign languages. Through the Crookston Park and Recreation Department, UMC instructors offered enriching activities for adults. The 1972-74 biennium marked the most rapid expansion to date of UMC's outreach toward the adult population.

UMC personnel reinforce the excellent image that UMC has attained by their continued participation in community events and meetings. Faculty and staff were again active in the Red River Valley Winter Shows and Pioneer Days and administrators sat on the Winter Shows Board of Directors. Other staff members played a major part in supervising the annual Talent Festival and arranging for exhibits at the Winter Shows. The college has also been extremely visible on the board of Pioneer Days. Each fall the college produces and performs the Faculty Frolics, with proceeds going to the UMC scholarship fund. UMC has also been widely used in recent years as a resource for program planning and consultant services.

Faculty Activities—In 1972-73, two stipends were awarded to faculty under the University's Small Grants Program. A University grant was also made to the provost, allowing him to tour advanced technological institutes in the Soviet Union.

The following school year an associate professor was awarded a Fulbright-Hays Scholarship, which will enable him to serve as a consultant in Saudi Arabia during a one-year leave of absence. A University grant was also given to the chairman of the General Education Division to conduct a study of five technical schools in England and Scotland. An associate professor in natural resources, who did research on conservation methods in northwestern Minnesota, was appointed to the All-University Council on Environmental Quality.

The head of Student Affairs presented a paper at a convention of the National Association of Student Personnel Administrators. He and another administrator had articles printed in a 1973-74 issue of *The Community and Junior College Journal*. An article by the provost, entitled "Technical College to Serve Rural People," was published in *Rural Education News*. Other articles by him appeared in *The Farmer* and *Ag Man*.

Planning—Long-range planning on virtually all high-priority matters of the UMC campus is presided over by a committee of administrators, faculty, and students. Committee members contribute their ideas and viewpoints on such issues as future land use, building development, landscaping, and adaptation of the physical plant to accommodate new programs. One of the prime purposes of the group is to provide a forum through which in-house needs can be fully aired and resolved by consensus.

The committee took action during the biennium on six matters of major consequence: (1) modernization of prevailing organizational patterns for more effective internal communications and supervision; (2) revision of the *Internal Policies Handbook*; (3) delegation of more responsibility for day-to-day operations to the Campus Assembly; (4) expansion, after careful research and analysis, of academic programs and options within areas already approved; (5) further cooperation with post-secondary educational institutions in the region; and (6) examination of methods for enlarging the capacity of existing student housing and, if necessary, providing more housing for resident students when dorms are fully occupied. The committee felt that more student housing is essential to maximize the growth that was estimated in the 10- and 20-year projections of UMC's enrollment.

UNIVERSITY OF MINNESOTA TECHNICAL COLLEGE, WASECA

Edward C. Frederick, *Provost*

Still in its first year of operation in 1972, the University of Minnesota Technical College, Waseca (UMW), experienced two years of exciting growth during the biennium. Based on student interest in the programs and industry interest in the graduates, the programs offered at UMW are meeting a need in the agricultural industry of this state.

Organization—The college completed its administrative team, added to its faculty, and in January 1974, made a partial reorganization in its academic divisions area. This latter change resulted in the establishment of division coordinators and discipline area groups. UMW also became a member of the University Senate in this biennium, and is presently working to establish a campus assembly.

Enrollment—Enrollment reached a high during the biennium. UMW, which had projected an enrollment of 400 for the 1973-74 year, reached 406 in fall quarter and 426 in winter quarter. In winter quarter 1974, the college had 1.5 men for each woman on campus. Nearly 45 percent of the students were enrolled in agricultural production, 15 percent in animal health technology, 11 percent in agricultural business, 10 percent in horticultural technology, 6 percent in agricultural industries and services, and 3 percent in home and family services. A seventh program in food industry and technology was in the developmental stages.

Although most UMW students come from the southern half of Minnesota, the program in animal health technology, which is the only one of its kind in the state, has an enrollment more representative of the state as a whole. UMW operates on an open-admission policy, but does counsel each student prior to enrollment to insure that his goals are in agreement with the mission of the college.

Curriculum—All courses are designed to provide training in keeping with the mission of the college. The 23 majors, which are offered in seven program divisions, are agricultural business management; agricultural communications technology; agricultural mechanization technology; agricultural office management; agricultural sales and marketing; agricultural research technology; animal industry-related technology; crop industry-related technology; crop production; diversified agricultural production; light horse management; livestock production; food marketing and distribution; food products and inspection; family merchandising; child care services; floriculture; landscape development; nursery, greenhouse, and garden center management; rural home services; rural youth and recreation; soils and chemical technology; and veterinary assisting.

Courses and majors at an agricultural-technical college must be under continuous review to keep them up-to-date with the needs of industry. This is accomplished mainly through the direction of the instructors, but instructors and students also have an opportunity to review the educational thrust of their division through a program advisory committee. These committees also provide a means by which industry personnel can make recommendations on the curriculum as it pertains to their businesses.

UMW courses are open to adults, agricultural industry personnel, farmers, veterans, and anyone else who can profit from them. Special courses for adults are not developed since it is felt that the courses offered at UMW are of value to people working in the agricultural industry, as well as to adults in the community. Two concepts developed and used by UMW include offering courses in blocks of time (e.g., each day for one week) or as mini-courses (portions of regular courses that are complete in themselves).

A Cooperative Farm Management Program for veterans was started in fall 1973 in cooperation with the Veterans' Administration and the State Department of Education. The program provides veterans with a unique way to work toward a degree. The Preoccupational Preparation Program provides students with a full quarter of internship or on-the-job training midway through their study. This quarter gives each student an opportunity to learn about his career choice after he has received some training, but before he has completed all of the required course work; allows him to identify areas in which he wants additional instruction; and gives him experience in job application and interviewing.

Placement—UMW has experienced a high placement rate for the graduates of its first two classes. Of the 111 students in the class of 1974, 92 accepted positions in their area of study, 10 were pursuing further education, 5 were awaiting placement, and 4 were homemakers. A large majority of these graduates stayed in Minnesota.

Facilities—Two new facilities were completed and occupied during the biennium. The Learning Resources Center was constructed in 1973, at a cost of \$868,000, including a \$228,533 grant from the Department of Health, Education, and Welfare. This building was designed to accommodate both the traditional library functions and the technological audio-visual services, thus providing a total media resource for the Waseca campus. Construction of

a stable and indoor arena for light horse management was completed in 1972, at a cost of \$58,000. In 1973 a pasture fence, an outdoor arena, and exercise rings were added to the facility.

Improvements and additions have also been made to parking lots and roadways. Other remodeling in the main facilities included adding specialized laboratory areas, such as a hydraulics lab. The residence halls have also undergone minor remodeling to allow them to better accommodate students.

Community Programs—One goal of the college is to make maximum use of the facilities for the good of the people of the area. In this respect, more than 12,000 persons who are not a part of the ongoing UMW program used campus facilities each year. These persons attended meetings, short courses, seminars, special days, banquets, and recreational activities.

Planning—Based on the planning that preceded the opening of the college, the enrollment projections of 800-1,000 by 1980 remain the key to the future developments at UMW. Curriculum development must continue in order to provide a comprehensive technical agricultural program of study for this number of students. Given adequate support for facilities and staffing, all facets of the college should move forward on a strong basis to meet this goal.

Activities—The UMW faculty, despite a heavy teaching load, has been active in developing many instructional materials for use in the two-year technical-agricultural program. They have also participated in a number of professional meetings, seminars, and programs.

The increase in student activities has reflected UMW's growing enrollment and the development of a number of cocurricular organizations. The activities range from film series, convocations series, and drama programs, to specialized events relating to the programs of study, such as a horse show and FFA judging activities.

The college has also participated in many programs, including providing an artist-in-residence and a humanities discussion series. Each year UMW sponsors a Rural Development Emphasis Week, which gives the farm population, the UMW students, and government personnel an opportunity to discuss the future of rural Minnesota.

Needs—Adequate support for facilities and staffing remains extremely important to the continued growth and development of UMW. Within the next biennium the need for specialized laboratories will be critical and, if facilities are not available, less satisfactory alternative plans will have to be studied. The student numbers have increased by more than 30 percent in each year of this biennium and it appears growth will continue. This will require additional staffing to meet increased student demands.

In addition, the on-campus housing available is not sufficient for the increasing student population. The college is seeking to make community residents aware of the need for additional housing in private homes, apartment buildings, and other facilities. Continued enrollment growth will be restricted by the available student housing.

Divisions of Academic Administration

Harold W. Chase, *Acting Vice President*

Personnel—During the 1972-74 biennium there were several staff changes in the Office of the Vice President for Academic Administration. William C. Shepherd left his position as vice president to return to teaching and research in the Department of Electrical Engineering. He was replaced on an acting basis by Harold W. Chase, professor of political science, in September 1973. Fred E. Lukermann and Lloyd H. Lofquist left their positions as assistant vice presidents to return to the Departments of Geography and Psychology, respectively. Shirley M. Clark, associate professor of social, philosophical, and psychological foundations of education, assumed the position of acting assistant vice president in September 1973, and A. J. Linck, on leave from the position of dean of the College of Agriculture, joined the office in the next month as acting associate vice president.

Kenneth C. Zimmerman, who left the position of assistant to the vice president to become assistant dean of the Graduate School in July 1973, was replaced by Nancy Groves, research fellow in academic administration and assistant director of the Office of Equal Opportunity and Affirmative Action. Ann M. Bailly remained as assistant to the vice president on a part-time basis, and Peter G. Roll continued as special assistant to the vice president, for coordination and development of educational resources.

William F. Hueg joined the staff as deputy vice president for agriculture, forestry, and home economics in June 1974, a position established by the Board of Regents in December 1973.

Organization—The University Gallery, formerly within the College of Liberal Arts, became a division within the office in July 1974.

An external review was conducted for the Office of Sponsored Programs within the Graduate School and for the Office of Research Accounting in the Business Office. The recommendations of the review team resulted in reorganization of the two offices into two areas: the Graduate School Research Development Center and the Office of Research Administration within the Business Office.

Faculty Affairs—The office worked with the University Tenure Committee on revising the *Regulations on Faculty Tenure*. An Ad Hoc Committee on Faculty Accountability was established to develop proposed revisions in the faculty consulting policy. The "cease and desist order" issued by the State Bureau of Mediation Services on July 2, 1973, which was precipitated by the petitions of faculty groups for collective bargaining, prevented the implementation of any changes in the terms and conditions of faculty employment. Hearings were held by the bureau on matters involving geographic scope for collective bargaining purposes. The University remained under the "cease and desist order" through the end of the biennium.

The office devoted an increasing amount of time to faculty personnel matters and academic budgeting and planning. Special projects for the period included studies on graduate assistant policies, communiversity, faculty consultantships, and planning for the next biennium. Two standing advisory bodies were established. The Council of Academic Officers, originally appointed by William C. Shepherd, began to meet regularly in 1973-74, and the Academic Policy and Planning Group was initiated in February 1974 to advise the vice president and the Council of Academic Officers on matters of academic policy. A major focus, which the office will continue to have, is long-range academic planning in conjunction with the Academic Policy and Planning Group.

DEPARTMENT OF AEROSPACE STUDIES

Thomas D. Madigan, *Head*

Enrollment/Commissioning Totals—Air Force ROTC enrollment and commissioning totals as of June 30, 1973, and June 30, 1974, are shown in the table below.

ENROLLMENTS AND COMMISSIONS						
Academic Year	AS100 (Fr)	AS200 (Soph)	AS300 (Jr)	AS400 (Sr)	Total	Commissioned
1972-73	29	17	27	21	94	18
1973-74	29	18	21	23	91	19

Scholarships—Air Force ROTC participants can compete for four-, three-, and two-year college scholarships. These scholarships pay the cost of tuition, laboratory expenses, and required textbooks. In addition, scholarship recipients receive a stipend of \$100 a month. During the 1972-73 school year, 18 Air Force cadets received scholarships. There were 19 Air Force ROTC scholarship recipients during the 1973-74 school year.

INSTITUTE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS

William F. Hueg, Jr., *Deputy Vice President and Dean*

The Board of Regents appointed William F. Hueg, Jr., to the position of deputy vice president for agriculture, forestry, and home economics and dean of the institute, effective June 16, 1974. The position had been created by the Regents in December 1973 but was not filled by a permanent appointee until this time.

As of July 1, 1974, the operating budget of the institute was estimated at \$28 million. Of this amount, \$14 million supports research, \$8 million continuing education, \$5 million instructional activities, and \$1 million international activities. The Agricultural Experiment Station has a \$14 million budget.

The institute encompasses more than 800 academic staff and more than 500 civil service staff, plus hundreds of part-time staff. Undergraduate and graduate student enrollment is approaching 4,000.

COLLEGE OF AGRICULTURE

John A. Goodding, *Acting Dean*

Since October 1973 Dr. A. J. Linck, who has been on leave from his position as dean of the College of Agriculture, has served successively as acting associate vice president for academic administration and acting vice president for academic affairs in the central administration of the University. Dr. John A. Goodding, assistant dean, has served as acting dean during Dr. Linck's leave of absence.

Enrollment—Enrollments in the College of Agriculture have continued to increase. Undergraduate enrollment increased to 1,306 in fall 1973 (a 5.4 percent increase) and to 1,308 in fall 1974 (a 15.1 percent increase). These totals do not include 40 and 58 agricultural education students who were formerly included in the College of Agriculture enrollment totals. The college has experienced a 43 percent increase since it was established as a separate unit within the Institute of Agriculture, Forestry, and Home Economics in 1970. Another significant element in the enrollment data is that 402 (26.7 percent) of the total number of undergraduates in fall 1974 are women.

The reasons for the increasing undergraduate enrollments are many. The close relationship between agriculture and current environmental issues, the part agriculture must play in combating hunger in the world, the requirement of greater know-how to run a farming operation effectively and efficiently, and the increasing demand from the agricultural industry for graduates of baccalaureate-level programs in agriculture are among the factors affecting enrollment.

Graduate student enrollments in the 11 departments in the college have tended to remain around 450.

A study made of the graduating class in spring 1974 showed that 38 percent of graduates had started as freshmen in the College of Agriculture, and 26 percent started in other units within the University—a total of 64 percent who started as freshmen in the University. Of the remaining 36 percent, 13 percent started at community colleges, 11 percent transferred from collegiate institutions outside of Minnesota, 6 percent started at private colleges in Minnesota, and 6 percent started at Minnesota state colleges. The results of the study indicate that transfer students from within the University and from other institutions make up a significant proportion of the undergraduate student body, and that continued attention to maintaining appropriate transfer relations with other institutions must be a priority item in the basic operation of the college.

Undergraduate Instruction—Curricula and course offerings continue to undergo revision. The college now offers six curricular areas and 22 majors. The production-oriented majors, such as agronomy, horticulture, animal science, food science and technology, and soil science, continue to attract large numbers of students, and increasing interest is being shown in communication science, landscape architecture, agricultural education, resource economics, entomology, and plant health technology.

Master of Agriculture Degree—The College of Agriculture received authorization in fall 1973 to offer a new degree, the Master of Agriculture. A professional post-baccalaureate degree offered outside of the Graduate School, the Master of Agriculture has attracted considerable interest among those working in the food industry in the Twin Cities, county extension agents, vocational agriculture teachers, foreign students, and others who are seeking professional updating. Some 20 students were enrolled by spring 1974 and three had met the requirements for the degree.

Placement—Demand for graduates continued to be strong in all areas except wildlife management. By September 1 of each year more than 90 percent of those seeking help through the College of Agriculture Placement Service had been placed. Agricultural businesses and industries hired 47 percent of the 1974 graduates, and 22 percent chose to farm or manage farming enterprises. An additional 18 percent accepted teaching or extension positions, 6 percent decided to pursue graduate studies, and 4 percent went into government positions. Noteworthy this year were the 22 percent of the graduates who went into farming and farm management. Five years ago only about 10 percent of graduates were afforded such opportunities.

Facilities—During the biennium two buildings funded by the 1969 Legislature were completed. The Meat Sciences Building and the Classroom Office Building were built with appropriations of \$2,571,000 and \$3,964,000, respectively. Construction and remodeling of the Food Science and Nutrition facilities were started in 1973. The \$10 million Animal Science Facility, Phase I, which is to house units of the College of Veterinary Medicine and the Department of Animal Science, was also started during the biennium.

Concerns—Attendant to the increases experienced in enrollments is the need for replacement of teaching assistant, civil service, and faculty positions lost during the retrenchment and reallocation process of the past four years. Shortages in funding for new positions have continued to restrict additions of critically needed faculty to properly staff essential programs.

COLLEGE OF FORESTRY

Richard A. Skok, *Dean*

Dr. Frank H. Kaufert, after 27 years as the head of the College of Forestry, retired on June 30, 1974. He guided the college during the very rapid growth period of the 1950's and 1960's to a level of national and international eminence among forestry and forest products programs in higher education.

The Remote Sensing Laboratory was established on July 1, 1972, and Dr. Merle P. Meyer was appointed director. This laboratory provides teaching and research capability for many programs within the Institute of Agriculture, Forestry, and Home Economics. Its principal focus is on the application of remote sensing technology to natural resource and agricultural problems. Substantial outside grants have been obtained from a variety of public agencies to conduct research in these areas.

Enrollment—Undergraduate enrollment rose to 550 students in fall 1972. When admission standards were raised in fall 1973, enrollment declined to 525 students, but it has subsequently grown back to its former peak. The proportion of students at the upper-class level continues to increase. An enrollment-control policy was placed on the forest resources development curriculum, the largest in the college. This policy, which limited to 125 the number of students entering the junior level in this program, was necessitated by limitations of teaching resources and facilities.

Between 60 and 65 graduate students with forestry majors were enrolled each year of the biennium. Roughly two thirds of these were pursuing master's programs, while the other

third were in doctoral studies. Women now make up approximately 10 percent of the enrollment in the undergraduate programs. About 15 percent of the graduate student body is made up of foreign nationals, principally from Southeast Asia, Latin America, and Europe.

Facilities—Construction of Phase III of the Forest Products Laboratory was completed during this biennium. This facility, which is one of the world's outstanding forest products laboratories at an institution of higher education, provides an excellent teaching and research facility for applied and basic work in fiber, particle, and solid wood products.

At the Cloquet Forestry Center two new student cabins were completed and two additional cabins were winterized and provided with central plumbing. The center can now accommodate 50-60 students and was used for 25 weeks during this past academic year.

Preliminary planning of an addition to Green Hall was completed, and a request for working drawings will again be submitted to the Legislature.

Instructional Programs—The forest resources development curriculum was reaccredited in fall 1973 by the Society of American Foresters after extensive preparation of self-evaluation materials and an external committee review. The curriculum received strong endorsement and steps are being taken to correct some weaknesses in the program. In the first public ranking of U.S. forestry graduate-professional programs, reported in *Change: The Magazine of Higher Learning*, the college program was ranked fifth in the country.

In the forest products curriculum, a new undergraduate specialization in pulp and paper has received strong industrial support and acceptance by students and potential employers. A fine program of scholarship support has been developed and employment opportunities appear to be excellent.

An expanded and strengthened program in environmental education for elementary and secondary teachers in Minnesota was developed by Professor William Miles and offered to over 1,500 teachers. A variety of University programs, including resident instruction courses, CEE evening courses, Summer Session workshop courses, and Agricultural Extension Service short courses, were used.

Research Developments—Substantial growth in the funding of research projects by outside sources, such as the National Aeronautics and Space Administration, the National Park Service, the Corps of Engineers, and the U.S. Forest Service, has occurred during the biennium. A major ecosystem analysis was completed for several proposed sites for Voyageurs National Park. This research study culminated in important contributions to the knowledge of vegetation management in parks and to the ecology of moose habitat.

Major efforts in particle-board and aspen-dimension lumber research, which have contributed to industrial investment in processing plants in Minnesota, have also shown important potential for controlling costs of wood products to final users. Studies of mechanized harvesting impacts through alternative systems have resulted in the adoption of improved practices by public land-management agencies and private firms.

Faculty and Staff—During this biennium we have undergone a number of staff and faculty changes, many due to career and salary opportunities provided elsewhere that could not be met at Minnesota. We have had a period of active recruiting and only recently have achieved relative stability. This has been accomplished during a period in which our educational commitments have grown, while our resources have either been stable or eroding in terms of inflationary pressures. Although we have attempted to more effectively use our available resources to meet program growth, some sacrifice in program quality, particularly instruction, has been inevitable.

Relationships with the renewable-resource management and research organizations within the state and region have been strengthened during this period. For example, several adjunct professors on our faculty are staff members of the North Central Forest Experiment Station, U.S. Department of Agriculture, Forest Service. These members contribute effectively to our program in an advisory capacity and occasionally serve as substitute lecturers. In addition, we undertake joint research-program reviews with the station, share certain types of support facility services, and sponsor joint offerings emphasizing research implementation.

Faculty and students continued their involvement in international dimensions of forestry in several ways during the biennium. Eighteen graduates participated in Peace Corps programs in forestry, principally in Morocco and Latin America. Faculty participated in

forestry activities in higher education, research, and development work in Latin America and Southeast Asia through projects supported by the United Nations Food and Agriculture Organization, the World Bank, and the Agency for International Development. These involvements have been important in strengthening the programs within the college as well as to the state and nation.

COLLEGE OF HOME ECONOMICS

Keith N. McFarland, *Dean*

Organization and Staffing—The major changes in organization and procedures developed in 1970-72 were placed into operation and thoroughly tested in the 1972-74 biennium. The groundwork has been laid for the move on July 1, 1974, of the Center for Youth Development and Research to the College of Home Economics.

In 1973-74 a lead position for the coordinated dietetics internship program was secured, and positions in the textiles and clothing and the design programs, long supported by nonrecurring monies, were stabilized. The addition of an electronics technician has greatly added to the efficiency of equipment use within the college.

In March 1973, Acting Dean Keith McFarland was appointed dean of the college.

Enrollment—Undergraduate enrollments were relatively stable during the biennium, while the college waited for improved and expanded facilities to become available. Fall quarter enrollments of undergraduates (including those in home economics education) were 1,264 in 1972-73 and 1,344 in 1973-74. The numbers and proportion of new high school students continued to decline, new advanced students remained relatively constant, and transfers from other colleges of the University increased. More than 60 percent of new students had previous college work in other units of the University or in other institutions.

Graduate student numbers increased in every major area during the biennium, yet these increases do not fully reflect the pressure of interest. Applications to family social science, for example, far exceeded available space. The limiting factor in graduate admissions is graduate faculty availability and time.

Undergraduate Instruction—The interdepartmental, problem-oriented undergraduate program concept in the College of Home Economics has met with success and satisfaction on the part of students, faculty, and the community. Changing societal needs will continue to be an influential factor in curriculum revision and course development. The increased interest in all aspects of housing have led to the addition of several new courses, including *Housing Alternatives of the Family* and *Psychology, Communications, and Design in Housing Management*. Other courses reflect the increasing concern with consumer rights and responsibilities. These courses, many of which are revisions of several traditional foods, clothing, or management classes, include *Introduction to Food Decision-Making*, *Principles of Food Purchasing*, *Issues and Trends in Consumer Protection*, and *Consumer Decision-Making*. Courses such as *Public Social Policy* and the *American Family and Food and Nutrition in the Life Cycle* are designed to provide graduates with the abilities necessary to teach people to improve their quality of living.

A significant addition to course offerings has been the development of field-work experience as an integral part of several curricula. These courses give students an opportunity to observe, learn, and apply the knowledge and expertise required of professionals in their particular areas of interest. While this experience places added demands of time and energy on the student and on the faculty member who advises and evaluates the experience, the benefits far outweigh the expenditure of human resources. The resultant service to the community and the visibility afforded the college and its programs have been invaluable. The value to the student of an experience that makes the on-campus study even more meaningful, while augmenting his opportunities for employment, is almost beyond measure.

As opportunities continue to increase for women and minorities to advance to positions of administrative and managerial responsibility, the undergraduate programs have expanded some of the basic course preparation for those opportunities. By working closely with the College of Business Administration and with members of the business community, new courses and off-campus study experiences have been added as program requirements in several areas, including *consumer food science*, *fashion merchandising*, *design*, *costume*

design, and interior design. The undergraduate program in food and nutrition science was phased out in 1972-73, but its content was incorporated as an option or area of emphasis in both the consumer food science and the nutrition and dietetics programs. There are now 13 undergraduate programs, plus three administered by the College of Education.

Bachelor of Science graduates of the program in nutrition and dietetics have traditionally been placed in one-year hospital dietetic internships to meet the requirements for certification by the American Dietetic Association. In recent years, as hospitals have sought to keep their operating costs down, many of them phased out their education programs, decreasing the number of available internship positions. At the same time, the demand for certified dietitians was increasing. On the basis of a coordinated undergraduate program in dietetics curriculum, which was developed in 1973-74, the American Dietetic Association selected the University as a pilot-study location. In this program, the internship experience is coordinated with other course work in the student's junior and senior years. While it will not take the place of the fifth-year internship, the coordinated program will provide another alternative to students who are seeking certification as dietitians.

A policy of controlled admission to the interior design program was necessitated by space, staff, and budget limitations and also by the availability of jobs for graduates. Sixty students now are admitted each year to upper-division work. Applicants must have successfully completed 90 credits, including six basic courses in design, drawing, and interior design, and must submit a portfolio of their work, which is evaluated by a team consisting of the interior design faculty and two or more student members. Students whose work is not of sufficient quality are either counseled on other appropriate programs or advised to repeat some of the basic course work to improve their portfolios for subsequent reviews.

The college was able to direct special attention to the recruitment of minority students through an Educational Development Grant. Two home economics student representatives of minority groups were sent to community centers, park and recreation areas, public schools, and other colleges in the University to alert young people and their advisers and parents to the many career opportunities in home economics. A retention program was also promoted wherein help, encouragement, and a sense of community were provided for the present minority student population in the College of Home Economics. Another Educational Development Grant allowed the central advising staff to develop a set of short taped interviews designed to answer students' routine questions.

Graduate Instruction—Departmental faculties subjected graduate-level courses to thorough review, deleted some, and restructured others. Nevertheless there are serious gaps in the instructional program that can be filled only when additional staff are available. Although staffing of undergraduate instruction is still under stress, additions to the faculty clearly should be those who are qualified to move directly to graduate advising and instruction, if the efforts of the college are to come into more reasonable balance.

Off-Campus Instruction—Graduate-level professional improvement courses were made available in Thief River Falls, Rochester, Marshall, St. Cloud, and suburban Twin Cities areas. The majority of enrollees were teachers, though those in industry and business, service agencies, and nontraditional educational programs were represented. Many married women, with children at home, sought studies contingent upon course availability within commuting distance from their homes.

Placement—Affirmative action programs had positive impact upon placement of home economics graduates in traditional and alternative jobs. Nationally the demand for those with advanced degrees far exceeded the supply. All graduates at either the M. S. or Ph. D. level in the fields of nutrition, foods, or food science found positions with relative ease. A majority of advanced degree holders in design and textiles and clothing went into college teaching positions or related activities. Family social science students completing graduate programs entered a wide range of educational openings in collegiate, secondary, and nontraditional programs.

Special Activities—Dr. Gerhard Neubeck's course in human sexual behavior was presented for credit through Continuing Education and Extension. It has been reported that this course drew more registrants than any other course the University has televised.

In winter quarter 1973, the Department of Textiles and Clothing offered its first full-quarter program for fashion merchandising students in England and on the continent, with an enrollment of 20.

The research activity of the Department of Food Science and Nutrition continued at its normal high level. Major projects in family social science included studies on the significance of childlessness in American society, decision-making and conflict resolution, marriage and family development, and family problems and adjustment. A study on the flammability of garments drew wide attention, and one on the role of clothing in public assistance and nonpublic-assistance low-income families was of special interest to Hennepin County AFDC program administrators.

Space and Facilities—The 1973 Legislature appropriated \$5.8 million for a home economics facility, with the understanding that a subsequent request for an additional \$1.019 million would be forthcoming in 1975 to complete a program estimated to total \$7,019,331. Construction of Phase I, Stage I, to include renovation and new construction in the Food Science and Nutrition Building, the development of a quantity foods laboratory in the Dining Center, and the renovation of the old Horticulture Building, began in April 1974 and is scheduled for completion by fall or winter quarter. Bidding on Stage II, the renovation of McNeal Hall and new construction linking McNeal Hall with old Horticulture, will take place in the late summer of 1974.

As a consequence of construction activity in the old Horticulture Building, instruction in textile design was moved to the Livestock Pavilion Annex. A major cleanup and painting of this building preceded classroom and laboratory setup. All activities now in the south wing of McNeal Hall are to be moved to other locations in summer 1974, prior to Phase I, Stage II, construction.

Needs—The College of Home Economics has adjusted to the major changes in structure and function implemented at the close of the previous biennium. Most new programs have proved themselves, and the building program holds great promise. The desire for continued growth in research, in graduate and undergraduate instruction, and in public service is great. One hindrance to this continued growth is the lack of funding sufficient to add necessary highly qualified staff.

Although most undergraduate programs are now well-established, graduate-level programs and research efforts need to be strengthened in order to better serve the students, the University, and the state. Many departments have been forced by budget restrictions to limit enrollment in graduate-level programs. This action is particularly distressing because there is an increased need for Ph.D.-level home economics graduates at this time.

AGRICULTURAL EXPERIMENT STATION

William F. Hueg, Jr., *Director*

At the close of the biennium, about 270 individual research projects were under way in the Agricultural Experiment Station. The following are examples of projects in four major areas of investigation:

Agriculture—The wheat variety Era, reviewed in previous reports, was grown on 65 percent of Minnesota's wheat acreage in 1974. The extra production from this variety in the 1973 and 1974 crop seasons netted \$80 million of additional income to Minnesota's economy at the farm and processing levels, and resulted in 430 million more loaves of bread.

Two new soybean varieties, Hodgson and Evans, are expected to be grown on two million acres by 1976. The additional production from these two varieties will add about \$8 million to the economy of the state and provide the protein requirements of over one million persons for one year. These benefits accrue each year.

Recently completed research indicates that each additional dollar spent on pesticides returns about six dollars of additional farm output, and each additional dollar spent on fertilizer returns about five dollars of additional output. On a national basis, reducing the use of fertilizer would increase the price of raw agricultural products about one third. A 75 percent reduction in pesticide use would increase the price of raw agricultural products about 20 percent.

Research has helped Minnesota farmers determine the best weed control practices. To improve selective weed control in field crops, scientists have been investigating the growth habits of weeds, crop tolerance to herbicides, influence of soil and weather conditions on herbicide performance, and response of individual weed species to numerous herbicides. This research has increased yields, lowered labor and tillage costs, provided more reliable weed control, and saved over 9½ million gallons of fuel in the production of corn and soybeans. This has meant greater income for Minnesota farmers and lower food costs for consumers. In addition to research on pesticide use, biocontrol research activities have continued for many years. Biocontrols now used include crop varieties that have improved insect and disease resistance. Using insect predators as biocontrols has also been tried, with varying success. Crop residues, animal manures, and plow-down crops are continually used with commercial fertilizers as biocontrols.

Transporting about 9½ billion pounds of milk annually from dairy farms to dairy plants is big business in Minnesota. In too many situations, this job has not been performed efficiently and costs have increased dramatically. With the great need to conserve energy, studies have proposed improved hauling arrangements, which should result in cost savings to dairy farmers of 15¢ to 25¢/cwt. of milk. This represents a substantial gain for Minnesota's dairy farmers and consumers of dairy products.

The value of Minnesota's agricultural exports skyrocketed to \$597 million in 1973 and to \$1,162 million in 1974. Minnesota exports 54 percent of its soybean and soybean products, 13 percent of its feed grains, 22 percent of its corn crop, and 44 percent of its wheat. Research on policies such as liberalized trade or export restrictions is of critical importance to determine their economic impact on Minnesota agriculture.

Blue comb disease once caused the turkey industry to lose more than \$500,000 yearly, and increased the cost of turkey raising from 2¢ to 4¢ per pound. Since 1971 the incidence of this costly disease has been reduced through research application. Diagnosis of the disease, which is caused by a corona virus, has been improved by the development of a fluorescent antibody test. Research involving evaluation of immunizing agents and improvement of diagnostic methods is continuing.

The Twin Cities Metropolitan Council has used the soil map developed by the experiment station and the Department of Soil Science as a guide for land-use plans for the metropolitan area. Hundreds of private developers and engineering consultants have also been influenced by this information, which has an estimated value of \$14 million each year.

Environmental Quality—Concerns about the nation's water resources have renewed interest in land waste-water treatment as an alternative to the conventional treatment and disposal of waste water into receiving waters. The ability of receiving waters to assimilate effluents that do not meet high-quality standards becomes more doubtful in light of the increasing volume of sewage and industrial waste and the mounting need for water. The eutrophication of nonflowing receiving waters makes the elimination of nutrients in waste-water effluents even more important. Land waste-water treatment takes advantage of the natural purification offered by soil contact and appears to be comparable or even superior to methods that discharge such objectional components into our rivers and streams. Although it is difficult to place a dollar value on the recycling of treated sewage products, our research has shown that land disposal is feasible and that the effluents are an acceptable alternative to commercial fertilizers.

A new means of preparing land for crops has been developed through experiment station research. The ready availability of suitable machinery, along with the use of chemical weed control to minimize field cultivation, has made minimum tillage a major technological advance. Superior crops can be produced while land-preparation costs are reduced. The rough soil surface produced by this method has reduced soil blowing, erosion, and run-off, and allows more precipitation to be trapped, which benefits succeeding crops. The saving in land preparation varies from \$5-\$10 per acre, representing about \$35 million per year.

There are at least three levels of minimum tillage. Reduced tillage, with a reduced number of trips for seed-bed preparation and weed control, is practiced on most of the corn-soybean land in Minnesota. It results in at least a \$3 per acre saving on 10 million acres. Minimum tillage, which consists of little but plowing or field cultivating, is carried out on an estimated 400,000 acres at a saving of perhaps \$8 per acre. No tillage or zero tillage consists of chopping

corn or soybean stalks and plants without plowing or field cultivating. At least 7,000 acres are estimated to be tilled in this manner in Minnesota. Minimum tillage represents a preharvest reduction of 52-58 percent in hours of labor over conventional methods. In experiments at Waseca, no-tillage planting of corn resulted in yield reductions of about 10 bushels per acre, but estimates show that it reduces preharvest hours per acre by 1.8 hours for soybeans and 2 hours for corn. It also reduces the energy requirement from 65 to 32 horsepower hours per acre, resulting in an actual fuel saving of 3.4 gallons of gasoline per acre.

In Minnesota, many water control structures are built each year to handle run-off from small watersheds. Construction costs vary from \$1,000 to \$200,000, including only those watersheds up to 100 square miles in size. Hydrologists recognize that present methods of estimating peak flows are as much as 50 percent in error. Using mathematical models, researchers have been studying the effects of measurable physical characteristics on peak flows and expect to improve the accuracy of peak-flow estimates. This could reduce the cost of oversized or undersized structures, with an estimated future saving of \$500,000 annually.

Gaining knowledge about the dynamics of freshwater animal populations in streams and rivers is the best means of assessing the well-being of these aquatic communities. Minnesota's rivers and streams include populations of economically important recreational fish, like trout, smallmouth bass, steelhead, salmon, walleyes, and northern pike. The newly aroused concern for the natural and aesthetic value of free-flowing streams, expressed by such legislation as the Wild and Scenic Rivers Act, is aimed at protecting river values. Research is contributing information on the ecology of stream and river life and the effects of human-induced disturbances such as drainage, channelization, pollution, thermal additions, and water extraction.

Research has clearly defined the food and cover requirements of the American woodcock during its stay in Minnesota. Management techniques based on these requirements are being used by private, state, and federal agencies as a basis for improving habitat to increase the population of this important game bird. Ruffed grouse management procedures developed at Cloquet have aided forest wildlife species without reducing timber production. These methods are suitable to small recreational lands as well as to major timber areas, and the research has resulted in procedures for the integrated management of aspen for maximum production of wood fiber and wildlife.

During the last few years, approximately 50 additional plant materials have been offered for sale in Minnesota as a result of evaluation studies. Among these are Mollis azaleas, PJM rhododendrons, Korean boxwood, river birch, chokeberry, Sargents highbush cranberry, cultivated varieties of shade trees, lilacs, potentillas, and other shrubs. Sale of these items adds \$2.5 million retail to Minnesota's economy annually. There is also a great deal of interest in the plants being evaluated at the Landscape Arboretum, including dwarf shrubs, conifers, shade trees, and ground covers. Many of these materials will be available from Minnesota nurseries in the near future. Information gained from evaluation of shade trees will be invaluable in choosing replacements for the American elm if Dutch elm disease continues to spread.

One of the more critical issues facing Minnesota today is land use. Every year, hundreds of acres of prime agricultural land are converted to other uses, mainly housing and industry. The promotion of land-use planning that makes more efficient and humanistic use of residential and urban land and that uses the natural, social, and economic sciences as bases for the planning process is of inestimable benefit to Minnesotans.

Forestry and Wood Products Research—Aerial photographic tools have made it possible to collect credible resource data and develop sound management decisions at a relatively low cost in a very short time, a capability that would have been impossible within the financial and time constraints of conventional methods of resource surveys. These systems have now been adopted by other public agencies and private concerns, and their applicability is now being tested in Minnesota for a better understanding of renewable and nonrenewable resources. This research is being conducted by the College of Forestry, in cooperation with state agencies and the U.S. Forest Service.

Current research in outdoor recreation has been concerned with the impact of campers on wilderness campgrounds, the perceptions of visitors to state parks and forests of Minnesota, and the possible effects of park area development in northern Minnesota. Results from these

studies have provided information that can result in better use of our forests, lakes, and open spaces for recreation. For example, wilderness campsites could be used more effectively with improved management, saving the cost of opening new areas. Since many visitors prefer minimum development, planning for variety in state parks and forests could save money otherwise used to develop uniform modern facilities. By understanding ecosystems, we can avoid the costly development of areas that are only outwardly desirable.

The development of scotch pine Christmas tree varieties adaptable to Minnesota conditions has enhanced Minnesota Christmas-tree production. Over 40 percent of the Christmas trees purchased for use in Minnesota homes are scotch pine, a tree that formerly had to be imported from Michigan and Wisconsin. This research has contributed to the ability of Minnesota producers to supply an estimated 300,000 Christmas pines to Minnesota consumers annually, which amounts to approximately \$1,095,000 each year.

The possibility of using tubed seedlings to supplement Minnesota's present reforestation program offers at least two major advantages: reduced production and planting costs, and extension of the state's normal planting season. The actual time period from germination to field planting varies with the size of the container and the species of tree. The time period of 10-12 weeks, used when tubelings were first introduced, has now been extended to about 16 weeks. This extended growing period results in larger, better developed trees. In some cases, trees are overwintered before planting. Large tracts of land currently used for production of nursery stock might be replaced by small greenhouses for container production. The advantage of being able to grow trees in a relatively short time is also very real.

Shelter belt studies initiated in the late 1950's indicate that the best survival can be obtained with Colorado blue spruce seed sources and the best height growth with Arizona sources. Using Colorado blue spruce sources for shelter belt plantings could save approximately \$150,000 annually.

Timber harvesting patterns that included habitat improvement requirements for wildlife and permitted the use of mechanized logging equipment were tested in cooperation with wildlife research scientists and foresters from the Minnesota Department of Natural Resources. These studies indicated that, with minor concessions to the harvesting operation, the required final harvest can be made, desirable size openings achieved, and wildlife cover areas maintained. The post-logging treatment of harvested areas for habitat improvement can be eliminated with a saving of \$30 per acre on 65,000 acres of aspen cut annually, or approximately \$1.95 million.

Research on public incentive programs for small, nonindustrial, private forest landowners indicated that the return per dollar of public funds can be increased. Minnesota recently had a return of three dollars for every dollar of public funds used to encourage forest landowners in Minnesota to plant trees for timber production. This return of public expenditure could eventually be increased to nine dollars for every dollar invested.

Research has been directed toward the production of high-strength particle boards from Minnesota species, including aspen, paper birch, tamarack, and balsam poplar. These studies have shown that several species can be interchanged for particle board production, and that the boards can be made more resistant to the degradation that results from changing moisture content. Within the next few years the increased production in particle board in the Great Lakes region could mean \$20 million to \$25 million annually to Minnesota. Whole-tree chipping operations that have come into the state in the last two years are making practical use of some University studies. When whole trees are chipped and used for particle board, land productivity can sometimes be doubled, meaning lower production costs and decreased land requirements. Other research deals with bark characteristics and how to handle this type of fiber most effectively in a variety of reconstituted wood products. If the cost of raw material for particle board production in the state could be reduced by 10 percent through such a use of bark, a saving of about \$500,000 per year would result.

Home Economics and Food Research—Over 40,000 families in Minnesota are in need of some type of financial support from federal, state, or local governments. Although Minnesota ranks in the top quarter of states in both budget standards and amount paid, the state's standard still hovers below the poverty level. Welfare recipients have found it difficult to manage on the low budgets for each of the basic necessities, thus adding to the psychological and social stresses characteristically present in many of these families. For example, recipi-

ents have found clothing allowances for school-age children unrealistically low, and a lack of adequate apparel often leads to absence from school. Home economists are now examining the extent of clothing problems and the needs of welfare recipients. Their results should help welfare departments evaluate the present budget standard on the basis of current practices and the problems of specific client groups. This will benefit both the state and the 126,000 individuals involved. The total value of these research efforts, which means not only dollars saved but better health and the preservation of human dignity, could never be calculated.

A leading cause of personal injury is flammable textile products, particularly clothing. About 150 Minnesotans die and another 75,000 are injured each year from burning textile products. Such burning causes an estimated annual loss of \$7.5 million, plus the incalculable loss of life and health. Research in the Department of Textiles and Clothing centers around simulation of these accidents on an instrumented mannequin to provide more accurate test methods for apparel manufacturers and to identify for Minnesota consumers those garments that are particularly hazardous. An outgrowth of this research is quick-release clothing, which provides an alternative to clothing made of flame-retardant fabric. Clothing that can be speedily removed if it catches fire has the potential of significant savings compared to clothing from flame-retardant fabric, not only for Minnesota consumers but also for Minnesota garment manufacturers. The department has also pioneered, in collaboration with the Minnesota Legislature, in improving the safety of camping tents and sleeping bags.

Minnesota produces about 100 million pounds of all types of cheeses annually. As a result, there is a potential for some 7 million pounds of whey protein. In addition, the whey contains about 50 million pounds of lactose. Research to develop economically feasible processes for recovering substantial quantities of the whey protein and lactose has a potential to save \$7 million annually.

Research has developed new and improved low-fat coffee and whipping cream products that utilize milk constituents as major ingredients. A dairy whip topping resembling whipped cream but containing about half the fat has been developed. The value of such products may be \$750,000 annually.

Increasing consumer demand for low-calorie, low-fat cheeses, and the unavailability of natural low-fat cheese on the market led to research in this area. Most cheeses made from skim or partly skim milk are hard and tough and lack flavor. But methods of milk treatment have been developed that result in softer cheeses. Low-fat Port du Salut, Swiss, and brick-like cheeses with acceptable characteristics have been developed. Other special studies on curing practices and cultural control have made it possible to develop flavors of full-fat cheeses. This development has a potential value of \$2 million annually.

Research with swine and beef cattle has demonstrated some of the cellular and metabolic differences among animals that have different growth rates and abilities to fatten. Although no immediate field application can be made of this work, it has provided a basis for tests that may be useful in reducing the quantity of waste fat produced in meat animals. The U.S. Department of Agriculture has estimated this waste is a \$1 billion inefficiency in terms of production costs and value received for product.

AGRICULTURAL EXTENSION SERVICE

Roland Abraham, *Director*

Every year the Agricultural Extension Service brings the University to nearly a half of the state's population. With faculty in every county, its campus is the entire state. Close to two million Minnesotans are reached by its programs in some way. If the number of people attending its short courses, meetings, consultations, and seminars were converted into terms of full-time students, the figure would be 22,000-23,000 enrollees. Extension programs embrace a variety of subject matter, including agriculture, forestry, family living, home economics, community development, resource development, youth development, and veterinary medicine.

Staff—Conducting this program are about 420 faculty members, including about 250 county extension agents in 92 county offices, 34 area agents dispersed throughout the state, and the full-time equivalent of 150 faculty members on University campuses. These faculty members are supported by an efficient civil service staff and by local program assistants.

In addition to extension staff, volunteers contribute thousands of hours to extension programs and activities. For example, 16,351 adult leaders and 12,050 junior leaders serve 75,767 4-H members in 2,240 clubs in Minnesota. Approximately 2,800 homemaker clubs across the state have more than 42,000 members who volunteer thousands of hours to the betterment of their communities.

Organization—The Agricultural Extension Service's educational program is different in many ways from the more traditional concept of classroom teaching at the University. It is this uniqueness that distinguishes the extension service and brings it closer to the people.

Extension funding allows the utilization and coordination of resources from three levels of government to most effectively serve the people of Minnesota and to operate educational programs relevant to current needs and problems. Although county support has been excellent in the past two years, University funds for salaries and supplies have been inadequate to meet needs and to maintain activities and salaries at the level of other parts of the University. Counties have increased their share of funding in support of the county staff.

Extension committees in each county, county extension faculty, and campus-based faculty work together to plan programs and educational offerings. Thus the local student, from age 9 to 90, has a hand in determining what is taught. Their suggestions and requests are melded with those of the professionals on the University staff in a way that provides a progressive, locally oriented program that will meet needs of the people.

Much of the extension service's work is informal. There are, of course, the more formal conferences and seminars, but there also are the less formal methods of consultation, phone calls, short meetings, radio, television, newsletters, and news articles.

Several changes were made in the last biennium to better handle the operations of the Agricultural Extension Service. A personnel officer was employed, the administrative organization was changed to conform more closely to Minnesota's economic areas, and some positions were shifted to provide new area staff to help communities with their development opportunities. A team of irrigation agents was added to meet special needs recognized by the public through the Legislature. In addition, special efforts have been made to conform with equal employment opportunities and to extend extension offerings equally to all groups and income levels.

Agriculture and Related Industries Program—Over 4,200 meetings were held, reaching 310,000 persons. This represents only part of the efforts in this area. Subject matter varied greatly. Several programs combined the efforts of improving production with protecting the environment. For example, pesticide applicators training sessions, offered in 10 regions of Minnesota, were attended by nearly all of Minnesota's 1,500 commercial applicators and others who handle pesticides.

Major efforts were made to bring Minnesotans up-to-date on such subjects as crops and soils, livestock production, and general farm management. For example, the extension service recommends crop varieties on the basis of experiment station research, carries on educational programs on minimum tillage to cut down on fuel use, demonstrates how to use scarce fertilizer supplies more efficiently, and helps farmers on marginal farms make improved plans.

A northern beef cow/calf project, serving northern Minnesota counties, was funded through a grant from the Upper Great Lakes Commission. Extension staff are working with six demonstration farms to demonstrate recommended practices of producing and marketing beef in beef cow/calf enterprises suited to the region.

A special effort was made to train inspectors in the seven-county metropolitan area on detection and control of Dutch elm and oak wilt diseases. Since no new resources were available to do this, it was necessary to set aside other important programs.

Joint extension education programs with North Dakota State University in potato and sugar beet production in the Red River Valley were continued in cooperation with growers.

The central sand plains of Minnesota continued to be the focus of irrigation meetings, demonstrations, and consultations. The number of farmers irrigating increased greatly as many shifted to specialty crops such as potatoes, dry beans, and vegetables. Recent efforts have also sought to improve the marketing of these crops. Special irrigation staff were added through recommendations of and funding by the 1973 Legislature.

In another area, the extension service has expanded its efforts in computer aids for farm management, helping farmers and educators with computer information that will enable them to make decisions in nearly every farm enterprise. Programs were conducted in market analysis, alternative marketing plans, credit, and direct-marketing plans. The extension service has made available market news from Washington, D.C., and University specialist interpretation.

Forestry efforts have included programs for noncommercial growers, individuals interested in mechanized handling of forest products, and the wood-handling and processing industry. To meet the rapidly expanding demand for information on home yards and gardens, campus-based staff have established answering services handling 50,000 calls and letters per year. In addition, a variety of programs, including the "Yard n' Garden" TV program, radio programs, and news articles, were conducted.

4-H and Youth Development Program—This program serves nearly 170,000 youths each year, including over 75,000 in organized 4-H clubs, over 28,000 in special short-term 4-H programs, and 3,000 in special-education classes. In 1974 nearly 90,000 youths enrolled as 4-H television members in science and nutrition programs. The most popular projects, carried by a half of all club members, were in the area of horticulture, an area suitable for farm, town, suburb, and city youths. Other popular projects included foods and nutrition, livestock, and clothing.

The club members are concerned about their environment. They are involved in conservation of energy, soil, water, and wildlife; pollution control; and community beautification and cleanup. They serve on local or state community-development committees, conduct studies and campaigns, and organize projects such as sanitary land fills, paper and glass recycling, youth recreation programs, and entertainment in rest homes.

This Atomic World, a joint venture of Minnesota 4-H and Oak Ridge Associated Universities, reached 62,850 youths in Minnesota schools and supplied information on sources and uses of atomic energy. Art and drama became tools for human development in the day-long Workshops of Expression, which were offered to 1,000 children in Indian communities and community centers throughout Minnesota.

Family Living and Home Economics Program—Family development programs emphasized human and family relationships. Two television series, "Preparing Your Child for the Twenty-First Century" and "Living Married," plus small neighborhood group meetings, highlighted the efforts. Other programs centered on understanding aging and senility, education for parenthood with inner-city teenagers, and the changing role of women.

Foods and nutrition continued to have high priority. Programs included the 14-segment television series "Food Sense" and programs for professionals on dietary fads and heart disease, cholesterol, cost of meat, food additives, and food buying. Food and food-preservation workshops were conducted throughout the state, and extension staff began to use the computer for teaching home economics.

Over 2,000 individuals from 40 counties participated in housing programs on interior design and furnishings, which emphasized low-budget decorating and creative furnishing. Other efforts focused on kitchen planning and the selection and use of household equipment. Home management programs emphasized consumer education, basics of home management, financial planning, funeral facts, and legal affairs. Textiles and clothing put a major emphasis on the buying and care of clothing, clothing construction, clothing for youth, and clothing for low-income people.

One of the most widely used programs in family living/home economics was the Consumer Information Answering Service. The service answered more than 25,000 telephone calls annually in the Twin Cities area. Added to this, the calls handled by local extension staff make the demand even more intense.

Community Resource Development and Public Affairs—The Agricultural Extension Service and the Agricultural Experiment Station joined efforts in a rural development program, financed by special federal funds, with four central Minnesota counties (Region 6E) at the edge of urban expansion. Here education and research emphasize land use and seek a solution, consistent with energy conservation, to the problem of insufficient transportation facilities for supplies and people. These projects have involved local people and many agencies in their planning.

Special workshops involving over one fourth of Minnesota's 9,000 township officers were conducted each year. These focused on such programs as revenue sharing, planning, zoning, land use, and township government. Other projects included a program designed for the tourism, hospitality, and recreation industry; seminars, a special periodical, and other teaching efforts on food service, marketing, bookkeeping, and computerization; and programs in land-use, zoning, and lakeshore management.

Energy Education—The extension service has incorporated energy education into many of its programs to help people economize on energy use. State and county extension faculty incorporate energy-saving ideas into their work on farm management, crop production, engineering, homemaking, and many other areas. In addition, faculty members prepared about 15 publications for widespread distribution, provided teaching aids to teachers and agents, started an energy newsletter, and disseminated important information through the mass media.

Supporting Services—The Office of Special Programs offered 160 short-term educational programs to more than 30,000 participants. Course topics included soils, fertilizer, and agricultural pesticides; income tax; property tax; pest control (for operators); and forest land operation. Food science, veterinary medicine, and horticultural short courses increased in both numbers and attendance. New programs dealing with Dutch elm disease, oak wilt, and township administration were started with cooperating departments.

Organizational users of the Minnesota Analysis and Planning System (MAPS) grew to 1,500 in 1974. The reports generated by MAPS include economic data for Minnesota counties and regions, employment characteristics by race, and revenues, expenditures, and debts of cities and villages in Minnesota.

The Communications and Educational Aids Project of the Department of Information and Agricultural Journalism continued to provide communications support to the extension service, including news releases, publications, radio copy, and television programs. The total number of radio programs, many used on up to 70 stations, was over 41,000 each year. One new television program, "Mulligan Stew," was shown on 12 stations and had 90,000 students enrolled in 2,550 schools or groups. An estimated audience of 400,000 watched three other series, "Fit Sew Well," "When the Time Comes," and "Food Sense." Tele-lecture continued to bring University specialists to outlying areas, reaching over 350 groups and an audience of 10,000 each year.

Needs—The most pressing need of the Agricultural Extension Service is for additional county and area staff to better serve local needs. There has been no increase in county extension staff for 10 years. Supplies, equipment, and adoption of new technology in extension work have all suffered in recent years. The need is to catch up in these areas to restore program response to former levels. Some additional staff members are also needed to meet growing program requests for livestock, farm management, youth development, soil management, veterinary medicine, and home and yard information.

OFFICE OF INTERNATIONAL AGRICULTURAL PROGRAMS

John Blackmore, *Director*

For more than 100 years, the U. S. land-grant universities have been a key element in the scientific infrastructure of the American food supply. For more than 20 years, these same universities have been assisting in the development of the technical infrastructure of food supply systems for the developing nations. Food supply systems based on custom and tradition in Asia, Africa, and Latin America are slowly giving way to systems having a base of modern science. The task has begun but it is far from completed. The Institute of Agriculture, Forestry, and Home Economics is assisting in speeding this development in several parts of the world.

A decade ago the Institute of Agriculture, Forestry, and Home Economics restructured itself to provide a more adequate international dimension to its work. The Office of International Agricultural Programs was established alongside the functional units for research and extension. The office serves as a means for coordination, administrative support, and policy leadership. International activities are carried on by regular units of the institute, the colleges, other functional units, and departments.

The basic strategy for developing international dimensions of the institute is that internationally oriented activities should be part of, and lend strength to, the ongoing instruction, research, and service programs of the institute. They should facilitate the efforts of the institute to contribute to the ever-changing technical and scientific needs of the national and world food supply systems. Overseas technical assistance projects are viewed as a necessary service contribution consistent with the national obligations of the land-grant university system. Such projects, however, must serve not only the needs of a host country and U.S. policy objectives, but should also bring additions to the experience and professional competence of the faculty. An overseas project should facilitate the development of the Institute's capacities for further service, more relevant teaching, and more effective research. Increasingly we are becoming involved in faculty- and student-exchange programs and research investigations based on the particular specializations already well developed here and applicable to the needs of the developing world.

A special focus of the international activities of the institute is development in relation to Africa, particularly the Francophone nations. Our eight years of experience in Tunisia and four years in Morocco have given Minnesota a substantial head start over other U.S. universities in the development of capacities for work in and cooperation with these French-speaking countries. We will continue to also be involved in Asia and Latin America, particularly where the special skills and experience of the faculty make such cooperation particularly effective.

Tunisia Project—The Tunisia project is in its eighth year. A four-man faculty team headed by Dr. Robert Reeser is carrying on research and advising the staff of the Ministry of Agriculture's Bureau of Planning. In past years, considerable progress was made in the development of a system for computer analysis of the changing needs of the agricultural sector of the Tunisian economy. The system being developed in Tunisia is attracting international attention as a potential model of systems for many small developing countries with relatively poor data sources. Work was begun during the past year jointly by Tunisian and Minnesotan economists to study the agricultural credit system and needs of Tunisia. Advisory assistance is also being provided in connection with the development of a system of annual production planning and on studies of wheat prices, taxation, and the livestock industry. About a year ago an agreement was signed between the University and the Tunisian National Institute of Agronomy; it provides for the exchange of students and faculty.

Morocco Project—Now in its fourth year, the Morocco project has been characterized as one of the best agricultural projects the Agency for International Development (AID) has sponsored in Morocco. The central objective continues to be the development of the capability of the Moroccan National Institute of Agronomy to offer specialized training in the soil and plant sciences to advanced students. A four-man faculty team offers specialized instruction and engages in research in soil classification, soil fertility, cereals breeding, and virology. During the biennium five Moroccan students completed programs of study and returned to complete their research and obtain degrees at their home institutions. Six new Moroccan students arrived for U.S. training. Arrangements were also finalized for the addition of two more members to the faculty team to provide advanced instruction in horticulture. One faculty member provided consulting services on the design of a greenhouse complex and another advised on the plans for a new library.

The Morocco project is being carried on with an unusual administrative system. Instead of a full-time resident party chief, each sector of the project is headed by a campus-based project leader who is responsible for the technical aspects of the work in his area. Each project leader is a distinguished senior member of the Minnesota faculty. Through this arrangement the talents of some of our best faculty members are brought to bear in a continuing fashion on the problems of Morocco. The system has worked well.

Indonesia Project—In cooperation with the other member universities of MUCIA, Minnesota continued to cooperate in the project in Indonesia. The central thrust of the project is the improvement of instruction programs of two leading Indonesian colleges of agriculture. Dr. S. O. Berg, formerly dean of the institute, is serving as resident director of the project. During the biennium four members of the institute's faculty served as short-term advisers in Indonesia and six members of the faculties of agriculture and related sciences at Bogor and Jogjakarta were enrolled for graduate study at Minnesota.

Peace Corps Intern Project—After four years of successful work, the Peace Corps Intern Project was terminated. Through this project 98 undergraduate students in the institute's colleges have been given special training relative to Peace Corps service in Morocco, and 80 have served or are serving as volunteers there. Under the terms of the contract with the Peace Corps, these students received two years of professional work experience as volunteers.

Fellowships and Scholarships—The first two Norman Borlaug Fellows began their graduate studies in 1974. Mohamed Mekni of Tunisia is a candidate for the Ph.D. in plant breeding and will return to Tunisia as a member of the faculty of the National Tunisian Institute of Agronomy. Worapong Suriyantrating from the Northeast Research Center, Thailand, is a candidate for the Ph.D. in animal physiology.

Virginia Persons Scholarships were awarded in 1973 and 1974 to four undergraduate students in the institute, permitting each of them to undertake a year of professional study in a foreign university. Patricia West, nutrition, is spending a year in Mexico. Michael Moodie, agricultural engineering, is spending a year at Pahlavi University, Iran. Ronald Woltjer, agronomy and plant genetics, is spending a year at the Institute for Mediterranean Agronomic Studies, Montpellier, France. Patrick Shea, agricultural economics, studied for one year at the Institute for Agronomy, Montpellier, France.

Distinguished Visiting Foreign Professors—During the biennium Professor Yvon Rene Dommergues and Professor Albert Chominot, both of the National Agronomy Institute of Paris, served as visiting professors in the institute. Professor Dommergues, a noted soil microbiologist, was in the Department of Soil Science and Professor Chominot served in the Department of Agricultural and Applied Economics.

Professor Francisco Garcia-Olmedo from the Polytechnic University in Spain was a visiting faculty member in the Department of Agronomy and Plant Genetics, and Dr. Young Il Park from Seoul National University, Korea, was a visiting professor in the Department of Animal Science. Professor Rajammal P. Devadas, a noted Indian nutritionist, paid a visit to the University and gave a series of seminars and lectures.

International Training—Foreign-student enrollment in the colleges of the institute has remained relatively constant, with about 180 students from 50 countries currently enrolled. College affiliation of these students during 1974 was: Agriculture 153 (plant and soil sciences 52, animal sciences 41, food sciences 30, social sciences 26, and engineering 4), Forestry 17, and Home Economics 16. Of the total, 142 students were registered in the Graduate School.

The University has continued to be a major source of financial support for foreign graduate students, although at a decreasing rate, with 82 in 1973 and 72 in 1974 receiving assistantships or other financial assistance. AID is the second major source of support for foreign students.

Program Sponsored Training—The University, under contract with AID provides both degree and special program training for qualified participants from developing countries. Currently, 40 academic participants are sponsored by AID and Food and Agriculture Organization (FAO) programs that are administered through the Office of International Agricultural Programs. This is an increase of 15 during the biennium. These programs generally include special training features in addition to regular degree requirements. Also under this agreement, special consultant programs of 1-15 days duration were provided for 70 official visitors from 27 different countries.

Several special delegations were hosted during the biennium. A six-member agricultural delegation from the People's Republic of China visited laboratories and experiment stations. A three-member oilseed delegation from the U.S.S.R. consulted with specialists in several departments. In cooperation with FAO-UN, delegations of agronomists and farm managers from Hungary were given special training programs in 1973 and 1974.

COLLEGE OF BIOLOGICAL SCIENCES

Richard S. Caldecott, *Dean*

The end of the 1972-74 biennium marked the ninth anniversary of the College of Biological Sciences (CBS). The college was established by the University in response to the need for a different organizational structure for teaching, graduate education, and research in the life

sciences. During the past decade, continuing efforts have been made to bring distinction to the programs in the basic biological sciences at the University and, while economic factors have recently dictated a period of controlled growth, significant progress has taken place.

Personnel—Dr. LaVell Henderson, who resigned as head of the Department of Biochemistry on June 30, 1974, will be replaced by Dr. Finn Wold; formerly of the Biochemistry Department in the Medical School. Dr. Wold's appointment paves the way for increased and mutually beneficial ties between these two units. Dr. Henderson will return to full-time teaching and research after a sabbatical leave. Dr. Alan Brook resigned as head of the Department of Ecology and Behavioral Biology in order to return to England. Dr. John Tester is serving as interim head, and a search has been undertaken for a replacement.

Substantial time and effort have been spent during this biennium developing staffing plans for the new Freshwater Biological Institute in Navarre. Construction of the facility, which was financed by the Freshwater Biological Research Foundation, was completed in January 1974. An extensive search led to the selection of Dr. John Wood as director for the institute; he will join the staff in July 1974.

A net increase of four academic appointments occurred during the biennium. Significant progress was made in hiring women scientists: three females joined the faculty during this period. Dr. Ernst Abbe and Dr. Max Schultze retired in 1974. Dr. Elof Carlson joined the Genetics and Cell Biology Department as a Hill Family Visiting Professor in spring 1974. Other administrative changes included the naming of Dr. Donald Gilbertson as director of zoology graduate studies, Dean R. S. Caldecott as director of biology graduate studies, Darlene Joyce as equal employment opportunity officer, and Dr. Frank Barnwell as the honors representative to the College of Liberal Arts.

In fall 1972, Dean Caldecott requested that his performance be reviewed by President Moos. After completion of the review, the dean was encouraged to continue in the position. In accordance with the college's constitution, a systematic review of each administrator and department is planned.

Organization—Early in the biennium, Dr. Jeanne Lupton, director of Student Services, moved her headquarters from the Office of the Dean on the St. Paul campus to the Office of the Associate Dean on the Minneapolis campus. This move has provided better service to the growing number of students interested in electing biology as a major.

The Botany Department and a major portion of the Ecology and Behavioral Biology Department moved from Minneapolis into the new Bio-Science Center in St. Paul. The center provides adequate housing for these departments and for the Department of Genetics and Cell Biology. These moves have disturbed the balance of faculty members on the two campuses. Although there are now twice as many CBS faculty members on the St. Paul campus, some shift toward regaining equal numbers will take place when the Zoology Building addition is finished. While the development of needed facilities has been delayed on the Minneapolis campus, progress has been substantial and the physical plant available in St. Paul is exemplary.

One of the goals established for the college has been to foster interaction between many departments and disciplines. Substantial progress has been made in developing a mutually beneficial relationship between the college and the Department of Microbiology in the Medical School, and representatives from the department now meet regularly with the CBS Administrative and Educational Policy Committees. Ties between the two biochemistry departments on campus are also being strengthened, and the departments now jointly administer one graduate program. Cooperative arrangements made during the biennium have permitted an internship program, involving CBS graduate students and Waseca campus faculty. This program has proved mutually beneficial by providing teaching assistants to Waseca and by allowing students to be exposed to different teaching environments than those afforded on the Twin Cities campus. With the development of program and staffing plans for the Freshwater Biological Institute, new relationships are emerging with faculty in the Institute of Technology, the College of Agriculture, the School of Public Health, the Medical School, and elsewhere. The establishment of the institute has also brought the college into close contact with the community.

Several administrative functions were evaluated and changed during the biennium. A systematic evaluation procedure for the review of teaching assistants in general biology was

developed and is being tried experimentally. A plan providing for student input to tenure decisions was approved. The current advising system in the college was reviewed and some organizational changes, which should enhance the delivery of student services, were made.

Curriculum—Extensive revision of the general biology course occurred during the biennium. The Educational Development Center (EDC) assisted in producing several multimedia presentations and in upgrading the delivery system from the standard television format. Another EDC grant made possible the video taping of the advanced techniques used in separating and analyzing biological materials. These instructional aids provide students with new opportunities for self-instruction in laboratory courses and also permit an improvement in the kind and frequency of contact between faculty and students.

The Educational Policy Committee approved 17 new courses during the period and deleted four outdated offerings. Additions included electron microscopy, cell biology, population biology, limnology, animal behavior, evolutionary ecology, angiosperm families and phylogeny, nucleocytoplasmic interactions, physiology, predation, nutrients and energy in terrestrial ecosystems, and comparative mammalian reproduction.

A recent experimental offering, the Biology Colloquium, was approved as a regular part of the curriculum. The colloquium has increased personal contact between students and faculty, while providing assistance to beginning students in delineating career objectives and exploring the various disciplines within the biological sciences.

Considerable time and effort have been spent during the biennium on a review of the CBS curriculum. The college instructional load includes a large service component for only 15 percent of the student credit hours offered are taken by undergraduate CBS majors. Evaluation of course offerings is an ongoing process involving the college with as many as 21 other University academic units. The Educational Policy Committee is studying several proposals for an alternative curriculum in biology since 50 percent of the bachelor's degree graduates from CBS go directly on to advanced study in medical school, dental school, or other graduate programs, and another 25 percent accept first occupations directly related to their training in the biological sciences. In studying curriculum proposals, the committee is concerned with maintaining the quality of the existing core curriculum while considering alternatives appropriate for a part of the undergraduate student population.

A recent study of graduates indicated that 45 percent of students graduating from CBS begin their college careers at an institution other than the University of Minnesota. The Educational Policy Committee has been studying the various curricula offered at Minnesota colleges and how they affect transfer to CBS.

Enrollment—Graduate enrollment has increased slightly over the biennium. There are currently 296 master's and doctoral candidates enrolled in graduate programs administered by the college. The principal limitation on the expansion of the programs is inadequate funding for student stipends and laboratory research.

COLLEGE OF BUSINESS ADMINISTRATION

C. Arthur Williams, *Dean*

Enrollment—The 1972-74 biennium witnessed a substantial increase in the number of students enrolled in the College (and Graduate School) of Business Administration (CBA). The increase was especially strong in the second year of the biennium. Details are provided in the table below.

COLLEGE OF BUSINESS ADMINISTRATION ENROLLMENT

	Fall 1972	Fall 1973	Increase over Fall 1971
Undergraduate (Jr. and Sr.) plus Adult Specials	1,175	1,326	17%
Master's Candidates			
Day	208	228	12%
Evening	169	183	10%
Doctoral Candidates	93	85	*
Industrial Relations			
Master's Candidates	60	77	18%
Doctoral Candidates	22	25	-17%
TOTAL	1,727	1,924	16%

*Percentage is not given because a change in the basis of recording doctoral candidates makes this figure not comparable to the other percentages.

The principal reason for the 17 percent increase in undergraduates was a 177 percent increase in the number of women, who by spring 1974 were 13 percent of the undergraduate student body. Women also contributed significantly to the 15 percent increase in graduate enrollment. By spring 1974 they were 9 percent of those enrolled in the Master of Business Administration (M. B. A.) program. The increase in graduate students reversed the downward trend of the last biennium, especially in the evening Executive M. B. A. program.

The instruction work load has grown even more rapidly than these enrollments indicate. Student credit hours increased 39 percent, from 52,870 in 1971-72 to 73,227 in 1973-74. Both CBA students and students from other colleges took a larger proportion of their credit hours in the business school.

Faculty resources increased slightly over the biennium, but the enrollment and student credit hour increases reported above caused the faculty-student ratio to rise sharply from what was already regarded as an unsatisfactory condition at the beginning of the biennium. At the close of the biennium, about one third of the scheduled course sections were filled by the third day of registration. These closed sections created serious problems for students registered in the college and made it impossible for students from other colleges, who register after CBA students, to take these courses. Class sizes in many other courses far exceeded the levels considered appropriate by both faculty and students. Elective courses were scheduled less frequently to handle the large introductory courses.

The college is also responsible for one fifth of the registrations in evening classes offered by Continuing Education and Extension. The college staffs these classes with its own faculty, paid on an overload basis, and a sizable part-time faculty. Most of the evening classes duplicate courses taught in day school and carry degree credit; other courses carry credit for extension certificates. Evening class registrations in CBA courses increased 35 percent from 1971-72 to 1973-74. The Management Information Systems Program, started in 1971-72, contributed greatly to this growth.

Curriculum—During the biennium substantial resources were devoted to implementing the revised undergraduate and graduate programs described in the previous *Report*. Course contents were revised and the faculty increased their contact hours in the classroom and the time spent reviewing independent-study efforts.

Probably the most demanding effort was the introduction of a Business and Society course. The college was one of the first schools, if not the first, to require such a course. Because the college received no additional resources for this extra effort, faculty members from existing areas volunteered to add this course to their teaching assignments. This caused heavier individual work loads and the loss of services in some teaching areas at a time when enrollments were rising rapidly. Resource limitations made it impossible to replace an intermediate-level microeconomics course taught by the Department of Economics with a managerial economics course taught by CBA faculty.

A top-management perspectives elective course, which was introduced during the biennium, featured leading business and other executives as lecturers and allowed an opportunity for students to question the speakers. The course was suggested and moderated by Wheelock Whitney. Because the course was popular with students, attracted considerable public attention, and did much to bring the college and the community closer together, it was offered three times during the biennium.

By the close of the biennium the implementation of the new undergraduate and graduate curriculums was complete and the college was considering ways in which they might be improved. The college faculty also voted to offer, as soon as resources permit, a joint master's degree program with the Department of Hospital Administration.

Placement Office—There has been some improvement in placement activities since the 1970-72 biennium. There were 274 companies interviewing on campus in 1972-73 and 276 in 1973-74. Schedules went to 396 in 1972-73 and 546 in 1973-74, while the number of interviews went to 3,960 and 5,064, respectively. The percentage of companies cancelling was 11 percent in 1972-73 and 7.5 percent in 1973-74. The number of offers received by students registered with the office stood at 564 in 1972-73 and 509 in 1973-74. The largest number of offers came from public accounting; the combined categories of banking, finance, and insurance; and merchandising and related services.

At the master's degree level, 81 percent of the registrants receiving M.S. or M.B.A. degrees remained in Minnesota in 1972-73 and 73 percent stayed in 1973-74. Of those receiving an M.A. degree in industrial relations, 33 percent were employed in Minnesota in 1973 and 44 percent in 1974. At the undergraduate level, 89 percent of the accounting students stayed in Minnesota in both years. Of those receiving a general business degree, 84 percent remained here in 1972-73 and 70 percent remained in 1973-74.

Continuing Business Education—In cooperation with Continuing Education and Extension, the college greatly expanded its continuing business education program. The Minnesota Executive Program (MEP), designed for persons who are in a position to influence strategic planning in their businesses, had two highly successful years, enrolling 23 executives in each year of the biennium. In 1974 the college presented a Chief Executive Seminar, a mini-MEP for chief executives of firms that were actual or potential participants in the regular program.

In December 1973, the Division of Continuing Business Education was reorganized and the staff increased in number in order to expand the number and diversity of the short courses presented. During 1973-74, the division registered almost 1,600 persons in a variety of short courses. A committee, headed by the associate dean, was appointed to coordinate the programs conducted by the division and by the Labor Education and Employer Education Services.

Conferences and Symposia—Each of the Alumni Institute programs offered during the biennium included a keynote address, panels comprised of CBA faculty and local business and labor representatives, and a banquet at which there was a major address. Principal speakers at the 1972 institute were Dr. James R. Bright, professor and associate dean of the College of Business Administration at the University of Texas, and John E. Carroll, president of American Hoist and Derrick. In 1973 the speakers were Dr. Joseph W. McGuire, vice president of planning at the University of California, and William B. Phillips, chief executive officer of International Multifoods. At the 1974 event the University's Outstanding Achievement Award was given to Ralph Voss, president of Western Bancorporation.

The B-Day luncheons offered in April of 1973 and 1974 featured Warren Spannaus, attorney general of the state of Minnesota and a CBA graduate, and Harold P. Pluimer. Distinguished teaching awards were made to Professor Gavin Collins and Professor John Cumming.

A Kappel Chair Lecture Series was organized to provide distinguished speakers for the new Business and Society course. These speakers included Professor Walter Adams of Michigan State University; Professor Neil Jacoby of the University of California; Professor Marcus Alexis of Northwestern University; Dean Robert F. Lanzillotti of the University of Florida College of Business; Frederick R. Kappel, retired president and chief executive officer of American Telephone and Telegraph; Professor Raymond A. Bauer of Harvard University; and Associate Professor David H. Blake of the University of Pittsburgh. A Distinguished Lecture Series was also arranged by each department to enable faculty and students to interact with outstanding faculty members from other institutions.

During the spring of both years the finance area assumed primary responsibility for arranging Small Business Institutes. They involved many leaders from the business community and were highly successful. A new quarterly lecture series, sponsored by the Alumni Board, began in spring 1974 with a luncheon address by Dr. Harry Levinson of the Levinson Institute. These lectures, which are held off campus, feature three CBA faculty members and one distinguished visitor each year.

Research and Publications—During the biennium CBA faculty members authored or contributed to 21 books, published 81 articles in professional and academic journals, prepared 22 case studies, wrote 9 working papers, and produced 36 book reviews, technical reports, or papers for conferences.

Among the research projects were an analysis of financial risks/returns and cost of capital using the capital asset pricing model, an environment project, and studies on location models for commercial banks, branches, and facilities; commodity future markets; occupational and task determinants of job satisfaction; deregulation of transportation and the northeast railroad crisis; utilization of routine accounting reports; corporate income forecasting; unemployment, inflation, and wage-price controls; and managerial value systems and managerial successes of American managers.

Industrial Relations Center—The programs in industrial relations (IR) have grown at a fast pace during the past biennium. Enrollment in industrial relations M.A. and Ph.D. programs showed a 7 percent increase over the previous biennium, making Minnesota the largest full-range IR graduate program in the country. In addition, the IR faculty provides an active program to over 1,000 area residents, many of them practitioners, each year through evening classes.

The IR faculty, with the support and assistance of the IRC's Advisory Council, requested funding from the Minnesota Legislature to increase the center's service activities in employer education. The Legislature responded by increasing the budget of the IR Education Fund to establish the Employer Education Service, which is a nonprofit service to the private and public employer community in the broad field of industrial relations. It will provide a resource of current, specialized information and instructional programs for all management functions concerned with employment relations. Since February 1974, the service has offered programs in compensation, collective bargaining, training and development, equal employment opportunity, affirmative action, employee benefits, management rights, and supervisory management, among others. Of special significance is the capability, with the parallel Employer and Labor Education Services, to offer cooperative labor and management conferences and seminars. A number of joint programs have already been undertaken.

In the past two years, the Labor Education Service has been broadened in scope and extended to new groups and geographical areas. During 1974 activities under this program included: AFT-MFT Regional Conference; 10th Annual Labor and World Affairs Conference; 28 one-day conferences for the American Federation of State, County, and Municipal Employees; MEA Leadership Conference; Minnesota Prisoners Union leadership training; St. Paul Trades and Labor Assembly mini-courses; and Union Leadership Academy courses.

IRC research programs during the biennium included analyses in human resources management, involving the use of computer-based simulations to aid and assess decision-making, and studies of the acceptability of various measurement approaches to human resource accounting and of methodological designs to evaluate the usefulness of a number of multivariate prediction techniques. In the area of manpower resources and markets the IRC faculty have researched alternative models of wage-price mechanisms, market implications of the American Medical Association's doctor supply policy, and the feasibility of using the WIN-11 Tax Credit as a stimulus to facilitate the movement of individuals from welfare status to effective labor-force participation. Finally, in collective bargaining and organizational behavior, numerous studies were undertaken, including an analysis of individual perception of job satisfaction, strategies of organizational change, and collective bargaining in higher education and among physicians and dentists. Several seminars have been held on manpower analysis planning and control, using the on-line computer simulation of a corporate manpower system developed by two IR faculty members. The most recent local seminar attracted participants from the U.S., Canada, and Mexico.

The IRC Reference Room, which furnishes extensive reference services to University students and staff and to off-campus representatives of business, governmental agencies, and the general public, received over 700 off-campus requests during the past year. This increased use of the Reference Room by individuals outside the University and by the expanding number of both graduate and undergraduate students with related fields, majors, or fields of concentration in IR has created space problems.

Management Information Systems Research Center—The Management Information Systems Research Center (MISRC) is solely supported through contributions from local industry. It has office and support facilities for a 25-30 person staff and ready access to diverse computing equipment.

Approximately \$800,000 contributed by associate firms in the period 1968-74 has been expended in the three major areas of education, research, and interaction. An MIS academic program has been developed and has financed many educational projects, including salary support for faculty, teaching assistants, administration, and clerical staff; writing and producing manuals and texts for classroom use; \$150,000 toward the purchase of a CDC 3200 computer, with business applications capability for the business school; and the design and start-up of the MIS extension program.

In the area of research, money has been used to support the writing and production of 47 working papers (17 in 1972-74), 5 monographs (2 in 1972-74), and selected articles; starting of projects and preparation of proposals; and general administration of projects for the MISRC and the college.

Other funds have gone to maintain the Associates Program and to recruit new members. Of the original 20 firms, 12 continued to participate in the program and two new firms have been active since 1971. During the biennium, 12 general meetings had presentations on special interest topics; 6 evening speakers addressed current and controversial subjects; and 11 seminars and workshops, running half to full days, examined specific issues in depth.

Personnel—In July 1972 Professor C. Arthur Williams, Jr., was appointed dean. Professor Roger Upson was named associate dean later that year. In 1973 the college faculty adopted a new school Constitution and By-Laws.

Full-time faculty members in 1973-74 numbered 61, the same as in 1971-72 when enrollments were much smaller. To meet the demands posed by its rapidly increasing enrollment, the college used the additional funds it received to hire graduate students as teaching assistants and associates instead of hiring senior faculty.

Consultative Council—The Consultative Council met several times during the biennium. E. Palmer Tang, partner-in-charge of the Minneapolis office of Touche, Ross and Company, served as chairman. The terms of the council members were changed to three years, with the possibility of one reappointment, and several new members were appointed. In spring 1974 the council indicated its support of CBA's 1975-77 biennial request to the central administration of the University. This request called for sizable increases in the college's faculty and civil service staff to match the expanding teaching, research, and service demands. Enrollment limitations may be necessary if the college does not receive these resources.

DEPARTMENT OF CONCERTS AND LECTURES

Ross D. Smith, *Director*

Artists Course—The most apparent trend in the presentation of classical music during the biennium was the decline of interest in the solo recital artist. The Masterpiece Series played to only 66 percent of capacity in 1972-73 and 45 percent of capacity in 1973-74. Interest in dance attractions continued to be strong, when enough good companies were available. Modern dance presentations drew large numbers of students; 70-80 percent of the audiences at such performances were students. A new policy of giving students a \$1 discount on individual tickets for Artists Course presentations resulted in greater student attendance. Students have always received substantial discounts on season tickets. The Artists Course had a deficit of \$13,000 in 1972-73 and \$48,000 in 1973-74.

Summer Programs and Special Concerts—The department presented highly successful free summer programs in conjunction with Summer School each year. These programs, many of which were held out-of-doors, included recitals, films, and Minnesota Orchestra, jazz, blues, and dance presentations. During the biennium there were 46 programs. Attendance by students and the community was high.

There were 23 special concerts given by the department during the biennium. The *Nutcracker Fantasy*, presented with the Minnesota Orchestra and the Minnesota Dance Theater, played to 14,039 for three performances in 1973, and 22,678 for five performances in 1974.

Convocations—The student-faculty Convocations Committee continues to provide free school-year events on both Twin Cities campuses. Lectures are not as popular as in previous years, so the emphasis has been placed on theater, music, dance, films, and gallery shows. The committee often cosponsors events with departments, student organizations, and community groups.

Contemporary Music Series—This series, sponsored with the Department of Music, offered 5-6 free programs each year, featuring contemporary composers and experimental music of all kinds. These programs do not draw large audiences, but offer a unique experience to interested students and staff. The budget is \$4,000.

Special Lecture Funds—This valuable resource money continues to be in great demand by the University departments. During 1972-74, over 95 departments received supplemental stipends, which are used primarily for honoraria and travel. Departments are thus able to bring distinguished scholars to the campus for specialized or public lectures. Since the amounts are small (\$50 to \$500), several departments often combine their resources to bring a scholar of interdisciplinary interest. The money is generally completely committed by February.

University of Minnesota Program Service—The service continued as in previous years. Two University Theatre groups, the Repertory Players and the Children's Theatre, were again very popular. Because of rising costs, particularly in the travel expenses of the artists and lecturers, this program had deficits of \$15,000 in 1973 and \$6,000 in 1974, both covered by a surplus from previous years.

PROGRAM SERVICE

	1972-73	1973-74
Number of Programs Presented	1,825	1,715
Total Receipts	\$155,431.22	\$138,685.45
Deficits	\$15,000.00	\$6,000.00

Metropolitan Opera—Seven performances by the Metropolitan Opera are cosponsored each May by the University and the Minnesota Orchestral Association. Although it is impossible to break even on box-office receipts alone, the contributions of Guarantors and Friends of the Opera have kept Opera Week in the black during 1973 and 1974. The cost of presentation in 1973 was \$433,000, and in 1974 it was \$448,000. The profits in those years were \$6,000 and \$5,000, respectively. Because of the financial difficulty of the Metropolitan Opera, each tour city was asked to contribute an additional \$66,000. Payment of our share was made possible by raising \$58,000 from outside contributions and by taking \$8,000 from our reserve funds, which are now at \$72,000.

Needs and Recommendations—With the Minnesota Orchestra moving into its new hall in downtown Minneapolis after 45 years in Northrop Auditorium, new considerations are in order. Northrop will now be available for more campus and noncampus groups. Next year, the auditorium will be rented, on a trial basis, to local commercial promoters for six events. This procedure will be reviewed by the Regents at the end of the year.

Programming in Northrop will also be affected. Orchestra Hall will present several recital series and popular entertainments and it will be available, on a rental basis, to outside groups. Northrop is still a unique facility, however. It has both the stage facilities and the seating capacity (4,810) for opera and large dance companies. The smaller halls in the Twin Cities cannot provide the potential revenues to meet the high fees of these attractions. The University should, therefore, increase the number of such events. At the same time, smaller-fee artists, recitalists, and small ensembles can be presented at popular prices (\$1.50 to \$3), and should attract audiences that cannot afford the high-priced tickets for similar events in the other halls.

Because of rising artist fees and higher presentation and promotion costs, it is apparent that the department's activities will not be entirely paid for by box-office receipts. Other arts organizations, such as the Guthrie Theater, the Minnesota Orchestra, and the Minneapolis Society of Fine Arts, attempt to make up their deficits through private contributions. In 1973-74 the deficit of the Department of Concerts and Lectures was about equal to the staff payroll, which is taken from the ticket revenues. The continuation of these programs will have to depend on a partial subsidy by the University.

Two needs mentioned in the last *Report*, a new set of black-velour drapes and a 9-foot concert Steinway piano, have been met. The most pressing needs now are for a new console and sound-communication system and a remodeled light booth that can accommodate two follow spotlights and two 16mm movie projectors.

CONTINUING EDUCATION AND EXTENSION

Harold A. Miller, *Dean*

Community Relations and Extension Services—The appointment in June 1973 of George Bilicic as assistant dean for Community Relations and Extension Services (CRES) provided needed direction in responding to community needs for experimental and interdisciplinary programs. A number of innovations and changes during the biennium deserve special mention. Audio-Visual Extension and a portion of Audio-Visual Resources were merged into an expanded Audio-Visual Library Service. A new program, Continuing Education in Government, provided training programs for public employees at all governmental levels. In cooperation with the Agricultural Extension Service, community resource development agents were selected for service in Crookston, Duluth, and Marshall. And the Municipal Reference Bureau, which had served as the secretariat for the League of Minnesota Municipalities, was abolished in 1973 when the league was relocated.

Three other changes, all concerning older adults, were also significant. First, a Title I grant was used to establish the Cedar-Riverside Lifetime Learning Center, in cooperation with St. Mary's Junior College and Augsburg College. Second, a recently initiated educational program of classes for older adults became the responsibility of Continuing Education for Women. And third, Continuing Education and Extension (CEE) was represented through CRES in developing a proposal with five other Minnesota educational institutions for continuing education programs for older adults and in serving on the governing council of Countryside Council, a post-secondary educational consortium in southwestern Minnesota.

Audio-Visual Library Service scheduled over 128,000 film titles to accommodate information needs for training and information during the biennium. Over 680 subjects were added to the collection to contribute to new programs such as the 1971 OSHA legislation requiring specific on-the-job protection for employees. Another informational area added in response to public demand was the Third World political impact on world economy. The *Audio Visual Journal* has been indexed for several national and international indices.

The AV Marketing (publishing) program has grown to 153 subjects (\$110,000). All products are solicited from the faculty and student body and produced for use as educational materials supplementing the University's educational program.

Community Programs offered 103 credit classes during the biennium. Support services were strengthened by the addition of two full-time counselors.

It is hoped that, within the neighborhoods served, there can be an expanded role for noncredit programming. Attempts must be made to provide continuing education service to other metropolitan neighborhoods in which the residents have similar economic and educational backgrounds. In addition, the skills centers, which have been successful in the neighborhood programs, seem to be exportable to institutions like Stillwater Prison, where often the counseling and study skills support services are not available.

The *Office of Delinquency Control* represents the University through CEE and the Law School in a broad range of projects in youth development, delinquency prevention, training, education, research, and development. The objective of the office is to promote social changes that will make democracy work more effectively in the areas of crime and delinquency. Fairness, community-building, and humanness provide direction in the application of education and active research.

Current programs include the Juvenile Officers' Institute, the Juvenile Court Judges' Institute, Project Newgate, Legal Assistance to Minnesota Prisoners, and the National Training Programs in Youth Leadership. Programs begun through this office include the Training Center on Community Programs, HELP, New Careers, Indian Upward Bound, Special Course Concentration in Corrections, Ombudsman for Corrections, Criminal Justice Studies Department, Indian Newgate, Anishinabe Wakaigan, and Pre-Hearing Information Service. New programs planned include Legal Assistance to Adjudicated Delinquents, Legal Advocacy Program, and Principals' Workshop.

Emergency Services Education, formerly Civil Defense Education, is supported and funded by the Defense Civil Preparedness Agency in Washington, D.C., and is subcontracted under the Minnesota Department of Emergency Services Education. During the past two years the department has conducted conferences and emergency exercises and has taught

courses throughout the state, such as the Emergency Operations Simulation Exercises in Rochester and St. Paul, Career Development Phase II, the Elected Officials Conference, the Business and Industrial Conference, and planning and operations courses.

The *Fire Information, Research, and Education Center* provided information, advice, and consultation on 2,227 fire protection matters; expert testimony to the Governor's office and Legislature during the 1973-74 legislative sessions; consultation to municipalities and townships; research for the State Advisory Council on Fire Research and Education; and research on the cost of fire protection for 756 state communities. The center conducted 45 workshops for 6,315 people, held two statewide fire safety conferences for 350 people, and offered new fire safety education programs to the public. Staff members gave lectures on fire deaths and injuries to two public health classes, on state fire problems to 10 regional audiences, and on fire service contracts to 23 TWSP Officers groups. The center also produced two television and radio programs on rural fire safety. Publications included "Guidelines for Training," "Aids to Fire Department Management," "Training Aid Catalogue," "Volunteer Fire Organization in Minnesota," "Outside Fire Service," "Fire Department Relief Association," "County Fire Plans," "Fire Protection for State Institutions," "Forest Area Protection," and 25 other articles and papers. Departmental changes included reassigning one staff member to public education projects and hiring an assistant to the director.

The *Labor Education Service* reached over 2,000 union members in Minnesota each year through conferences and the Union Leadership Academy offerings. Special audio-visual projects included a video tape entitled "Frank Ellis Labor History" and a collective bargaining tape for AFSCME Council 6, "Negotiations and Grievance Qualities."

Continuing Education in Public Policy was formed in 1974 to house the World Affairs Center, the State Organization Service, and a new unit, Continuing Education in Government. The change enabled these units to serve a wider clientele within CEE, the University, and the community. Continuing Education in Government was formed after the termination of CEE's long association with the Municipal Reference Bureau, to enable the University to continue to use its resources for training public employees. The World Affairs Center, which assists its 49 member organizations and colleges in their programs, held conferences on the balance of power vs. international organization; development and the Third World; disarmament; world-wide inflation; China, Japan, and world trade; Europe and the Soviet Union; uses and abuses of the seas; the Middle East and the politics of oil; and world-wide ethnicity. The department launched new programs to serve the international business community and to offer University of Minnesota courses in London.

Continuing Education for Women increased registrations 47 percent, from 3,321 in 1970-72 to 4,891 in 1972-74. Experiments in delivery systems and subject matter continued. The "Brown Bag School," featuring noon-hour classes in the metropolitan downtown areas, attracted a new audience. Two 3-quarter seminars on the art of well-being and on major women writers were added to the liberal arts seminars offered annually. Credit and noncredit courses on sense of identity and self-awareness, offered every quarter since their introduction in 1973, remain popular. A noncredit seminar on the middle years was successful both as a one-day conference and as a 10-week class.

The establishment of the Louise Roff Scholarship Fund and the Tuition Assistance Program provided some needed scholarships for part-time students. University faculty members continue to give the program enthusiastic support. Plans include interdisciplinary seminars in the sciences; courses in economics, accounting, and business; and out-state expansion. Through rotation of credit course offerings, the department plans to provide an increasing variety of classes for part-time students working toward a degree.

Continuing Education Division—The Continuing Education Division (CED) is made up of departments, each of which is tied to a specific college, school, or group of related disciplines of the University. In most cases, CED faculty members hold joint appointments with their academic units and CED; in Continuing Business Education and Continuing Legal Education appointments are totally within CEE. During the biennium, experience was gained by the continuing education directors in identifying needs, working with faculties to meet these needs, and guiding program development. The directors made greater use of the Instructional Systems Division in implementing their programs. It is anticipated that this

trend will continue as confidence in the services grows. The Continuing Education Divisional Council meets monthly, sharing both operational and programmatic experiences.

Continuing Education in the Arts continued to make the resources of the University in the arts and humanities available to all citizens. The principal programs in the areas of continuing education in arts, music, and theater were the Winter Quarter in Mexico, the Summer Arts Study Center, the Legislative Specials in the Arts, and the MacPhail Center for the Arts. In addition to extension classes in the arts, the department offered regional and statewide competitive art exhibitions, circulating art exhibits, and workshops and conferences in dalcroze, ethnomusicology, multimedia and music, creative movement for children, lyric theater technique, thermoplastics and the theater, string and string repair, and energy-saving architecture. The department works closely with academic departments in music, studio arts, and theater; with the Agricultural Extension Service; and with community organizations, such as parks and recreation departments, the Minneapolis Institute of Art, the Walker Art Center, the Minnesota Orchestra, the State Fair Commission, and the Guthrie Theater.

Continuing Business Education has made significant progress. Professional staff increased from one faculty member who divided his time among the Minnesota Executive Program, management seminars, and teaching, to three and a half positions for program personnel. Three six-week executive programs have been conducted, and attendance at management seminars has doubled from 871 in 1972-73 to 1,615 in 1973-74.

Two areas have greatly increased in the number of requests for educational assistance: the in-house programs, which were designed to train a number of managers and supervisors from one organization, and the small business programs, which developed in response to requests from the owners of small, struggling businesses, who felt they could not afford our normal fees. It is essential for us to solicit legislative support for programs for small business, since 98 percent of the 67,000 businesses in the state have fewer than 50 employees.

Some conferences are now being jointly sponsored by the department and professional associations. Cooperating associations have included the Administrative Management Society, the American Society for Personnel Administration, and the American Marketing Association.

The *Department of Continuing Dental Education* seeks to provide dental professionals and paraprofessionals with opportunities to upgrade their academic and clinical skills. This is accomplished through a series of conferences and clinical exercises designed to introduce new philosophies, techniques, and materials. This department has now moved to the Health Sciences Unit A building, where the separate clinical facilities will allow the development of a more clinically oriented program. Long-range planning is in progress to establish ongoing clinical programs, in cooperation with the dental faculty, and extend the undergraduate curriculum in the clinical disciplines. Continuing education requirements for relicensure have been increased in Minnesota, and it is anticipated that greater demand will be made upon the department to satisfy the needs of its clientele.

The *Department of Continuing Education in Education* continued to coordinate the efforts of CEE and the College of Education in serving the teachers of the state. Numbers of offerings and registrations continued to increase. Forty-one conferences drew more than 4,000 participants, and 600 credit extension classes attracted more than 17,000 registrations. The department plans to place special emphasis upon the development of programs in selected out-state areas, such as Rochester, and of course work with the special field of adult education in the College of Education.

The *Department of Continuing Education in Engineering and Science* involves a full-time position, jointly funded by the Institute of Technology and CEE. Six candidates have completed Professional Development Recognition Programs. A special video-tape series to help engineers prepare for the Professional Registration Exam was offered at several locations in the state, in cooperation with the Minnesota Society of Professional Engineers. An Engineers Information Registry was established to aid in determining needs and informing engineers of continuing education offerings.

Continuing General College Education contributed significantly in this period through participation in the Rochester Consortium, scheduling classes that enabled residents of southeastern Minnesota to work toward B.A.S. and B.S. degrees. In St. Paul a program of

courses for the police department was introduced, allowing St. Paul policemen to complete A.A. degree requirements. Course offerings were expanded in CEE community programs in north Minneapolis and St. Paul and Project Newgate at the St. Cloud State Reformatory. Studies skills centers were established at the reformatory, Stillwater State Prison, and the Minneapolis Workhouse to augment the education programs in those institutions.

The *Department of Continuing Legal Education* substantially increased the number of its short-course offerings during the biennium: 45 courses were offered with 5,961 registrations. Nearly all programs were cosponsored by the Minnesota State Bar Association and several were cosponsored by national organizations.

Perhaps the most significant development, both in Minnesota and nationally, is the movement toward the adoption of minimum, mandatory educational requirements for all members of the legal profession. Minnesota has pioneered in this movement and is being watched closely by other states around the country. Through a specially appointed Continuing Professional Competence Study Committee of the Minnesota State Bar Association, a two-year study was undertaken and resulted in the promulgation of a set of proposed rules, which are under consideration by the Minnesota Supreme Court. If adopted, this requirement will have a profound impact on the department's future program planning and scheduling.

Continuing Medical Education assists practicing physicians in Minnesota and surrounding states in keeping their medical skills current through short courses, preceptorships, and visiting professor arrangements throughout the state. More than 5,200 physicians have participated in the conferences held at the University, and many other physicians have been assisted through the educational outreach programs of the Medical School. Continuing Medical Education is now extending its programs to selected regional centers throughout the state, with the cooperation of the Minnesota Academy of Family Physicians, the Minnesota State Medical Association, and the Rural Physician Associate Program. A new Medical School faculty Council on Continuing Medical Education is studying additional ways to improve educational support to the practicing medical community.

Continuing Pharmacy Education serves the needs of pharmacists registered in the state. To meet the demand for increased programming in light of the recent mandatory continuing pharmacy education requirements, the office has presented seminars on a wide variety of topics to assist pharmacists in updating their knowledge and increasing their competencies. During the biennium, sites for the television lecture series were expanded to include 21 state locations. The office has also produced a programmed instruction text and will continue to provide audio-cassette programs. Use of computerized record-keeping in the form of Continuing Education Units is now being implemented to record program credits earned.

Continuing Education in Social Work is an integral part of the social work education continuum at the University. It reflects a recognition by the profession and the School of Social Work that formal education is only one part of the learning process and should be supplemented by other educational experiences all through life. The program is designed to enable social work practitioners and other helping professionals in the field of social welfare to update old and acquire new knowledge and skills and to meet the educational requirements for agency employment. This should enable agencies to fulfill their functions in the community and to deliver better services to people. During the biennium, 514 persons participated in certificate programs, 932 in specialty courses, 2,755 in conferences and institutes, 480 in special training programs (such as Head Start and Foster Parents), and 688 in summer courses.

Instructional Systems Division—Encouraged by legislative support and increased enrollments, Instructional Systems departments are able to provide more upper-division and graduate programs in areas the University is especially equipped to provide.

Extension Classes enrollments increased 12 percent in 1972-73 and 7 percent in 1973-74. Independent Study remained constant with 8,964 new enrollments. The number of programs offered in Conferences increased 10.6 percent, while the enrollment increased 34 percent over the previous biennium. Counseling was up from 7,848 counseling contacts in 1972-73 to 10,348 in 1973-74. The Duluth Center had an increase of 1,453 registrations over the previous biennium, and Rochester increased by 1,748 registrations. The University-sponsored credit courses on radio (KUOM) and television (on time contracted from KTCA) enrolled 707 students in 1972-73 and 879 students in 1973-74.

The *Department of Extension Classes* concerns itself with nontraditional students (those who are not full-time day-school students) and their desires and requirements for educational opportunities in the form of classes and lectures. In most cases, nontraditional students simply want the same opportunities that are available to their day-school counterparts. As the first and most important step toward this goal, the department offered approximately 3,600 classes, in which over 52,000 students registered during the biennium. Many students took advantage of the certificate and degree programs open to them. More certificate and degree options were developed and long-range schedules were devised in a number of fields to help students plan the completion of certificates and degrees. Conversations were initiated with academic departments and the Graduate School for the purpose of expanding the number of graduate degree programs, comparable to day-school graduate programs in quality of students and faculty, that may be completed through extension study.

The department continued to respond in a special way to exceptional situations. Classes were offered on a special basis to community, business, and other groups with unique requirements, as to time, place, and course content. In cooperation with the College of Education, the department developed and administered a human relations program to assist teachers in meeting a new State Department of Education recertification requirement. Funds allocated by the state Legislature enabled the department to offer low-enrollment upper-division and graduate-level courses, which the University alone is able to provide. Legislative special funds also made it possible to inaugurate a new program of courses in Cambridge, where the desire for higher education far surpassed the opportunities available. The department opened many of its credit courses to noncredit, no-transcript registration at reduced tuition. With this registration, individuals may attend a wide range of designated courses at one half the normal price. Persons over 60 or between 12 and 16 may attend these courses for \$3.

The department continued to offer television courses and lecture series. A number of free lectures by University faculty and noncredit mini-courses in public affairs were also presented. Through programs such as these and through a vigorous program of credit courses, the department strives to broaden the range of options available to the public it serves.

The *Department of Conferences* continued to expand programming during the biennium. A total of 396 conference programs were conducted, an increase of 11 percent over the previous two-year period. Accompanying this growth in programs was a 34 percent increase in total registrations, from 29,581 in the previous biennium to 39,694 in 1972-74.

These figures cannot, however, begin to portray the department's diverse efforts to respond to and anticipate changing educational needs. Notable among the new and timely conferences offered were the International Symposium on Behavior Modification (which attracted 762 participants from around the world) and conferences on new urban systems, metrication, energy conservation, inflation, and the politics of oil.

During the past year the department began awarding, on a limited basis, the Continuing Education Unit (CEU) for participation in certain qualifying programs. There is a growing public awareness and acceptance of the CEU as a means of recognizing and recording noncredit educational experiences. It is expected, therefore, that the granting of these units in conference programs at the University of Minnesota will have a significantly favorable impact on the development of programs in the future, particularly for professional and occupational groups for whom the CEU has special meaning and utility.

The *Counseling Department* continued its record of growth in offering counseling and advising services to adult, continuing education students. The staff counseled 11,086 students during the two-year period, for a total of 18,196 interviews. The figures demonstrate an increase of 48 percent in the number of students and 65 percent in the number of contacts over the previous biennium. In addition, the department maintained files on 2,567 degree candidates and 1,481 certificate candidates, an increase of approximately 30 percent. During this period, 579 persons completed CEE certificate programs and approximately 200 completed degree programs.

The *Department of Independent Study* continued to offer independent study through correspondence opportunities for students who could not or did not wish to come to the University campus. New course enrollment for the biennium was 8,964.

CONFERENCE ATTENDANCE, 1936-72

Type	1972-73				1973-74				1936-74			
	No. of Courses	No. of Regs.	% of All Regs.	Avg. Regs. Per Course	No. of Courses	No. of Regs.	% of All Regs.	Avg. Regs. Per Course	No. of Courses	No. of Regs.	% of All Regs.	Avg. Regs. Per Course
Medical	23	2,461	11.5	107	26	1,865	10.2	72	699	42,907	13.0	61
Educational	20	2,261	10.6	113	21	1,868	10.2	89	610	46,669	14.1	77
Technological	13	5,088	23.9	391	12	1,690	9.2	141	409	49,144	14.9	120
State-Municipal	27	2,870	13.5	106	11	1,144	6.2	104	509	38,724	11.8	76
Public Health & Hospital Service	8	879	4.1	110	12	1,046	5.7	87	349	24,844	7.5	71
Business-Commercial	28	1,294	6.1	46	52	2,068	11.3	40	461	25,384	7.7	55
Social Welfare	27	1,400	6.6	52	18	1,527	8.3	85	361	22,761	6.9	63
Nursing	16	3,307	15.5	207	16	4,066	22.2	254	291	25,555	7.8	88
Civic-Cultural	10	978	4.6	98	6	803	4.4	136	289	21,399	6.5	74
Dental	22	607	2.8	28	19	638	3.5	33	614	12,671	3.8	21
Labor	1	28	.1	28	..	..	..	..	135	8,396	2.5	62
Legal* .....	..	..	..	..	..	..	..	..	43	3,068	.9	71
Pharmacy	1	136	.7	136	5	1,460	8.0	292	75	5,879	1.8	78
Miscellaneous .....	..	..	..	..	2	154	.8	77	82	2,695	.8	33
TOTAL	196	21,309	100.0	109	200	18,329	100.0	92	4,927	330,096	100.0	67

*Does not include activities of Continuing Legal Education.

During the biennium, the department developed a more diversified program. New study opportunities offered included credit courses by newspaper and KUOM radio, and study guides for television credit courses. With the help of legislative special funding, Independent Study expanded its curriculum, concentrating mainly on developing upper-division courses. This added funding also allowed the department to maintain tuition costs without increase. The partial payment plan initiated in 1972 has continued to grow in popularity with students. During 1972-74, the department received tuition commitments of \$73,587 through use of this plan.

Plans for the 1974-75 biennium include the development and refinement of the television independent-study credit course program, which is produced in conjunction with University Media Resources. An effort to gain at least minimum acceptance of the offering of graduate independent-study credit courses is also planned.

University Media Resources was officially constituted July 1, 1972. It includes the radio and television activities formerly assigned to the Department of Radio and Television and to Audio-Visual Resources, as well as the Art and Instructional Materials, Audio-Visual Engineering, and Photographic Services sections. During the biennium, radio, television, and motion-picture production were moved to the fifth and sixth floors of the new Rarig Center. Media Resources was responsible for tape-recording one-and-a-half hours per week of television programming for broadcast on KTCA-TV, and occasionally on educational stations in Duluth, Fargo-Moorhead, and Appleton. There was increasing emphasis on televised credit courses, and those offered included "Human Sexual Behavior," "Utopia," and "Interior Design." Outstanding noncredit courses included a series on revenue sharing in which Walter Heller and Arthur Naftalin talked with distinguished national guests. The closed-circuit television trend was from central distribution by cable to video cassettes for direct use in classrooms. During the second year of the biennium, 77 projects were prepared for 56 departments.

KUOM is the only Twin Cities AM radio station dedicated entirely to education, instruction, and classical music. An important part of its schedule has been the presentation of recorded classroom lectures on subjects such as parent-child relationships, twentieth century writers, and women in politics. The nationwide educational radio network chose three Minnesota School of the Air programs for national distribution.

Film production included 45 lectures for Psychology 1-001, and documentary studies of artists, poets, and labor problems.

The Photographic Services section expanded its space in North Hall on the St. Paul campus and installed new and better equipment. The service unit of Media Resources took care of approximately 1,500 repair and installation orders each year, in addition to choosing, installing, and servicing most of the electronic broadcast and audio-visual equipment on the Twin Cities campus.

The *Duluth Center* serves northeastern Minnesota communities by offering educational opportunities through extension classes and special programs, conferences, and continuing education for women. Enrollments have increased during the biennium and the curricula have become more specialized. Registrations in extension classes of 4,462 in 1973 and 6,011 in 1974 were 12 percent and 35 percent higher than those in each preceding year. Offerings changed from a relatively traditional curriculum to one that was 55 percent traditional and 45 percent specifically planned special programming. Conferences registration slowed down, while continuing education for women registration more than doubled. Persons may now register in any UMD or Duluth Center academic-credit program through a pilot cross-registration program that recognizes registrations in either office for either curriculum.

The *Rochester Center* develops educational programs, credit and noncredit, on the graduate and undergraduate level. During the biennium, the center accepted 7,637 registrations in 276 classes. Approximately 90 percent of those students were from Olmsted County.

Classes were the core of programming, although workshops and institutes did increase. The annual Institute for Two-Year, Post-Secondary Educators and the Educational Administration Institute attracted students from Minnesota and over 25 other states. The Chemical Dependency Program received national recognition. The General College baccalaureate-degree program also attracted increasing numbers of students.

Emphases during the biennium have included: expanding the delivery of programs from the Twin Cities campus to the Rochester area; emphasizing the center as a resource serving area students; developing complete degree-program alternatives; expanding cooperative relationships with area post-secondary institutions and the HECC Task Force; and expanding programs in the allied health sciences, education, and General College.

The *Morris Center* was established in January 1973, with the employment of the first full-time director. The center, titled Continuing Education and Regional Programs, was developed to serve the educational needs of the adult student in western Minnesota. During the 1972-74 biennium, 1,573 enrollments were accepted in 71 classes.

The *Morris Center* has developed a wide range of program options. Traditional classes are offered by *Morris* faculty. A pilot, rural University Without Walls project was begun. A federally supported OEO Career Development Project was offered each summer. A Title I Project, involving five types of post-secondary institutions in Minnesota Development Region IV, was developed to provide community problem-solving assistance. A grant was awarded to the center to begin programming for senior citizens in Grant, Stevens, and Traverse Counties. And classes have been offered for members of the Sisseton-Wahpeton Sioux Tribe.

Internal Services

The *Research Department* completed a number of studies, including a community service survey of the University of Minnesota faculty of all campuses, a survey of the faculty for the Audio-Visual Library Service, an evaluation of the Pilot City programs, and a statewide survey of public-school principals for the Minnesota School of the Air program. The department also had the responsibility for the nationwide Association for Continuing Higher Education and National University Extension Association Joint Statistical Report. Also completed were an analysis and summary evaluation of the Continuing Education in Social Work programs, and an analysis and summary of a survey of MacPhail program participants and their parents.

An evaluation of the Continuing Education for Hospital Trustees program, sponsored by the School of Public Health, was accepted under special contract.

New projects in process and in the planning stage include a survey of the 1973-74 participants in Continuing Education for Women programs and a survey and evaluation of the 1974-75 Extension Classes students who request counseling services from the CEE Counseling Department.

The *Office of Administrative Services* has been more fully implemented within the 1972-74 biennium. A new support service department, Communication Services, was developed in 1973. It brought together the State Organization Service and CEE publications staffs, which now handle the editing, art, production, and distribution of Continuing Education and Extension materials. Outstanding artistic designs identified CEE direct-mail announcements, which were printed and mailed at reasonable costs through coordinated University services. Various clerical overload services were also available through the department to other CEE departments, and materials were developed to describe all of CEE. Over 1,500 jobs were processed during the 1973-74 year. The State Organization Service continued its function of providing administrative services to *pro bono publico* organizations through Continuing Education in Public Policy.

Other functions provided by the Office of Administrative Services included coordination of CEE accounting, budgeting, payroll, inventory, space, fund-raising, and personnel requirements, as well as maintaining liason with the University's central business office.

COLLEGE OF EDUCATION

Jack C. Merwin, *Dean*

The 1972-74 biennium continued a period of change started in the previous biennium—a period characterized by extensive attention to existing programs through both internal and external review, priority setting, and reallocation of resources in the light of mandated fiscal retrenchments. The biennium witnessed program shifts reflecting recognition of the educational needs of all age groups, with special attention to the continuing educational needs of practicing teachers and administrators. The result was a new mix of majors, with those students in post-baccalaureate programs becoming more prominent.

While continuing to offer the challenge of improving and meeting new needs under great fiscal restraint, the biennium has offered great opportunities for developing new approaches and clarifying priorities. A solid foundation was built for maintaining excellence while meeting situations characterized by stable or modestly increasing enrollments, changing emphases, and fiscal restraint.

Personnel—During the 1972-73 academic year, Assistant Dean Wayne Welch was in Washington, D.C., working with the National Science Foundation and, in December 1972, Professor Darrell Lewis was appointed to an associate deanship. Dean Welch returned in fall 1973 and will move into a full-time professorial role on July 1, 1974.

Governance and Organization—Following approval of an Assembly-Senate structure of governance, the College Assembly and the Board of Regents approved a new College of Education Constitution and By-laws document in June and October 1972, respectively. This document reflects the Assembly-Senate structure and provides for two standing committees of the Senate: the Committee on Educational Policy and the Committee on Personnel Policy.

Early in the biennium, a team of three consultants submitted an evaluation report entitled "A Program for Increased Organizational Effectiveness for the University of Minnesota College of Education." The 17-member internal task force that had worked with the external consultants developed a reorganization plan, which was approved by the College Senate in January 1974 and made operational July 1. A chart of the reorganization appears within this report.

Planning—Collegiate and departmental planning continued to be a predominant characteristic of the college during the biennium. This effort is concerned with base data and information about current and past characteristics, as well as with the ever-changing needs of the future. Many departmental activities and efforts of the Education Career Development and Education Planning and Development Offices are directed toward overall planning. Faculty plans for allocating effort, program reviews, fund allocations and reallocations, departmental reports, student enrollments and follow-ups, faculty accomplishments, and missions and priority development have all become part of this systematic process.

It is expected that the need for ongoing, careful planning and development will continue, and the processes will become more refined. Although enrollment in the college should remain relatively stable, changing needs and circumstances demand the best possible planning, so that the limited resources available to the college are used efficiently and effectively.

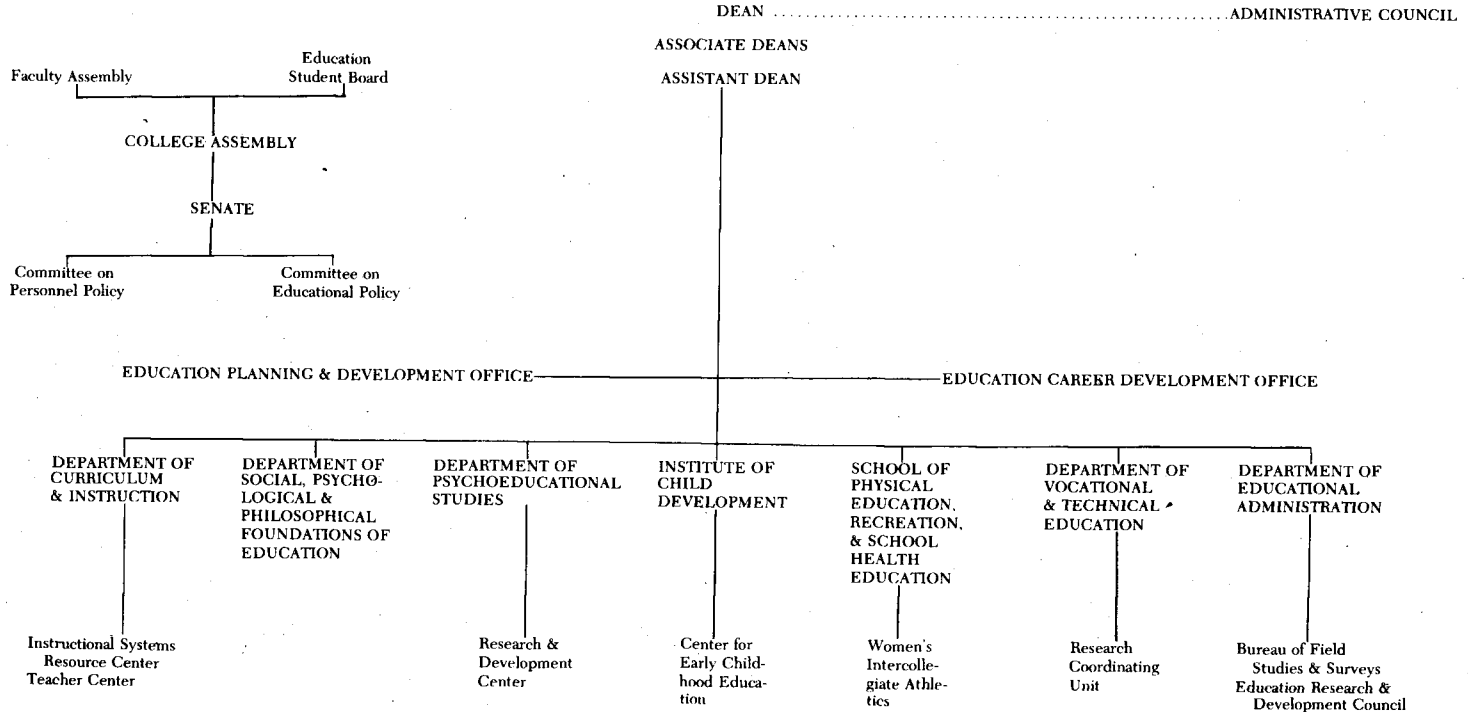
Marks of Excellence—In a study conducted by the Research and Development Office during 1973-74, indicators of the various quality dimensions of colleges of education were identified. These indicators included the judgments of experts in the field, papers accepted for presentation at national research meetings, and the ability to attract external funding. The University of Minnesota College of Education rated high in all areas. It was in the top 10 in a consensus ranking of three major studies on quality of institutions, and was eighth in the number of presentations at the American Educational Research Association annual meetings over a three-year period. Over the past decade both total dollars and the percentage of the total college budget coming from nonstate sources have been on the increase, with \$4,647,164 or 45.6 percent of the 1973-74 expenditures being external funds.

The excellence of the faculty is also reflected in the number of promotions. During the biennium, 15 assistant professors were promoted to associate professor and 21 associate professors were promoted to full professor.

Enrollment and Placement—From fall 1971 to fall 1973, post-baccalaureate majors increased from 38 percent of all education majors to 47 percent—29 percent in M.A. and Ph.D. programs and 18 percent in various continuing education programs. Approximately 850 post-baccalaureate degrees were granted during the biennium to students in education.

As the biennium began, enrollment quotas had been established for elementary education, art education, physical education (majors in physical education, recreation, and park administration), and secondary education. Limited areas in the latter field included American studies, language arts (majors in French, German, Latin, Russian, and Spanish), science (majors in earth science, biological science, chemistry, and physics), and social studies (majors in anthropology, economics, geography, history, political science, and sociology). These quotas were based on a tightening job market, the retrenchment of resources, and new

COLLEGE OF EDUCATION ORGANIZATION—1974



program needs. As a result of the quotas, undergraduate enrollment was reduced from 2,880 in 1969-70 to 1,868 in 1973-74. The number of B.S. degrees granted showed a similar decline, from 1,305 to 1,060 over the same time period.

In spite of a bleak job market picture, the placement levels for our graduates remain high. A survey of graduates receiving B.S. degrees between September 1, 1972, and August 31, 1973, showed that, as of November 1974, 81.4 percent of those available for employment were employed. Of those graduates who indicated they were available to teach, 77 percent were employed in teaching positions and 86 percent of those teaching were teaching in Minnesota schools.

Program Reviews—College programs received reaccreditation by the National Council for Accreditation of Teacher Education (NCATE) in the spring of 1974. On the basis of a site visit, the review team noted a number of strengths and concerns. Among the strengths were the excellence of the faculty, the support conditions for the faculty (particularly those related to teaching load and opportunity for preparation for classes), and the relationships that have been built with practicing school people. The program of student advising was considered a major strength, and liaisons with learned societies and professional organizations were considered very good. Of particular concern were the library and media resources, which the team judged to be adequate but not of the quality a great university should have. Another major concern was the lack of follow-up information and evaluations of graduate's performances, which could both be used as a basis for program improvement. This lack became a major focus of the Education Career Development Office, and an ongoing follow-up system was initiated.

Graduate programs in two departments were reviewed by external and internal teams during 1973-74. The Vocational and Technical Education Department received an excellent report: three programs (agricultural education, distributive education, and industrial education) were ranked with the top four or five programs of their type in the nation, and the department as a whole was ranked about fifth. The report described the Research Coordinating Unit as second to none. It went on to say that "a major strength of the department has been the excellent leadership of the current head and his predecessor and active cooperation from key senior faculty members. Deliberate but firm steps have been taken to weld distinctively different groups into a coherent whole. The next step in the development of the new department will, in our opinion, require the designation of a continuing rather than an acting head." This was accomplished when Dr. Jerry Moss was named chairperson of the new department. The external team reported that "if some of the few weaknesses noted herein are remedied, there is no reason why this could not be the foremost department of vocational and technical education in the nation. In our opinion, the University should give careful consideration to providing the relatively limited resources that would make this possible."

The Institute of Child Development also was praised. In the judgment of the members of the review team, "The Institute of Child Development is . . . the foremost teaching and research organization in the field of child development in the United States. The number and eminence of its faculty and their breadth of interests in the field are undoubtedly the major contributors to the excellent reputation of the institute." The Center for Human Learning was considered a primary vehicle for multidisciplinary study and research. The team felt the Center for Early Education held considerable promise and they favorably noted the involvement of individuals from school psychology and from elementary, physical, and special education. The team also called attention to the sharp rise in the quality of the student body in recent years. It was recommended that efforts be made to expose students to children in a wide variety of natural settings, that the institute reexamine its highly structured and somewhat rigid program, and that a systematic mechanism for the exposure of students to faculty members and their research be developed. In addition, the team noted that the "Nursery School is one of the finest of its kind" but "is housed in space that is in need of remodeling." They encouraged the University to continue efforts to obtain funds for this remodeling and to continue support of the institute programs, especially if the federal support should fail.

Program Revision and Development—Retrenchment, reallocation, and severe inflation resulted in the elimination of several programs and the reduction or modification of several others. Undergraduate certification in the American studies, language arts, and speech

pathology programs was dropped. Undergraduate special education programs for teachers of the visually impaired, the educable mentally retarded, and the hearing impaired were also dropped. Moratoriums were placed on all admissions to the all-college Higher Education Program, the master's-level Elementary Counseling Program, and the Ph.D. program in audio-visual education. In addition, the Office of International Education and the Pre-Education Advising Program of the Education Career Development Office were dropped, and the field-based and service-oriented Psycho-Educational Services Center has been terminated.

In art, elementary, music, physical, and secondary education, the average class sizes increased as much as 10 students per section, while the types and number of courses and number of sections were cut back. Student-teaching supervision and clinical or school-based experiences for teacher trainees were also reduced. Graduate student support was seriously impaired.

A document entitled "Contexts and Priorities for College of Education Planning," adopted by the college Senate in January 1974, set forth four priorities. First, priority should be extended to programs that demonstrate substantial interaction between the college's instruction and research missions. Second, priority should be granted to programs or units that prepare personnel for positions for which the University and the college have distinctive resources and for which anticipated needs are high. Third, priority should continue to be given to programs of continuing education and to programs in which plans extend beyond the practitioner degree. Fourth, priority should be extended to activities falling within the traditional category of service to any one of the several constituencies of the college.

Illustrative programs that have been directed at these priorities include the Training Program in Child Psychology, which prepares well-qualified Ph.D. students for careers in child psychology through a broad range of courses and extensive research. The School Psychology Training Program has provided support for Ph.D. students in that field since 1958. Ph.D. students seeking training for positions that require competence in research and extensive experience with young people in natural settings are served through the Behavior and Development of Preschool Children Program. A number of similar programs are also offered through the Departments of Educational Administration and Vocational and Technical Education.

Continuing education was a major focus of attention during the biennium, with new designs for M.Ed. programs established in secondary social studies, secondary science, secondary English, business education, and distributive education. The Seward-University Special Education Project served a dual purpose. First, it provided preservice and continuing education opportunities to observe and practice current and emerging roles in procedures in special education. Second, it allowed the University to reach out into the surrounding communities and provide services in ways previously not feasible through on-campus activity. The Teacher Center, an affiliate of the College of Education and the Minneapolis Public Schools, was established to provide in-service and preservice training for teachers in alternative schools, particularly those in the Southeast Alternatives Area. STAIRS and Indian Upward Bound offered tutorial services for Native American elementary and secondary school students.

The Research, Development, and Demonstration Center in Education of Handicapped Children, an integral part of the college since 1969, has been a source of support for over 100 graduate and undergraduate research assistants annually, as well as a vehicle through which many faculty members may conduct significant research and development activities in special education. Project EDGE, a cooperative effort between the College of Education and the Department of Pediatrics, provides early education experiences for Down's syndrome children.

Numerous other research, development, and training activities were conducted through such units as the Research Coordinating Unit in Vocational and Technical Education, the Psycho-Educational Center, the Educational Research and Development Council, the Bureau of Field Studies and Surveys, and the Center for Human Learning, as well as through the various academic departments and divisions.

Problems and Needs—Inadequate facilities and resources remain the major barriers to mission fulfillment. All reviews have pointed out the excellence of the faculty and their

potential, if given adequate facilities and resources. The library and media resources were judged only adequate by the NCATE evaluation team, and other resources were termed somewhat outmoded and inconvenient. The old YMCA building has been remodeled for our student personnel services, and the Butler Building was obtained for an Instructional Systems Resource Center. It is hoped that planning money for remodeling the Nursery School and for a vocational-technical building will be forthcoming from the 1975 Legislature.

Two other areas of concern should receive attention in the next biennium. The first is the need to define the role the college can best play in the state, in regard to undergraduate certification programs. The implications for our undergraduate programs, graduate programs, and research and development efforts aimed at producing better programs need careful and thorough consideration. The second area is the need to further develop cooperative relationships with schools, including a more effective involvement of their faculty members in preservice programs and of our faculty members in continuing education programs.

It is clear that after numerous retrenchments the college no longer has the fiscal flexibility to develop new programs or to expand existing activities by reallocation. New resources are a must if the college is to maintain current quality in the context of crippling inflation and attempt to meet the growing diversity of needs of its constituents.

CENTER FOR EDUCATIONAL DEVELOPMENT

James H. Wertz, Jr., *Director*

The Center for Educational Development (CED), an administrative unit within the Office of the Vice President for Academic Administration, facilitates, coordinates, and supports work in five general program areas: development efforts to improve the quality of education at the University; development efforts in precollege education; assessment and evaluation of educational programs; application of technology to educational practice; and interinstitutional educational development.

A major function of CED is the management of grant programs that support the innovation and renewal of educational programs at the University. In addition to continuing its management of the Small Grants Program of the Council on Liberal Education and the University-wide Educational Development Program, CED became responsible for the administration of the Media Production Fund. The Consulting Group on Instructional Design also became affiliated administratively with CED during the biennium.

Educational Development Program—This program, approved in 1970 by the Board of Regents on the recommendation of the University Senate, provided flexible support for the systematic renewal of existing programs and the development of new programs, thereby generating experience for planning future programs of the University. The funding goal of the Educational Development Program (EDP) is approximately 3 percent of the instructional budget of the University. At full funding, EDP resources will be budgeted in approximately equal amounts at the three administrative levels of the University (department, college, and all-University). Proposed projects are selected for support on the basis of merit through a peer-review procedure designed to insure that EDP resources are directed through a coordinated and systematic plan to improve education at the University.

EDP was supported in the amount of \$350,000 for each year of the biennium. For 1972-73, grants were awarded to 126 projects, the average grant being \$2,778. For 1973-74, 108 projects were supported and the average grant was \$3,262.

Representative of the grants awarded during the biennium were those to Frederick Forro in genetics and cell biology, to develop a freshman colloquium as a means to acquaint students with the life sciences; Frank Wilderson of education, to develop a program in human relationships; George Hage of journalism, to develop and evaluate programmed instructional materials in reporting courses; Joel Goodman of architecture, to develop a Built Environment Communications Center; Alan Hanson of computer, information, and control sciences and Ray Wakefield of German, to develop the new course Computers and the Humanities; Keith Wharton of the College of Agriculture, to develop seminar-workshops for improving the skills of advisers in that college; Benjamin Liu, William Kleinhenz, and Virgil Marple of mechanical engineering, to develop autotutorial materials for measurement laboratory courses; Arnold Henjum in education at Morris, to develop independent study materials on types of adoles-

cents for use by secondary-education students; Lewis Levang and David Mayo of humanities in Duluth, to develop a cross-disciplinary course on foundations of twentieth-century thought; and James Moller of the Medical School, to develop a computer-assisted program in pediatric cardiology.

Small Grants Program—Sponsored by the all-University Council on Liberal Education, the Small Grants Program is the oldest of the grant programs administered by CED. Founded in 1967 with a five-year matching grant from the Hill Family Foundation, the program supports faculty and faculty-student efforts aimed at improvement of undergraduate education.

By 1972-73 the program had grown to its full funding level of \$80,000, a portion of which was the final installment of the Hill Family Foundation grant. Seventy-one projects were supported during the year, in amounts ranging from \$100 to \$3,006. For 1973-74, support in the amount of \$80,000 came from University funds, the University-Sponsored Educational Materials Fund, and the General Mills Foundation. A portion of the total, however, was held for distribution during 1974-75. For 1973-74, 50 proposals were awarded grants ranging from \$60 to \$3,000.

Among grants awarded during the biennium were those to Roger Page of the College of Liberal Arts, to evaluate the Bachelor of Elected Studies Program; David Wark of the St. Paul Student Counseling Bureau, to develop the OASIS career exploration program; Robert Lambert of electrical engineering and Dean Abrahamson of the Center for Studies of the Physical Environment, to develop a program in acoustics and noise control; Ronald Morris and Kenneth Graham of theater arts, to implement an undergraduate peer-advising program; Gordon Kepner and George Bloom of the Department of Physiology, to develop a CLA lower-division course in physiology; Clara Kidwell of American Indian studies, to develop a course on the relationship of American Indian tribes to nature; Frederick Waltz of electrical engineering, to develop a course on the engineer in society; Donald Leavitt of social science and A. A. Lopez of science and mathematics, both at Morris, to develop a computer simulation of national presidential elections; Toni McNaron of women's studies, to develop the course Women and the Law; and Vernelle Kurak of General College, to train students as tutors in the Reading/Writing Skills Center.

Media Production Fund—The Media Production Fund was established during 1971-72, under the auspices of the vice president for academic administration. CED became responsible for administration of the fund after a trial run in summer 1972. The fund supports professional production of educational program materials in television, film, radio, and other audio-visual media, and the limited broadcast distribution of these materials. Priority is given to course-related projects.

During winter and spring of 1973, funds totaling \$50,334 were distributed among 23 supported projects, the average grant being \$2,188. In 1973-74, a total of \$75,841 was distributed among 41 projects, in amounts ranging from \$84 to \$12,500; the average grant was for \$1,850.

Illustrative of grants awarded through the Media Production Fund were those to Paul Walker of pediatric dentistry, to produce a series of video tapes on dental care for handicapped children; Arthur Klassen of neurology, to produce a neurological teaching film on movement disorders; R. Smith Schuneman of journalism, to produce an English language adaptation of a series of 30-minute Swedish documentary films on the development of motion and still photographic media from the early nineteenth century to the present; and Paul Pedersen of counseling and student personnel psychology, to produce half-hour video tapes demonstrating typical problems encountered in intercultural counseling.

Precollege Educational Development Projects—The precollege component of CED undertook a number of long-term projects and continued to fund short-term projects, all intended to join University resources with those of the elementary and secondary schools to improve the educational experience. Long-term projects included:

Chronobiology—A Student Science Training Program in the study of biological rhythms, funded by the National Science Foundation, started in 1972 with an eight-week summer institute on campus and continued during the 1972-73 school year in biology classes in many of the participants' high schools. Attempts to secure federal funding for wide dissemination of study materials were unsuccessful, but dissemination was pursued on a smaller scale.

Affective Assessment—The Minnesota Affective Assessment Instrument, developed in cooperation with the Department of Psychological Foundations of Education and Minnesota Independent School District 196, was tested and revised during 1972-73. The assessment in 1973-74 became a part of the offerings of the Minnesota Statewide Testing Program, operated by the Student Counseling Bureau at the University, and was run in more than two-dozen Minnesota schools, as well as schools in six other states.

China Studies—Development of a high school course on China, begun in 1971 in cooperation with the Department of East Asian Languages and the Department of Geography, continued under a National Endowment for the Humanities grant. A pilot project was run in the summer program of the Twin City Institute for Talented Youth. The curriculum became a permanent offering of several Minneapolis high schools and formed the basis of one of the special study centers in the St. Paul school system. Plans were laid for further dissemination of the program.

Drug Education—A sound-film technique that will be used to assess attitudes of educators, health professionals, and others toward drug users was developed and tested. A Media Production Fund grant was secured for production of a series of video-taped vignettes on drug behavior for similar use. CED resources were allocated for the piloting of a developmental psychology-based program of drug abuse prevention in all fifth-grade classrooms of Independent School District 196. A number of proposals were prepared, including one to the National Institute of Drug Abuse, and a National Drug Education Research Center at the University.

Details on these and other precollege efforts appeared in the April 1973 issue of *Comment*, a CED publication.

General Development Program—While the three grant programs and the precollege development program account for the major portion of CED activities, the center's interest in the improvement of the educational experience is also made manifest in other ways. Under a grant from an educational equipment fund and in cooperation with the University's Media Resources unit, the center assembled and organized a display of materials from Great Britain's Open University. Materials were housed at the center during the major part of 1972-73, then taken to several locations on and off campus before being moved to facilities at Rarig Center. In fall 1974, the center sponsored a public lecture by John Ferguson, dean and director of Studies in Arts at the Open University.

In spring 1973, the center cosponsored with the College of Business Administration and the Center for Higher Education an illustrated presentation by Edward Gross, professor of sociology at the University of Washington, and Paul Grambsch, professor of business administration at the University of Minnesota. Entitled "Changes in University Goals and Academic Power Structures Between 1964 and 1971," the presentation was a report on changes in preceptions of the decision-making process by faculty and administrators at a group of large institutions, as revealed by a comparison of the professors' recent study with results of an earlier one.

Communications—CED considers part of its mission to be the dissemination to the University community of information about educational development efforts within the University and elsewhere. As part of this program the center continued publication of its newsletter, *Comment*, and developed a 48-page handbook, "Instructional Resources—Faculty Guide to Instructional Services and Facilities on the Twin Cities Campus," which was distributed in fall 1972 to all University faculty members.

Program Evaluation—During the biennium CED attempted to measure the institutional impact of the Small Grants and Educational Development Programs. Questionnaires were distributed to all faculty members who had received grants from one or more of the programs and to a stratified random sample of faculty who had not received such grants. Responses were being analyzed at the end of the biennium.

Program Budgeting—In a first step toward capability for program-based budget planning, center staff members began to compile quarterly effort-analysis reports, categorizing activity in various program areas.

Consulting Group on Instructional Design—By working with faculty members in various departments throughout the University, the Consulting Group on Instructional Design

(CGID) carries out projects aimed at identifying and describing variables that are essential to effective teaching and learning. These projects are carried out within the context of both ongoing and developing educational programs.

One thrust of these efforts is to develop ways of bringing laboratory research on learning, cognition, perception, comprehension, competence, and memory to bear on questions of instructional design and development. These include particular questions in specific course and program development as well as the general problems of applying educational technology and techniques to the design of instruction and evaluation. The corollary thrust is to bring the challenge of ecological validity to the pedagogical and psychological research activities of CGID. This two-way street between the supporting research and the instructional practice allows a systematic approach to instructional design and development. Discipline specialists concerned with teaching and learning are joined by research specialists from CGID to study the many issues of effective instructional design.

Research and Development Projects—The major role of CGID faculty and staff is the support of faculty members from various teaching departments of the University. Research issues and methodologies, drawn from laboratory work on learning, cognition, memory, and pedagogy, are used in each project to seek answers to such questions as: Are instructional materials, events, and procedures effective and optimal for all possible students, or should alternative designs and technologies be examined? Is performance assessment and accreditation logically consistent among students' needs and expectations, faculty and departmental desires and responsibilities, program objectives, and institutional mission? Is achievement of the objectives adequately evaluated?

Projects have been carried out with faculty in a number of courses and subject-matter areas. Work in the teaching and learning of German, Dutch, Swedish, Norwegian, ancient Greek, modern Greek, Latin, Italian, and Spanish as second languages has been supported during the biennium by EDP and departmental grants. Course design in ancient, medieval, and Asian art history has been done under a grant from the National Endowment for the Humanities. Work in calculus instruction has been supported by the Fund for the Improvement of Post-Secondary Education. Work in the teaching and learning of symbolic logic was funded by EDP. Work in hematology, ophthalmology, family practice, and pediatric cardiology instruction has been supported by the Dwan Family Foundation and EDP. Work in the teaching of procedure, torts, professional responsibility, trial practice, jurisdiction and venue, and evidence has been supported by the Council for Legal Education on Professional Responsibility.

CGID staff members have also been involved with learning effectiveness and memory research and, together with the University Computer Center, with computer development in support of projects.

Seminars—Seminar workshops are offered quarterly and are attended by about 100 faculty members each year. CGID faculty present research and development results and information, and provide support to each participant in carrying out a pilot project. In addition, weekly research seminars are carried out on a year-round basis in second-language learning and in art history.

GENERAL COLLEGE

Alfred L. Vaughan, *Dean*

In many ways the 1972-74 biennium was for the General College (GC) a time of implementing, consolidating, and evaluating policies and activities initiated earlier. From 1966 to 1972 the General College was in what one University vice president characterized as a "period of rather aggressive and daring innovation in which the General College showed a remarkable power for regenerating the sort of role it was always intended to play in higher education at the University, and for that matter, in the nation." It was during this time, for instance, that General College established procedures that made it possible for graduates of public and private post-secondary vocational and technical programs to receive degree credit for their technical training. The inclusion of noncollegiate vocational-technical credit in college degree programs is now a common practice in Minnesota and elsewhere.

Special Services Programs—Since 1966 the college has been intensely involved in developing programs for low-income, minority, and educationally disadvantaged Minnesotans. This involvement resulted in the establishment of the nationally recognized New Careers Programs, the Consolidated HELP Center, the Martin Luther King Program, the Upward Bound Program, and Project Newgate. Unlike so many special projects and programs begun during these turbulent years, the General College programs continue to operate successfully as integral components of the college. The HELP Center, for example, had over 900 students using its services in 1973-74. It is significant that GC Upward Bound and Newgate are among the rather small number of such projects in the nation that continue to receive federal and state support.

General College continued during 1972-74 to build on its experience with the educationally disadvantaged by establishing skills centers in reading, writing, and mathematics. Student demand for the services of these centers prompted an extension of the hours they were open so that evening school students might take advantage of them. Furthermore, by June 1974, reading and writing skills staff were assisting students in the St. Cloud Reformatory, the Minneapolis Workhouse, and Stillwater Prison.

In an attempt to assess the effectiveness of some of the special service programs, an evaluation eliciting students' responses to services offered in the HELP Center and in the General College Student Personnel Service was completed in 1974.

Legal Paraprofessional Program—Initiated in 1969 in cooperation with the American Bar Association (ABA) and the University's Law School, this program has served as a model for 107 programs that have been started at other colleges and universities around the country. In spring 1974, the college participated in the ABA pilot project that established standards and procedures for accrediting legal assistant programs and a member of the GC faculty served as consultant and researcher for that group. Also in the spring of 1974, a grant was obtained from the Hill Family Foundation for the purpose of modifying the Paraprofessional Program to include a pilot project for training paraprofessionals to serve as advocates for inmates within the prison system. This project is, again, the first of its kind.

Consistent with the college's role as educational pilot plant, the Legal Secretary Program, developed in General College, was turned over to the Anoka Technical Education Center in spring 1974. This is another example of the college's role in developing new programs and then spinning them off to other institutions or systems in the state.

Human Services Generalist Program—In cooperation with the Minnesota Department of Public Welfare, the Southern Regional Education Board, and the University's Department of Psychiatry, General College initiated a Human Services Generalist Program in 1970, again one of the first in the nation. During 1972-74 the curriculum of this program was evaluated and modified. Some of the instruction in the program was revised to be offered at the upper-division level. Seminars offering University resources were developed for students enrolled in Inver Hills Community College. Through June of 1974 this program had placed almost 100 percent of its graduates.

Radiologic Technology Program—In spring 1974 the Radiologic Technology Program, operated jointly by General College and the Department of Radiology in University Hospitals, was accredited by the American Medical Association.

Internship Program—The college continues its internship programs for prospective college teachers and counselors. During 1972-74 arrangements were completed for interns to receive graduate credit for their activities in the Internship Program.

Continuing Education and Extension—From very modest beginnings in 1966, the college's off-campus activities have grown dramatically. During 1973-74 150 General College courses were offered off campus or in evening school. A number of students began working toward General College baccalaureate degrees through the Rochester Continuing Education and Extension Center. In addition to offering GC courses at the regular University continuing education centers, General College faculty and adjunct faculty offered them at the St. Paul Police Department and the Minneapolis Vocational Institute and in Cambridge, Faribault, and Duluth. To accommodate and facilitate this growth, a director of General College Continuing Education and Extension was appointed in 1972.

Baccalaureate Degree—In 1970 General College was allowed to extend its mission to include bachelor's degree programs. Twenty students received the first General College baccalaureate degrees in June 1972. By the end of the biennium, over 500 students had been admitted for study toward the college's Bachelor of Applied Studies and Bachelor of General Studies degrees, and 122 of these students had graduated.

A major research study dealing with characteristics of the students enrolled in General College baccalaureate programs was completed in June 1974. This study validated the assumption that the students who would be served by the GC upper division were in some important respects different from the students being served by other units of the University. In brief, GC four-year students are much like the so-called nontraditional new learners or the life-long learners that have been identified all around the country as consumers of post-secondary education, and are distinct from the traditional group of 18- to 22-year-old students.

Curriculum—Anticipated shifts in the enrollment pattern of General College took place during the biennium. As expected, fewer students enrolled in lower-division programs, and enrollment in upper-division and special programs increased. These changes necessitated a shift in the work load of the faculty, as indicated by the number of courses that were offered at the upper-division level. No upper-division courses were offered in the General College in 1970; since then, 47 courses have been designed or recast to meet the needs of GC four-year students. These courses were developed to fit the particular missions of the college and they do not duplicate work offered elsewhere in the University. Some of them are unique, such as the 20-credit course studying man's search for a good life, which integrates concepts and information from a number of academic disciplines. This course has been presented to the University's Council of Liberal Education as a possible alternative method of satisfying the liberal-education requirement for University bachelor's degrees. Another package of courses for the upper-division student has been designed around the study of Minnesota, its physical characteristics, its history, its culture, and its problems.

The college's two-year, lower-division curriculum also was updated during 1972-74. Courses in reading and in writing have been reorganized. The new mathematics program, planned during the previous biennium, was put into operation. Development of instruction in urban studies was evaluated. A method of peer tutorial instruction was developed for large classes in psychology.

Administrative Reorganization—By July 1974, General College had completed the administrative reorganization begun by faculty action late in 1971. The college was reorganized into three academic divisions and one service division: Science, Business, and Mathematics; Social and Behavioral Sciences; Arts, Communication, and Philosophy; and Student Personnel Services. In addition, a coordinator of curriculum development and evaluation was appointed in 1973 to expedite the work of the curriculum committee and to improve communication among the divisions with regard to curriculum development.

Role of General College—This report might well be concluded with a summary of the presentation made by the dean of the General College to the Board of Regents in spring 1974, indicating the integral role played by General College in the teaching, research, and public service missions of the University:

General College was founded in 1932 to provide educational opportunities for Minnesotans who were not being served by traditional University programs. Since that time, the teaching, research, and public service functions of the college have been centered on developing educational programs for such students. The college serves five basic functions for students: college try-out, pretransfer, occupational certification, two-year general education, and individually programmed baccalaureate education.

General College admissions policies and support services have allowed all high-school graduates, and many students who have not been graduated, to enter the University and progress, within the General College or within other units of the University, as far as their aptitudes, circumstances, and personal interests in higher education have allowed.

Higher education has also been made available to formerly by-passed groups, particularly ones in the metropolitan area. This has been done without duplicating or competing with other units of the University. In response to community needs, General College has extended its teaching resources to new groups of off-campus and part-time students. The college has

served these students by offering classes from its standard curriculum, by designing new courses, by providing individual help through skills centers, and by providing educational and vocational advising services. For example, General College has helped to provide a community college for the inner city of St. Paul.

Through General College, the University is exploring alternative patterns of post-secondary education—particularly baccalaureate and certificate programs—that can meet and even anticipate new needs. GC has been involved in the voluntary coordination and articulation of post-secondary education in Minnesota, particularly with the community colleges, vocational-technical institutes, and University units. Through GC, the University also provides internships for graduate and undergraduate students who intend to become college teachers and counselors.

Research in all of the areas mentioned above is conducted and reported through General College.

Conclusion—As it provides programs that emphasize general studies, including paraprofessional training in various University schools and institutes, that capitalize upon educational experiences gained in other institutions, and that extend from certificates to baccalaureate degrees, the General College is for thousands of Minnesotans the right college in the right place at the right time.

GRADUATE SCHOOL

Kenneth H. Keller, *Acting Dean*

Deanship—May Brodbeck, who was appointed dean in 1972, served during the 1972-74 biennium. She resigned at the close of the 1973-74 academic year to accept an appointment at the University of Iowa at Iowa City as vice president for academic affairs, dean of faculties, and Carver professor of philosophy. Kenneth H. Keller, professor of chemical engineering and associate dean of the Graduate School, was named acting dean in June 1974.

Enrollment and Degrees Granted—In 1972-73 a total of 10,237 individuals registered in the Graduate School, a decline of 2 percent over the previous year; but in 1973-74 enrollment increased by 3 percent to 10,518, including a 26 percent increase in new student enrollment in fall 1973. The indications were that Graduate School enrollment would continue to increase by a small percentage over the next biennium.

These enrollments included 1,725 official doctoral candidates as of the spring term of 1973, and 1,635 as of spring 1974.

Resident enrollment decreased slightly during the biennium, going to 53 percent in 1972-73 and to 54 percent in 1973-74. Enrollment from adjacent states remained at 6 percent, while enrollment from other states increased to 25 percent from 23 percent the previous biennium. Foreign enrollment, which had been 12 percent in 1970-72, went from 17 percent in 1972-73 to 15 percent in 1973-74.

The Graduate School awarded a total of 2,593 master's degrees and 1,116 doctoral degrees, decreases of 7 percent and 8 percent, respectively, from the previous biennium. The University has now awarded a total of 34,094 master's degrees and 10,749 doctoral degrees.

TABLE I. GRADUATE SCHOOL STUDENTS IN RESIDENCE, 1972-74

Classification	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
Fall, Winter, and/or Spring	4,925	1,704	6,629	5,170	1,969	7,139
Summer Session only	342	415	757	301	387	688
Fall, Winter, Spring, and Summer Session	1,616	649	2,265	1,386	735	2,121
Mayo Graduate School of Medicine	566	20	586	549	21	570
TOTAL	7,449	2,788	10,237	7,406	3,112	10,518
Total, Academic Year (exclusive of Mayo)	6,541	2,353	8,894	6,556	2,704	9,260
Total Individuals in Two Summer Terms (exclusive of Mayo)	1,958	1,064	3,022	1,687	1,122	2,809

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TABLE II. GRADUATE DECREES SOUGHT AND OBTAINED

	1972-73						
	No Degree Sought	Master's Degrees		Doctoral Degrees		Total Degrees	
		Sought	Obtained	Sought	Obtained	Sought	Obtained
Education and Psychology	118	1,216	303	1,032	148	2,248	451
Duluth	6	141	40	1	..	142	40
Health Science	405	449	102	532	48	981	150
Mayo	522	61	6	1	1	62	7
Language, Literature, Arts	26	737	146	453	66	1,190	212
Duluth	..	27	10	..	..	27	10
Physical Science	22	662	177	606	106	1,268	283
Duluth	..	25	3	1	..	26	3
Plant and Animal Science	13	390	88	316	54	706	142
Duluth	..	8	1	..	..	8	1
Mayo	..	2	2	..	..	2	2
Social Science	35	1,350	437	830	134	2,180	571
Duluth	..	31	4	1	..	32	4
Other	217	..	..	..	..	..	..
Duluth	1	..	..	..	..	..	..
Twin Cities Total	836	4,804	1,253	3,769	556	8,573	1,809
Duluth Total	7	232	58	3	..	235	58
Mayo Total	522	63	8	1	1	64	9
GRAND TOTAL	1,365	5,099	1,319	3,773	557	8,872	1,876

1973-74

	1973-74						
	No Degree Sought	Master's Degrees		Doctoral Degrees		Total Degrees	
		Sought	Obtained	Sought	Obtained	Sought	Obtained
Education and Psychology	91	1,124	260	1,067	160	2,191	420
Duluth	5	142	19	..	..	142	19
Health Science	220	590	117	503	60	1,093	177
Mayo	544	23	20	2	2	25	22
Language, Literature, Arts	27	802	139	461	53	1,263	192
Duluth	..	45	8	1	..	46	8
Physical Science	13	705	173	569	104	1,274	277
Duluth	..	27	8	3	..	30	8
Plant and Animal Science	4	412	104	334	60	746	164
Duluth	..	13	2	..	..	13	2
Mayo	..	1	1	1	1	2	2
Social Science	46	1,560	382	840	119	2,400	501
Duluth	..	58	41	..	..	58	41
Other	277	..	..	..	..	..	..
Duluth	9	..	..	..	..	..	..
Twin Cities Total	678	5,193	1,175	3,774	556	8,967	1,731
Duluth Total	14	285	78	4	..	289	78
Mayo Total	544	24	21	3	3	27	24
GRAND TOTAL	1,236	5,502	1,274	3,781	559	9,283	1,833

TABLE III. GEOGRAPHIC ORIGIN OF GRADUATE STUDENTS

1972-73					
	Minnesota	Economic Area	Other U.S.	Foreign	Total
Education and Psychology	1,556	132	461	217	2,366
Duluth	125	2	9	12	148
Health Science	650	101	370	265	1,386
Mayo	236	25	200	121	582
Language, Literature, Arts	646	85	344	141	1,216
Duluth	24	1	2	..	27
Physical Science	567	56	260	407	1,290
Duluth	10	7	6	3	26
Plant and Animal Science	322	58	189	150	719
Duluth	8	..	..	..	8
Mayo	2	1	1	..	4
Social Science	1,136	121	538	420	2,215
Duluth	24	2	5	1	32
Other	142	11	25	39	217
Duluth	1	..	..	..	1
Twin Cities Total	5,019	564	2,187	1,639	9,409
Duluth Total	192	12	22	16	242
Mayo Total	238	26	201	121	586
GRAND TOTAL	5,449	602	2,410	1,776	10,237

1973-74					
	Minnesota	Economic Area	Other U.S.	Foreign	Total
Education and Psychology	1,484	122	498	178	2,282
Duluth	122	3	10	12	147
Health Science	632	92	357	232	1,313
Mayo	222	32	210	104	568
Language, Literature, Arts	660	102	414	114	1,290
Duluth	38	3	4	1	46
Physical Science	607	51	275	354	1,287
Duluth	11	8	8	3	30
Plant and Animal Science	349	66	201	134	750
Duluth	10	1	1	1	13
Mayo	2	..	..	..	2
Social Science	1,322	123	613	388	2,446
Duluth	39	4	9	6	58
Other	165	13	26	73	277
Duluth	8	1	..	..	9
Twin Cities Total	5,219	569	2,384	1,473	9,645
Duluth Total	228	20	32	23	303
Mayo Total	224	32	210	104	570
GRAND TOTAL	5,671	621	2,626	1,600	10,518

Program Development and Review—During the biennium the following degrees were established: a Doctor of Musical Arts (D. M. A.) and an M. A., an M. S., and a Ph. D. in Ancient Studies. In addition, the Plan B master's degree was substantially modified as a result of recommendations made by an ad hoc group under the chairmanship of Professor Edward Griffin of the Department of English. The new arrangement calls for a minimum of 20 credits in the major field and 8 credits in one or more related fields, with a total 44-credit minimum, plus Plan B projects equivalent to 120 hours of effort.

In keeping with its reorganization plans the Graduate School, through its six policy and review committees, began conducting a systematic series of program reviews aimed at a complete examination of all 170 programs over a five- to seven-year period. These reviews took

place during the biennium: mathematics, statistics, computer and information sciences, control sciences, operations research, industrial engineering, philosophy, social work, Spanish, animal science, animal physiology, UMD English, art history, biochemistry, soil science, agricultural education, business education, distributive education, home economics education, industrial education, vocational education, agronomy, plant genetics, anatomy, anthropology, child psychology, microbiology, pharmacology, physiology, Scandinavian, and UMD chemistry. The Scandinavian and anthropology reviews were conducted jointly with the College of Liberal Arts, and it is anticipated that most of the program reviews left in the cycle will evaluate undergraduate and graduate programs simultaneously.

Organization—Governance of the Graduate School is the responsibility of the Office of the Dean and of various faculty and student-faculty committees. Six policy and review committees having student and faculty representatives are organized by general areas of study: education and psychology; health sciences; language, literature, and the arts; physical sciences; plant and animal sciences; and social sciences. The chairmen of these six committees, elected graduate students, and representatives from the dean's office make up the Executive Committee, which shares with the policy and review committees the responsibility for overall policy-making, examination of new degree programs, and modification of existing programs.

Graduate Fellowships—The 1972-74 biennium demonstrated the declining availability of U.S. government fellowships. There were no new awards in either NSF Traineeships or NDEA Title IV Fellowships, and the numbers reported in Table IV are for those awards made prior to but continuing into the 1972-74 biennium. A continuing trend noted during the 1970-72 biennium was for government fellowships to be oriented toward highly specialized areas. As a result of the decline in the number of general purpose fellowships, the Graduate School Fellowship Office received an increasing number of inquiries and requests for assistance from people seeking fellowship support. Substantial efforts were made to locate sources of aid and to disseminate such information widely.

Through the generosity of the Bush Foundation, \$2 million was granted to the University of Minnesota for support of graduate fellowships for four years beginning in fall 1974. Though actual expenditure of funds will not begin until fall 1974, 17 students were chosen in spring 1974 to receive graduate fellowships supported by Bush Foundation funds. Through matching funds provided by the University, 49 additional graduate fellowships were provided. The fundamental objective is to recruit outstanding new students to the University's graduate programs, and by 1975-76 close to 200 fellowships will be available.

During the biennium, the Graduate School continued its program of providing matching support for disadvantaged and minority students. Though modest in amount (\$14,849 in 1972-73 and \$45,985 in 1973-74), the program has been quite successful in increasing the opportunities for graduate study for these students. Support was given to seven students in 1972-73 and 19 in 1973-74.

During the biennium 16 visiting scholars were awarded honorary fellowships. The United States was represented by three fellows, Africa by one, Asia by five, Australia by one, and Europe by six. The Graduate School awarded 18 post-doctoral associate appointments during the 1972-73 academic year and 27 during 1973-74.

In spring 1974 the Graduate School established two new programs to facilitate and enrich contact with other Minnesota public and private colleges. The Visiting Scholar Program provides access to University libraries and auditing privileges for day-school courses to faculty members of other Minnesota colleges who are not studying for an advanced degree. The Teaching Fellows Program is designed to provide opportunities for qualified University graduate students to serve in short-term teaching capacities at other Minnesota colleges. Though established before the end of the biennium, the programs were not publicized early enough for appointments during the biennium.

Graduate Student Activities—The Council of Graduate Students (COGS) was established in spring 1971 as the official college board representing students in the Graduate School. The continuing functions of COGS during the biennium were the election of voting graduate students to serve throughout the committee structure of the Graduate School, and the appointment of graduate students to University-wide committees, including the search

TABLE IV. GRADUATE FELLOWSHIPS AND GRANTS AWARDED, 1972-74

	1972-73	1973-74
Funds Controlled by Outside Sources:		
National Science Foundation		
Graduate	18	11
Traineeships	28	14
National Defense Education Act		
Title IV	75	34
Title VI	18	14
Higher Education Act Title V/EPDA	10	5
Other (Awards to Departments and Colleges; includes Bush Fellowships in Theater)	74	56
National Institutes of Health Predoctoral Fellowships	1	..
Fulbright-Hays Grants	4	5
Woodrow Wilson Dissertation Fellowships	2	7
Danforth Fellowships .....	..	3
University-Controlled Funds:		
Graduate School Fellowships	41	24
Graduate School Special Grants	23	30
Quarterly Tuition Awards	91(+ 20 SS)	90(+ 20 SS)
Foreign Student Tuition Grants	84	84

committees for a University President, a vice president for academic affairs, and a Graduate School dean. A recommendation by COGS to the Senate Consultative Committee that search committee policies include open operating criteria was tentatively adopted pending further deliberations. In 1973, COGS was instrumental in the establishment of the Graduate School Grievance Committee and the Graduate Student Information Program. A COGS delegation testified against cutbacks in teaching assistantships before the state Legislature. In 1974, COGS actively opposed efforts by the Immigration and Naturalization Service to limit work permits for foreign students.

Graduate School Research Center—The Office of Sponsored Programs (OSP) provided major staff support for the University committees that were responsible for the development and implementation of University and federal policies on the protection of human subjects in research. The Animal Services Unit, which was created to comply with federal regulations on the care of animals in research, was located in OSP. Work was also done in concert with the Senate Committee on Research on indirect cost policies. Staff support was provided to the President's office for the Administrative Development Committee, which reviews proposals to be submitted to private foundations. OSP conducted systematic analyses of sponsored programs and their relation to the University. Trend data were provided to administrators and reports to the Board of Regents.

In March 1974 an outside review team visited the campus to study the responsibilities, organization, and operation of OSP. Another outside team reviewed the Research Accounting Office (RAO). Based on earlier discussion and the reports of the two review teams, a proposal was drawn up for the reorganization of OSP and RAO into a single unit, the Office of Research Administration. A Research Development Center is to be formed in the Graduate School, as well as a Research Development Council comprised of research officers from collegiate and campus units and chaired by an associate dean of research in the Graduate School. At the end of this biennium, the reorganization proposal was being circulated to administrative organizations, senate committees, and collegiate deans for comment.

A summary of the allocations made from research funds administered by the Graduate School appears in Table V. During the biennium, projects were supported in the following fields: agriculture (agricultural engineering, agricultural and applied economics, animal science, entomology, food science, forestry, horticultural science, plant pathology, soil science, textiles and clothing), biological sciences (biology, biochemistry, botany, ecology and behavioral biology, genetics and cell biology, zoology), business administration, education

TABLE V. GRADUATE SCHOOL RESEARCH FUNDS, 1972-74

	Appropriation		No. of Grants Made	
	1972-73	1973-74	1972-73	1973-74
General Research	\$216,100	\$216,100	69	70
Overhead Reserve Research	180,000	200,000	9	36
Medical and Cancer Research	250,000	201,428	98	96
Nonmedical Research	13,949	14,759	27	25
NSF Institutional Grant	57,814	50,200	9	..
Biomedical Sciences Support Grant (NIH)	97,886	102,354	18	10
Rockefeller Foundation, Income from Investments and Institutional Allowances from NIH, NSF, NDEA, EPDA, HUD/DOT, and IBM Fellowship Programs	108,242	68,047	86	59
TOTAL	\$923,991	\$852,888	316	296

(child development, counseling and student personnel psychology, educational psychology, elementary education, secondary education, special education, student personnel), science and technology (astronomy; chemistry; civil and mineral engineering; computer, information, and control sciences; electrical engineering; geology and geophysics; physics; statistics), liberal arts (anthropology, art history, classics, economics, geography, history, journalism and mass communication, languages, linguistics, music, political science, psychology, sociology), medical and health sciences, pharmacy, and veterinary medicine. Projects in biochemistry, biology, chemistry, economics, education, English, geography, geology, humanities, philosophy, physics, political science, psychology, and science and mathematics were funded on the Duluth and Morris campuses. Faculty summer research appointments numbered 35 in 1973 and 37 in 1974.

Assignment of Patent Applications, 1972-73

Assignment of Application for Patent, Serial No. 331,592, Richard A. Phillips, Optical Elements Based on the Combination of Ferroelectricity and Circular Birefringence.

Assignment of Application for Patent, Serial No. 283,981, Howard M. Jenkin, Method of Regulating the Growth of Tumorigenic Cells.

Assignment of Application for Patent, Serial No. 298,237, Francis W. Child, Heart Valve.

Assignment of Application for Patent, Serial No. 304,087, Robert Vince, A Simplified Preparation of 6-Substituted-9-[R-(2_R-Hydroxy-3_R-Aminoacyl) Cyclopentyl] Purines.

Assignment of Application for Patent, Serial No. 358,384, Ramon M. Fusaro, Method of Protecting Human Skin from Actinic Radiation.

Assignment of Application for Patent, Serial No. 346,074, E. John Staba, Production of Allergens by Plant Tissue Culture Technique.

Assignment of Application for Patent, Serial No. 363,095, Henry Tsuchiya, Bacterial Leaching of Copper, Nickel, and Cobalt.

Assignment of Application for Patent, Serial No. 358,100, William B. Rathbun, Poison Ivy and Poison Oak Treatment.

Assignment of Application for Patent, Serial No. 357,105, Chih C. Hsiao, In-Line Production Control of Polymeric Film.

Assignment of Application for Patent, Serial No. 367,640, Leslie C. Olson, Sterile Surgical Cord and Tube Retractor.

Patents Received, 1972-73

British Patent No. 1,292,320, Robert L. Kaster, Pivoting Disc Heart Valve.

U.S. Patent No. 3,731,681, Perry L. Blackshear, Implantable Infusion Pump.

U.S. Patent No. 3,710,789, Robert A. Ersek, Fracture Repair System.

Italian Patent No. 928,149, Perry L. Blackshear, Implantable Infusion Pump.

Swiss Patent No. 528,905, Perry L. Blackshear, Implantable Infusion Pump.

U.S. Patent No. 3,737,919, Francis W. Child, Heart Valve.

French Patent No. 7,209,234, Francis W. Child, Heart Valve.

West German Certificate of Registration No. 7,209,905, Francis W. Child, Heart Valve.

Assignment of Patent Applications, 1973-74

Assignment of Application for Patent, Serial No. 459,391, Rodney L. Bleifuss, High Temperature Direct Reduction Process for Iron Ore Agglomerates.

Assignment of Application for Patent, Serial No. 420,444; John Rosenau, Process for Production of Dairy-Based Cheese Food.

Assignment of Application for Patent, Serial No. 436,857, Frank D. Dorman, Cannula.

Assignment of Application for Canadian Patent, Serial No. 199,791, Henry Tsuchiya, Bacterial Leaching of Copper, Nickel, and Cobalt.

Assignment of Application for Australian Patent, Serial No. 68,976, Henry Tsuchiya, Bacterial Leaching of Copper, Nickel, and Cobalt.

Assignment of Application for South African Patent, Serial No. 74/2879, Henry Tsuchiya, Bacterial Leaching of Copper, Nickel, and Cobalt.

Assignment of Application for Japanese Patent, Serial No. 58350/1974, Henry Tsuchiya, Bacterial Leaching of Copper, Nickel, and Cobalt.

Assignment of Application for Australian Patent, Serial No. 68741/74, Ramon M. Fusaro, Method of Protecting Human Skin from Actinic Radiation.

Assignment of Application for British Patent, Serial No. 20090/74, Ramon M. Fusaro, Method of Protecting Human Skin from Actinic Radiation.

Assignment of Application for Patent, Serial No. 474,941, Benjamin Y. H. Liu, Solar Heat Collector.

Patents Received, 1973-74

U.S. Patent No. 3,760,812, Gerald W. Timm, Implantable Spiral Wound Stimulation Electrodes.

Canadian Patent No. 946,696, Perry L. Blackshear, Implantable Infusion Pump.

British Patent No. 1,345,764, Perry L. Blackshear, Implantable Infusion Pump.

Canadian Patent No. 950,690, Henry Tsuchiya, Process for Recovering Nickel from Nickel Ores (Oil).

Mayo Graduate School of Medicine—During the biennium nine Ph.D. degrees and 24 M.S. degrees were awarded to Mayo graduate students. Mayo faculty increased to 618.

Increasing individual fellowship stipends in each of the past two calendar years resulted in expenditures of \$7.5 million in 1973 and \$7.9 million in 1974 in support of an average of 650 Mayo Graduate School of Medicine appointees in graduate study. Extramural grants for educational programs, mostly from the National Institutes of Health, totaled \$548,823 in 1973 and \$594,541 in 1974.

Hormel Institute—Although basic support for the institute is provided by the Hormel Foundation, some additional support was received from the Minnesota Legislature during 1973-74. The annual budget is now about \$1.4 million, three fourths of which is obtained as research grants. The institute employed approximately 95 employees, including about 15 part-time student employees from Austin Community College, during the 1972-74 biennium. It gave specialized lipid training to 12-15 post-doctoral students.

The institute continued its coordinated investigations of the chemical and biological properties of lipids and of the biosynthesis, metabolism, and functions of lipids in living systems in both normal and diseased states. These programs were supplemented by research on the analysis, synthesis, and physical properties of lipids. One new project involved research on the effect of pesticides on lipid enzymes.

Water Resources Research Center—Expenditures from federal funds for the biennium were \$369,694 for the 1973 fiscal year and \$239,767 for the 1974 fiscal year. The center financed 23 research projects involving 25 faculty members with funds from the Office of Water Resources Research, U.S. Department of the Interior. Student research assistantships numbered 51 in 1972-73 and 49 in 1973-74. The research projects included two in agricultural economics, two in biology, five in engineering, one in forestry, one in geography, one in hydrology, three in limnology, one in medicine, one in pharmacy, one in public health, two in

sociology, two in soil, and one in water resources. The center sponsored research projects at Bemidji and St. Cloud State Colleges and Gustavus Adolphus College, as well as at the Duluth and Twin Cities campuses of the University.

Space Science Center—The center, which previously had reported administratively to the vice president for academic administration, was transferred to the Graduate School in July 1973. Dr. William G. Shepherd has been appointed director of the center and will assume this position in July 1974.

While support of research generally has declined during the past two years, the overall volume of research in the Space Science Center has remained relatively uniform. Several new activities were initiated during the biennium and the center now accommodates the research efforts of about 180 individuals involved in a broad spectrum of research projects, many of which will be described in this report. Research support facilities that were described in the previous *Biennial Report* were expanded to include Data Reduction Facilities.

Bio-Engineering—Biomedical-engineering research during the biennium was concerned primarily with the physical properties of blood cells and their deformability as a function of applied stress. Other projects included methods of analyzing jaw function and preparatory techniques of biological material for SEM and TEM examination.

Bronchial Flow—Experimental studies of flow in a model of the human bronchial tree were carried out to determine the interdependence between flows from different regions of the lung due to the converging flow paths in the bronchial tree.

Control Science—The two main research projects in this area were the development of controller design techniques for generalized dynamical systems and the control of large flexible aircraft. The goal of the second study was to provide controller synthesis techniques that could be used to reconfigure the vehicle when the control system capability was increased. Other projects had to do with the design of a multivariable controller for time-delay systems using frequency domain techniques, and a vehicle headway control scheme for a personalized rapid transit system.

Earth Resources Technology Satellite (ERTS)—The NASA-supported ERTS program has resulted in successful applications of remotely sensed images to ecological and environmental problems in Minnesota, including the rezoning of land for watershed recharge; the effects of currents, wind, and thermal movements on intakes for local drinking water; and the least damaging sites for the dumping of harbor dredgings. Other ERTS projects have included efforts to improve the knowledge of winter snow cover in major watersheds needed for the prediction of spring runoff, to improve detection and control of forest diseases and the classification and management of forest vegetation, to analyze crop productivity and soil deficiencies, and to evaluate water quality indicators.

Elemental Loss During Electron Beam Irradiation—Ultrahigh vacuum mass spectrometry of elements desorbed from frozen hydrated thin sections of biological materials and polymers during electron beam irradiation was performed.

Elemental Microanalysis of Biological Materials—Subcellular regions of biological materials have been analyzed for elemental distribution using scanning transmission electron microscopy and x-ray energy selective spectroscopy. Muscle, erythrocyte, liver, and sperm subcellular distributions have been made. Studies of normal and sickled cell erythrocytes are also in progress.

Environmental Sterilization—Ongoing research in the Environmental Sterilization Laboratory during the biennium included three important projects. The study of the dry heat resistance of microorganisms was continued. Another project has been to compile basic data on microbial spores that can be used as biological indicators and on the performance of these spores in biological indicator systems. In the third project, material developed for the design of low-acid canned-food sterilization processes will be used to evaluate commercial sterilization processes.

Fire Prevention and Fire Safety Standards Associated with Fault Arcs in Cables—This research project was initiated to establish realistic fire safety standards for cable insulation, and its results should have a strong impact on the rating of arc-proof insulation materials.

Geomagnetic Fields—Three major research projects have been pursued during the biennium: Explorer 45 satellite studies of the inner magnetosphere, sounding rocket investigation

of auroral currents, and micropulsation investigations at Siple Station in the Antarctic. A number of scientific papers describing data compiled from these projects have been published.

Interactive Computer Graphics—The activities of computer and information science faculty and graduate students in the center consisted primarily of research on and applications of interactive computer graphics. One system has been developed for efficiently solving a variety of two-dimensional boundary value problems on general domains. Other research has resulted in an improved hidden-line algorithm for the graphical display of three-dimensional objects, and a more flexible and efficient computer graphics language, APLG. Both of these developments can be used to improve existing and new computer-aided design programs.

Laser-Doppler Measurement—Several thesis and contract studies concerning laser-Doppler measurement were undertaken during the biennium. Two-dimensional velocity measurements were taken in Taylor cells present in a large vertical annulus. Other measurements were taken of the velocity distribution in simulated blood. Laser-Doppler optics were also used to enhance the measurement of blood flow near a solid surface. Other activities included the development of a Bragg cell to shift the frequency of a laser beam to enable flow measurement near zero velocity, and of instrumentation for measurement of the output of a laser-Doppler system.

Laser Technology—Two main projects in laser technology are being investigated. One project, on mode locking and pulse propagation, is concerned with the basic mechanisms of self-locking in lasers and the pulse propagation characteristics of the resonant gain medium. Mode locking in lasers is of vital concern for pulse-code optical communications and for other laser technology. The other study was on optically induced gratings in solids and liquids.

Lunar Soil Analysis—Analysis of lunar material returned by the Apollo missions continued. Two lunar analysis groups have conducted trace-element and isotopic analyses to determine the irradiation history, age, and origin of the lunar surface. Using a specially designed mass spectrometer, one group has detected and measured an abundance of rare gases in the lunar material, probably derived from the solar wind. The second group has concentrated on radioactive dating to establish the ages of various lunar soil samples.

Microelectronics—The Electrical Engineering Laboratory has been used for fabricating monolithic integrated circuits and discrete semiconductor devices. Facilities for the initial and final portions of this process sequence have been located in the Space Science Center laboratories. Project subjects have included the Gunn effect, surface wave and new bipolar transistor devices, metal-semiconductor contacts, and such circuit topics as active filters. Collaborative work with seven industrial firms also took place in the biennium.

Oxide Crystal Defects—Research was performed on alkaline earth oxide single crystals, with the intent of understanding the nature of point defects and elucidating their role in providing atomic diffusion and conduction of electricity. Work also began on the structure of surfaces of alkaline earth oxides.

Solar Energy Systems—A means of energy storage to bridge periods of no sunshine has been under investigation. The concept involves the bubbling of steam produced in a field of solar collectors into a tank of pressurized water. This heat transfer process is being evaluated by means of high-speed photography. Studies are also being done in an experimental facility on thermal insulation for solar energy devices.

Stellar Proper Motion—A survey of stellar proper motion was undertaken with the automated-computerized measuring machine built by Control Data Corporation with funds provided by NASA and NSF. Virtually all available Palomar photographic plate data has now been analyzed and processed and motions have been determined for some 300,000 stars. The data contained on magnetic tape are now being prepared for submission to the NASA Data Center in Greenbelt, Md. Detailed information on 26,000 stars with larger motions has been published in 10 publications. In addition, a monograph giving data for 7,000 stars near the South Galactic Pole has been issued.

Temperature and Concentration Distributions in Combustion Gases—Removal of harmful pollutants from combustion gases requires new methods for determining their origin and concentration. A double-probe system, developed and tested in a premixed sodium-seeded propane-air flame, has proved adequate for spectrometric temperature and concentration

measurements in combustion gases, regardless of their configuration, as long as regions of steep gradients are excluded.

Terrestrial and Lunar Paleomagnetism—Further study of the paleointensities and rock magnetic properties of lunar samples took place. Rock magnetic and petrologic properties of ophiolitic rocks from Marquarie Island have been studied providing important information about the oceanic crust responsible for the marine magnetic anomalies. The paleomagnetic signature of Minnesota lake sediments during the last 20,000 years is under study to determine the behavior of the geomagnetic field and possibly to provide magnetic stratigraphic markers for this geographic region. The magnetic properties of the copper-nickel sulfide minerals have been under study for the Mineral Resources Research Center. An extremely sensitive superconducting magnetometer has been purchased to measure very weakly magnetized lunar and terrestrial samples.

Transport Phenomena in Biological Systems—Studies have been conducted on solute transport and blood damage phenomena as they relate to the development of blood oxygenation devices, to the initiation of atherosclerosis, and to the investigation of blood disease.

Ultramicrowave Radiation and Semiconductor Free-Carrier Plasma—Investigations of the bulk nonlinear effects in semiconducting materials at millimeter wavelengths have been carried out and have demonstrated the bulk harmonic generation of electromagnetic waves at four millimeter wavelengths. Such work has applications in the fields of ultramicrowave communications, radio astronomy, radiometry, and radar.

Upper Atmosphere Composition—The Atmosphere Explorer-C earth satellite launched December 16, 1973, carries a mass spectrometer designed and built at the University of Minnesota. The instrument measures on a global basis the concentration in the thermosphere of neutral constituents of the atmosphere, including chemically active constituents such as atomic oxygen. A data terminal connected directly to the main computer at Goddard Space Flight Center permits a rapid reduction of data.

Other Projects—Other ongoing research during the biennium has included studies of fin and tube heat exchanger configurations, a project on the fluid mechanics of sound production in certain discrete frequency sound generating devices, investigations of fluid flow through porous media, and experiments to determine the heat transfer coefficients associated with the impingement of jets on surfaces and those of a turbulent flow of air in a porous-walled tube. Research on the laser diffraction of polymers, on nucleation and growth of thin solid films, and on secondary flows in corrugated-walled ducts has also been conducted. Another study was on the transport coefficients for varying molecular species, as a function of membrane structure, temperature, and pressure. Research projects undertaken by the Center for the Study of the Physical Environment are described within the report of the Institute of Technology.

OFFICE OF INTERNATIONAL PROGRAMS

William E. Wright, *Associate to the Vice President*

Change and Development—Since it is increasingly difficult to obtain sponsorship, either governmental or private, the Office of International Programs (OIP) continued to encourage participation in interinstitutional programs of organizations such as the Midwest Universities Consortium for International Activities (MUCIA) and the Organization for Tropical Studies (OTS). Such organizations enable the participating universities to pool their financial resources, as well as their educational strengths, for the benefit of all.

Faculty members were active on MUCIA project advisory committees and approximately 12 faculty members served as advisers on MUCIA overseas projects during the biennium. In the summer of 1973 MUCIA formed a linkage with Haile Sellassie I University (HSIU) in Ethiopia, which will provide for a wide range of activities including staff and program development, the exchange of professors and students, collaborative research, and the sharing of publications and other data. Through personal service agreements, two University faculty members were among the first faculty from MUCIA institutions to be assigned to serve as temporary staff at HSIU. Another faculty member is the chairman of the MUCIA HSIU Advisory Committee, which is concerned with the development of activities with HSIU. Several other faculty members have served as resident staff members on other MUCIA

overseas projects. Two were regular staff members on the MUCIA Indonesian Agricultural Higher Education Project, one was the resident director on the MUCIA higher education project in Korea, and another has been the deputy project administrator and resident director of the MUCIA Indonesian Agricultural Higher Education Project since June 1973. In addition, MUCIA has awarded 11 grants to the University to support activities, including council efforts and student and faculty research. During the biennium, Dr. Wright, who serves as the University's MUCIA liaison officer, served as secretary of the consortium. He is now vice president of the MUCIA Board of Directors. Dr. Wright also serves as a member of the OTS Board of Directors and the Executive Committee of the Board of Directors. In January 1974 he was elected to a one-year term as treasurer of the organization.

During February 1974, Dr. Enrique d'Etigny, pro-rector of the University of Chile at Santiago, and Dr. Douglass Escobar, director of international relations at the University of Chile, visited the University of Minnesota to discuss areas of mutual interest and possible programs that would give effect to the *convenio* that the University of Minnesota has with the University of Chile at Santiago.

The \$1.25 million Ford Foundation grant to the University to strengthen international development was officially terminated on September 30, 1972. A final report, which summarized the growth of international activities supported by the grant, was published in September 1973.

Some reorganizing was done by the Office of International Programs during the biennium. In June 1974, outside funds were no longer available to support the position of programs manager, so the duties of the programs manager were combined with those of the administrative assistant. Along with a reorganization of the secretarial staff, the principal secretary position was changed to an executive secretary position and a receptionist position was added.

Campus-Based Activities

Center for Comparative Studies in Technological Development and Social Change—The center has undertaken two kinds of research projects: (1) field research and (2) investigation aimed at the development of rigorous theory. While considerable interactions take place among those who are involved in the two kinds of research, it is convenient to describe them separately.

The field research has been centered in India and Mexico. The intent has always been to develop multipurpose field research sites that would accommodate a number of separate but interrelated projects, and to involve scholars and research institutions in the host countries as full partners in the research. The center has had full success with the policy only in Mexico where multipurpose research sites have been developed in the states of Hidalgo and Michoacan and where a very fruitful collaboration has developed with the Instituto Mexicano de Estudios Sociales. Similar attempts in India were unsuccessful because of the Bangladesh War and the rapid deterioration of American-Indian relations.

In the town of Zacapu in the state of Michoacan in Mexico, anthropologists are studying the social origins of factory workers and the strategies they employ to adapt to an increasingly urbanized life. Also being investigated are the impacts of the factory and of the town on the surrounding villages. Studies of the dynamics of migration in the area indicate an astonishing degree of geographic and social mobility.

In the same region, sociologists from the University have developed a board game called SIMCAR (Simulation of Career Patterns), which simulates occupational, educational, marriage, religious, and consumption decisions typically made for and by people from the age of 12 to early adulthood. This game was played with all families in a sample made up of white- and blue-collar families from the industrial town of Zacapu and from four surrounding villages. The game was also conducted with a sample of Minnesota families, drawn to include white- and blue-collar occupations and Lutheran and Catholic church membership. The aim was to determine whether American society is entering a new period of post-industrialism that is giving rise to new values, new life styles, and new forms of social organization. Are there, in fact, significant differences between emerging post-industrial societies in the United States and other developing nations? If so, are these differences attributable to the greater affluence in the United States or do they reflect changes that are far more profound? The preliminary findings showed a greater emphasis on material success among the Mexican than among the Minnesota families, reflected in such things as delaying marriages and having children,

achieving higher paying occupations, saving more money, and choosing alternatives such as moving to another town at some initial expense in order to get a better paying position. To state it bluntly, the Mexican from a traditional rural setting acted more like the stereotype of the calculating, rational, Protestant, middle-western American than did the Protestant, middle-western American.

The theoretical research conducted at the center on "The Analysis of Complex Systems" was aimed at beginning the development of cybernetic models of government and society and their relationships. The best means of accomplishing this goal were: (1) to adapt existing and develop new techniques for modeling dynamic, nonlinear social processes; (2) to adapt and extend the mathematics of control theory and automata theory so that they can be used in the modeling of dynamic social processes, particularly where goal-seeking behavior is explicitly involved; (3) to adapt and integrate relevant aspects of the economic theory of adjustment mechanisms and the theory of hierarchical control systems in order to prove a strong mathematical base appropriate for modeling governmental organizations as control units; and (4) to incorporate the process of goal setting directly into the control theoretic model of social systems through the formal analysis of voting and representative systems. Since no single discipline has the substantive knowledge and methodology required to develop the scientific base needed to understand the complex systems, the center assembled a group of scholars from economics, electrical engineering, mathematics, control science, sociology, and political science to work on the problem. To supplement the formal concept of the problem, the urban simulation model developed by Crecine at the University of Michigan has been adjusted to the Twin Cities metropolitan area. Experiments are now being conducted with the design of governmental structures to fit with this simulation model.

Economic Development Center—The center received a five-year grant of \$800,000 in July 1970 from the U. S. Agency for International Development (AID) to strengthen research and teaching of policy problems in agricultural development. During the biennium, it enabled the center to further expand its research program, broaden graduate studies in economic development, and support new faculty positions in economics and in agricultural and applied economics.

The center continued to receive support from the Rockefeller Foundation for two companion research projects on agricultural growth in Japan and Minnesota. The foundation also provided support for strengthening graduate teaching and research programs in the area of economic demography.

Three visiting professors from India, Israel, and France taught and conducted research here during the biennium. Three faculty-student workshops on issues of development were continued.

Significant publications of the center included 2 books, 5 papers in a reprint series, 1 bulletin in a bulletin series, 34 staff papers, and 14 Ph. D. theses, as well as *Annual Reports* published in 1973 and 1974.

Center for Population Studies—During the biennium, the center received several grants to support new projects. In 1972, it received a \$3 million grant from AID to coordinate the three-year international "Program for Applied Research and Fertility Regulation." Dr. Harry Foreman, director of the center, serves as assistant project director of the program, which provides grants to U. S. and foreign institutions for applied research projects in new or improved means of fertility control in developing nations. A one-year \$120,000 grant from MUCIA supported Dr. Robert Kennedy's research on "The Use of Census Data for Policy Decisions in Venezuela Relating to Family and Fertility." The grant was funded by the U. S. Bureau of Census and AID. A two-year \$150,000 grant from AID enabled Dr. Foreman to conduct research with Dr. T. Okagakai on "The Acceptability and Use of Condoms" in the U. S. and Japan. The center has also continued to coordinate the clinic testing of the copper-seven intrauterine device for Searle and Company.

Other center activities included the sponsorship of a seminar entitled "The Medical Aspects of Fertility Control," which was attended by approximately 200 physicians, nurses, and others concerned with family planning in the surrounding five-state region. The center, along with the International Studies Center at Hamline University, also sponsored a conference on population growth and world food supply. It featured speakers from the State Department, AID, and the Food and Agriculture Organization. Dr. Foreman was a principal

speaker at the First All-African Medical Students Conference on Population held in Igbo-Ora, Nigeria, and Dr. Kennedy presented a paper entitled "Linkages Between Female Educational Status and Fertility in Venezuela" at the Population Association of America annual meeting.

A number of materials were published during the biennium. A book by Dr. Kennedy entitled *The Irish: Immigration, Marriage, and Fertility* was published in 1973 by the University of California Press. An article by Dr. Kennedy entitled "Minority Group Status and Fertility—The Irish" was published in the February 1973 issue of *The American Sociological Review*. He also contributed an article, "Population," to the *Encyclopedia Americana Annual 1974*, and wrote a chapter, "The Minority Report: The Irish Americans," for a book. Dr. Foreman wrote an article entitled "Clinical Experiences With the Copper Seven Intrauterine Device," which was published in the May 1973 issue of *Minnesota Medicine*. A paper entitled "The Role of Student Activism in Population Control" by Dr. Foreman was published in the *Proceedings of the First All-African Medical Students Conference on Population*. Dr. Foreman, along with I. L. Reiss and A. Banwart, wrote a paper on "Pre-Marital Contraception Usage: A Study and Some Theoretical Observations," which was published in *The Journal of Marriage and the Family*. As a result of research sponsored by the center, Henry C. Chang wrote a paper entitled "Taiwan Demography: A Selected and Noted Bibliography of Governmental Documents."

Small Grants Program—During the biennium, the Office of International Programs awarded a total of 50 grants to faculty members for internationally oriented research through the Small Grants Research Program: 28 proposals in the 1972-73 academic year and 22 in 1973-74. In April 1974, the Office of International Programs announced awards for 16 proposals for the 1974-75 academic year.

Other Activities—Three foreign scholars came to the University through the International Research and Exchanges Board (IREX). During the 1972-73 academic year, Russian scholar Vladimir Pustovalov, senior lecturer in turbo-engines at Kharkov Polytechnical Institute, conducted research on problems of heat transfer in gas turbines. During the 1973-74 academic year, Dr. Petr Vavrin, assistant lecturer at the Technical University, Brno, Czechoslovakia, conducted research on hybrid computers, and Dr. Aljoz Kubek, assistant professor at the Agriculture University, Nitra, Czechoslovakia, studied the breeding and selection of farm animals. IREX, through its Short-Term Exchange Program for Professors and Instructors, also sponsored the two-week visit of Soviet scholar Yuri D. Diadkin, head of the Department of Metal Mining and Mining Thermal Physics at the Leningrad Mining Institute, in fall 1972. Dr. Diadkin presented seminars to the Department of Civil and Mineral Engineering and to the U.S. Bureau of Mines during his stay.

Student Overseas Study Programs—Interest and activity have continued to grow in the area of international education and overseas study programs. In order to provide more assistance to students planning overseas study programs, OIP added a part-time research assistant to the staff in December 1972. The research assistant's main responsibilities are to counsel students on available programs and to work with other departments on the development, administration, and promotion of overseas study programs. To provide basic information to students on overseas study programs and the resource centers on campus, OIP published a handbook entitled "Guide to Overseas Study Opportunities Through the University of Minnesota" in summer 1973.

During the biennium, a new Hungarian exchange program was negotiated and put into effect by the Office of International Programs and the Institute of Cultural Relations in Budapest, Hungary. The first three University students to participate in the program began study in Hungary in July 1973 and continued through the 1973-74 academic year. In June 1973, a student from Hungary began work on a 15-month master's degree program in the teaching of English as a second language at the University of Minnesota. The second student from Hungary to participate in the exchange was expected to enroll in the Teaching of English as a Second Language Program at the University in June 1974, but has been delayed until winter quarter 1975. Although the program is negotiated on an annual basis, it is expected to continue indefinitely.

OIP has continued to encourage participation by University students in programs sponsored and arranged by various consortia of which the University is a member. Consortium programs allow students to take advantage of teaching facilities and field opportunities that

would be beyond the means of any single institution. Some of the programs in which University students enrolled were the Council on International Educational Exchange overseas language and teacher programs, the OTS Summer Tropical Biology Course, the Committee on Institutional Cooperation overseas study programs, and programs in Costa Rica, England, and Italy sponsored by a new consortium for overseas study consisting of the Universities of Kansas, Colorado, Nebraska, and Minnesota. In addition, several University graduate students studied in Eastern Europe and the Soviet Union under the IREX exchange program.

Other Overseas-Based Programs—Projects in Tunisia and Morocco were continued. For details, see the Office of International Agricultural Programs report.

Requirements for Future Development—Increased support for international programs will be needed as current grant funds decrease. One very important program that is being affected by the decline in grant money is the Small Grant Research Program, which was initially funded by a 1964 Ford Foundation grant. The number and size of grants awarded through the program have declined in the past two years. This program, which has made possible important faculty research in the international area, will need new sources of funds if it is to continue. New sources of funding will also have to be found if the University is to continue to bring visiting scholars to campus and participate in faculty exchange programs. Additional support money is also needed in the area of overseas study programs to provide scholarships for students who would otherwise be denied the overseas study opportunity, to provide more overseas study counseling services to students, and to disseminate more information on overseas study opportunities to students through publications and promotional materials.

LAW SCHOOL

Carl A. Auerbach, *Dean*

Enrollment—The unprecedented interest in legal education continued, with 1,776 applicants for the class entering in September 1972, and 1,276 in September 1973. Because of space limitations, it was possible to accept only approximately 250 each year. In fall 1972, 749 students were enrolled in the Law School; in fall 1973 enrollment totaled 710. The existing law building, Fraser Hall, was designed for only 450 students and total enrollment should be limited to approximately 700.

The decline in the number of applications for admission from 1972 to 1973 did not reflect a lessening of demand for legal education in Minnesota; it reflected the fact that it is becoming more and more difficult to gain admission to the Law School. Applicants are applying—and paying application fees—only to those law schools to which they think they have a good chance of being admitted.

The total number of persons who took the Law School Admission Test increased, nationally, from 119,694 in 1972 to 121,262 in 1973. Total enrollment in the 150 American Bar Association-approved law schools increased from 101,707 in fall 1972 to 106,102 in fall 1973. For the first time, in 1973, there was not a single "unfilled seat" in the first-year class of any approved law school in the nation.

The University Law School's share of the total enrollment in Minnesota law schools has declined from 60 percent in 1964 to 41 percent at the end of the biennium. Its share of the total first-year enrollment went from 60 percent in 1964 to 34 percent at the end of the biennium.

The number of women students in the Law School continued to grow dramatically during the biennium. In fall 1972 there were 81 women, or 10.8 percent, enrolled. In fall 1973, the number increased to 106 and the percentage to 14.9. In fall 1972, 29 minority students, or 3.9 percent, were enrolled. In fall 1973, the number increased to 45, or 6.3 percent.

Faculty—At the close of the biennium there were 26 full-time teaching faculty members. In addition, two nonregular associate professors and two nonregular instructors were working full-time in the school's clinical programs.

Three professors retired: William B. Lockhart, who was also dean of the Law School for 16 years; Stanley B. Kinyon, who completed 40 years of service in the school; and Bruno H. Greene, who was also director of the Law Library for 13 years. Their contributions as teachers and scholars will be missed.

Professors James L. Hetland, Jr., David L. Graven, and Joseph Livermore resigned to take other positions. Professor Glen O. Robinson was granted a two-year leave of absence to become a member of the Federal Communications Commission. Professor Allan H. McCoid died.

Due to these events and the inability to fill previous vacancies, seven faculty positions remained vacant at the close of the biennium.

Facilities—The problem that continued to plague the Law School was the obsolete building in which it is housed. It not only sharply limited the enrollment, but had a serious negative impact on recruitment of new faculty. Equally important was the fact that physical limitations continued to frustrate the faculty's educational plans.

The entire Law School community—students, staff, and faculty—was greatly heartened when the 1974 Legislature recognized the need for a new law building and authorized \$400,000 to be spent for the preparation of working drawings for a building costing \$10 million to construct, exclusive of site work, equipment, and furnishings.

Curriculum—A number of curricular changes were introduced to permit students to take one or two elective courses during the first year.

Under the leadership of Visiting Law Alumni Professor Robert E. Keeton of Harvard and Professor Roger Park, the Law School pioneered in the use of the computer as a teaching technique. In 1973-74, Professor Park prepared several computer-programmed exercises in the fields of civil procedure, evidence, and professional responsibility to supplement the students' classroom experience. These exercises require the student to play the role of lawyer or judge, and to indicate to the computer what he would do in situations arising during the course of a trial. For example, the computer prints out a transcript of trial testimony. As a trial lawyer, the student is asked to decide whether to object to a particular question put to a witness. Later, as the judge, the student is asked to rule on the objection and justify the ruling. If the student gives the wrong reason for sustaining an objection, the computer explains why it is wrong and the student tries again. At the end of the exercise, the student receives a score. The instructor receives a print-out pinpointing the areas in which students encountered the most difficulty, and classroom time can concentrate on these areas.

Computer-assisted instruction does not replace the professor, the need for classroom instruction, or the discussion and problem-solving methods of instruction. It makes such instruction more efficient and enables each student to engage in a dialogue, via the computer, with the professor.

Professor Park's exercises are being used by law professors at Harvard, Yale, Illinois, Temple, and Iowa. Meade Data Corporations, which market the LEXIS research system, are currently exploring the possibility of using the exercises for the continuing education of the lawyers in its own offices.

An \$8,000 grant from the Council on Legal Education for Professional Responsibility paid for the development of the exercises. Advice and programming assistance were furnished by Dr. Russell Burris, director of the University's Consulting Group on Instructional Design. The cost of student use of the computer terminals for these exercises, including amortized capital costs, is approximately 82 cents per hour, or 41 cents per hour when two students do a program together.

Clinical Programs—The Law School also continues to maintain a position of leadership in clinical legal education. During fall quarter 1974, 104 students were involved in at least one clinical program.

Three clinical programs were continued during the biennium. The misdemeanor clinical course is designed to acquaint law students with the legal, practical, and ethical problems involved in defending and prosecuting criminal cases by working under the immediate supervision of a member of the county defender's or local prosecutor's staff.

The civil clinical course is intended to prepare students for the general practice of law. Each student, under faculty supervision, handles six to eight cases a quarter involving domestic relations, landlord-tenant problems, contracts, consumer protection, debtor-creditor problems, and negligence actions.

In the clinical appellate brief-writing seminar students assist in writing briefs for cases referred by the state attorney general, county attorneys, and the state public defender. Each

student's mock Supreme Court argument, based on the brief, is criticized and video-taped for self-evaluation.

During the biennium, the Legal Assistance to Minnesota Prisoners (LAMP) program was added to the clinical curriculum. Students enrolled in the program gained practical experience in providing civil legal services to adult inmates of the Minnesota Department of Corrections and the Hennepin County Workhouse. They also helped to develop procedures for the handling of prison disciplinary proceedings and prisoners' grievances.

This program was entirely supported with funds from the federal Law Enforcement Assistance Act. On May 1, 1974, the Minnesota Legislature appropriated sufficient funds to the state public defender to continue LAMP until June 30, 1975. The project has been recognized by the inmates, correction officials, and judges as a valuable addition to the correctional process.

A grant from the Council on Legal Education for Professional Responsibility enabled the Law School to participate in the legal training of students in the General College's legal paraprofessional program and to develop the clinical component of that program. The paralegal students work with law students in the clinical misdemeanor and civil programs. In the misdemeanor program, they conduct interviews and prepare cases for trial. Senior law students, or their supervisors, make the actual court appearances.

The civil program attempts to give the paralegal student the essentials of domestic relations law and experience in handling a case in which a marriage is dissolved because of the default of one of the parties. The student conducts interviews, prepares pleadings, and transmits to the client the advice given by the supervising faculty member.

The Law School is eager to diversify the clinical programs offered to students within the limits of available resources. It regards the addition of clinical components to traditional courses as particularly valuable. The most significant clinical program added during the biennium was a juvenile law clinical seminar. Students enrolled in the seminar were given the opportunity, under appropriate supervision, to defend juveniles in the Hennepin County Juvenile Court. Students not only developed practical skills, but they also gained first-hand knowledge, allowing them to assess the existing system of juvenile justice.

In connection with a basic course on income taxation, students have volunteered to provide federal and state income tax advice, under supervision, to senior citizens and others asking for such assistance from the Minneapolis mayor's office. The students first attended a general training session conducted in cooperation with the Internal Revenue Service. Students in a clinical antitrust seminar worked with the state assistant attorney general on the enforcement of antitrust laws.

Research—During the biennium, Professor Robert J. Levy, with the assistance of Julie A. Fulton, a Ph. D. degree candidate in sociology, neared completion of the long-range study "Divorce and Custody Adjudication." The project was funded with a \$70,000 Ford Foundation grant, a \$33,000 National Science Foundation grant, and a \$49,000 HEW grant.

The project studied divorced parents and their children in three urban and two rural Minnesota counties (Hennepin, Ramsey, Anoka, Steele, and Kandiyohi). The goal of the study was to see what happened when parents decided to divorce by determining how parents arranged for custody of the children when the decision was made consensually without court or agency intervention; by examining intervention in the divorce process and, particularly, the roles of lawyers, social workers attached to the court, and judges in determining post-divorce custody of the children; by assessing the extent to which intervention increased or decreased the likelihood of contest, and the impact of contest on the post-divorce adjustment of the family; by evaluating the quality of custody reports made to the court by adjunct social agencies; and by analyzing how the terms of the divorce decree (custody, support, visitation, etc.) affected the child's subsequent adjustment, as assessed by parents. Preliminary results of the research project should be available in summer 1975.

An empirical study of the system of probate administration was begun in 1971 by Professor Robert A. Stein with a \$17,000 grant from the Ford Foundation. The study proceeded with \$9,000 in financial support from the University, and \$44,000 from the American Bar Foundation. Stein will analyze the roles of the probate court, personal representative, attorney, appraiser, bond surety company, and federal and state tax authorities; evaluate the system's effectiveness in facilitating transfers of wealth at death; and determine the financial costs of the

probate administration process and the length of time required by the process in a variety of situations.

Using the Minnesota study as a model, Professor Stein planned a study of the same processes in a number of other states. The American Bar Foundation and the Council of the American Bar Association's Section of Real Property, Probate, and Trust Law have indicated great interest in financing the multi-jurisdiction study, which aims to respond to Chief Justice Warren E. Burger's call to American lawyers to make the probate process "as simple and inexpensive as can be done."

In January 1968, the Minnesota Association of Juvenile Court Judges, representing the 85 juvenile courts outside of Hennepin and Ramsey counties, retained Professor Donald Marshall to develop uniform rules of procedure and a set of integrated forms to govern juvenile proceedings. The adoption of the rules by the Judges' Association in 1969 created, at least in theory, a uniform procedural system for all out-state juvenile courts, based on the principle of maximum procedural protection for the child.

In 1970, Professor Marshall undertook a study to see whether procedural reform in theory had resulted in procedural reform in fact. The overall purpose was to ascertain the extent to which the courts were complying with the new rules and to identify factors that produced noncompliance. A primary subsidiary purpose was to develop ways for achieving maximum implementation of the new procedures and of any similar efforts at reform. The study was funded by \$77,000 in grants from the Ford Foundation and supplementary grants of \$34,100 from the Minnesota Crime Commission. The study was nearing completion at the end of the biennium.

The Law Alumni Association made available \$21,000 for faculty research projects in the summers of 1972 and 1973. In 1974, Elsie L. Fesler of St. Paul pledged \$5,000 a year for the establishment and support of the John K. Fesler Research Fellowship. The faculty are grateful for this generous act, which will further scholarship in the Law School.

No funds are allocated by the Legislature or the University specially for legal research. Law faculty must compete with the rest of the University's faculty for the limited research funds of the Graduate School. During the biennium, the Graduate School granted law faculty members a total of \$9,800 for research. This, plus the \$9,000 for Professor Stein's project, represents the total invested by the state in legal research—a very small portion of the total amount of research funds made available to the faculty from outside sources. Research in the Law School can be put on a sound footing only if the Legislature appropriates a minimum amount specifically for Law School research, as it does for agricultural research. Such an appropriation can be used as seed money to attract outside research funds many times the amount of the appropriation.

Oliver Wendell Holmes Lectures—In January 1974, Professor Anthony G. Amsterdam of Stanford University delivered the annual Holmes Lectures at the Law School. The lectures, entitled "Perspectives on the Fourth Amendment," were enthusiastically received and are published in volume 58 of the *Minnesota Law Review*.

Law Library—In the last year of his directorship, Professor Bruno Greene prepared several reports warning that the quality of the Law Library will decline unless the budgets for books and personnel are substantially increased and the Law School's space problem is solved. In the second year of the biennium, a number of steps were taken to temporarily alleviate the pressures, but these problems still await long-range solution.

The book budget was bolstered by nonrecurring University funds in each year of the biennium; the sale and exchange of duplicates; and a bequest from the estate of Harold G. Cant, a Minneapolis attorney. These special supplements enabled the library to continue to purchase necessary acquisitions.

Acquisition policies had to be redefined and, in the foreign law collections particularly, acquisitions were reduced because of inflation and the dollar devaluation. Two consultants were engaged to evaluate the library's foreign collection and assist in formulating acquisition policies in this area.

The library's lack of space is its greatest shortcoming. By finishing a portion of the subbasement and storing more than 50,000 volumes in Walter Library, enough space was found to shift the collection and allow for a few more years of growth. Nearly half the

collection, over 150,000 volumes, was shifted. At best, these measures provide temporary relief; the long-range solution can be found only in a new Law School building.

Administration—In March 1973 Professor Carl A. Auerbach accepted the position of dean of the Law School. Professor George S. Grossman was named director of the Law Library, effective July 1, 1973.

For the first time in the history of the school, a Board of Visitors was formed to provide two-way communication between the practicing bar and the Law School about the school's educational programs and plans. The board consists of the members of the Law Alumni Association Board of Directors, and equal numbers of persons selected by the presidents of the Law Alumni Association and the Minnesota State Bar Association. The board's first visit to the Law School was in 1974.

COLLEGE OF LIBERAL ARTS

Frank J. Sorauf, *Dean*

The College of Liberal Arts (CLA) is the largest collegiate unit in the University of Minnesota in student enrollment (more than 16,000 undergraduates) and in faculty at the rank of instructor or higher (about 625). This report summarizes both the activities undertaken by the college in the 1972-74 biennium in meeting its mission and the principal problems and exigencies it has faced.

Enrollment—The college continued the controlled growth policy designed to hold registration somewhat under the 17,000 peak reached in 1968-70. This limit was set to maintain high educational opportunity under the budget restrictions faced by the University. Student populations ranged broadly: the shift toward a higher proportion of advanced undergraduates, graduate students, and older, nondegree students continued. Enrollment declined from 16,798 in fall 1971 to 16,687 in 1972 and 16,157 in 1973. The percentage of juniors and seniors rose from 36 in fall 1971 to 40 in 1972 and 1973, and of nondegree students to 4 in 1973 (numerically about double that of 1968).

The number of students transferring from other institutions continued to rise, with 2,135 in 1972-73 and 2,295 in 1973-74. The number of new freshmen declined slightly—3,832 in 1972-73 and 3,720 in 1973-74. The retention rate, the percentage of undergraduates who continued to work toward degrees, continued to rise.

The college continued to admit all new high school-graduate applicants who met its admission standard—a "college aptitude rating" of 50 or higher, based on high school rank and entrance tests.

Organization—Progress toward more decentralization of budgetary, advising, and curriculum-planning responsibilities, in order to distribute them among the two administrative subdivisions of the college (Humanities and Fine Arts, and Social Sciences), approached the desired level. A related change in student services eliminated the traditional upper-division and lower-division classifications of students in favor of premajor and major classifications, a system that brings divisional associate deans and divisional offices closer to departmental advising efforts than had the former plan.

The college responded to certain new interests by establishing programs in Jewish Studies and Women's Studies, and by providing separate majors under Middle Eastern Studies emphasizing Hebraic and Islamic subject matter. An interdisciplinary major in East Asian studies was organized. Only the Women's Studies Program required new budgetary outlay.

The college approved a revised constitution in spring 1973. Its chief departures from the 1966-70 constitutions are the establishment of stated terms of service for the dean and for department chairmen and school directors; the establishment of an elected college consultative committee and discontinuance of the appointed executive committee; and the provision for regular reviews of the deanship, the college as a whole, and the individual departments, programs, and schools.

E. W. Ziebarth, who became dean of the college in 1963, resigned in summer 1973 to return to teaching and research; he was succeeded by Frank J. Sorauf, professor of political science. Dr. Carol Pazandak returned to the college staff as assistant dean for student personnel. A data services office to coordinate college informational and statistical services was inaugurated.

Faculty—The regular faculty of the college—academic appointees at the rank of instructor and above—numbered about 625 at the end of the biennium. The “full-time equivalent” faculty—the regular faculty and the graduate assistants, translated into full-time hours—was just below 1,000 in fall 1973, a slight decline from the two preceding years. The college adopted a policy of reviewing vacancies as they occurred and, in most cases, of making needed replacements at the assistant professor rank. No regular positions were discontinued, though some vacancies were left unfilled.

The percentage of women (N in 1973-74=100) on the faculty increased slightly, from 14 percent in 1970-71 to 16 percent in 1973-74. Women's salary medians also rose slightly in comparison with medians of men's salaries.

As in the preceding biennium, the college fared well in retention of staff members who received offers from other institutions of high quality. As the 1970-72 report put it, “the college's success in holding a stable and high-quality staff continued.”

Budget—The college continued to operate under salary, supply, and general operations restrictions because income did not rise commensurately with costs. The major budget item, salaries, rose about 4 percent in 1972-73 and about 3 percent more in 1973-74. Supply budgets in the biennium rose about 10 percent above 1971-72. The University lost ground in salary comparisons with other Big Ten universities, and maintenance funds did not keep pace with increased costs. An adjusted general retrenchment of 5 percent in departmental budgets, partly redistributed on a basis of need, was employed to meet the problem.

Curricula and Instruction—The threefold Cross-Disciplinary Studies (CDS) program, inaugurated in the preceding biennium, enriched the college's educational opportunities by providing full-year articulated sequences of courses for freshmen and sophomores. Three such sequences a year, plus one one-quarter group, were offered, in a variety that represented all of CLA's principal subject-matter fields. As planned, the CDS program assumed administration of experimental course introduction and evaluation and of several junior-senior interdepartmental majors, including the new East Asian studies and religious studies majors.

Student use of individual study opportunities increased markedly. The Office for Special Learning Opportunities (OSLO) aided students and faculty in designing and carrying out independent study projects. The Bachelor of Elected Studies (B. E. S.) Program, which allows students to plan their own degree work free of most requirements except those of quality and quantity, completed the third of its five experimental years with enrollment of some 2,000 students and the awarding of about 200 B. E. S. degrees.

Majors in Afro-American studies, American Indian studies, Hebraic studies, and Islamic studies (all in existing departments) were instituted. Bachelor of Science degrees were instituted in communication disorders and social work.

Enrollment by adult special students, who are usually students that are not registered for degrees, continued its steady increase (330 in fall 1960 and 647 in fall 1973). This is one way the college is extending to off-campus, usually older, students seeking refreshment of knowledge or skills rather than degree programs. The number of such students stating intent to seek graduate school admission dropped from 37 percent in fall 1968 to 5-7 percent in the biennium, largely because only credits earned in the first quarter of such work may be applied toward a Minnesota advanced degree.

About 30 junior-senior honors program seminars, designed to bring out-of-the-ordinary study opportunities to highly qualified students, were provided in the two years. More than twice as many colloquia (informal noncredit discussion meetings on topics ranging from the classic to the contemporary) were offered for freshmen and sophomores registered in the honors program. The practice of providing specially qualified advisers for incoming honors freshmen was continued.

Research and Training—Research and training funds allotted to the college, as reported by the Research Development Center office, came to \$3.8 million—a figure nearly 20 percent lower than those for the two preceding bienniums. Through the Center for Educational Development, another \$292,000 was granted to faculty members for research projects: 49 grants to 56 individuals for \$65,000 under the small-grants program, 23 grants to 33 individuals for \$49,000 from the Media Production Fund, and 56 grants to 70 individuals for \$178,000

from educational development funds. CLA participated with other colleges in the use of a number of grants. McMillan travel grants to facilitate research were made to 57 faculty members in the biennium.

Though not broken down by colleges, the Faculty Activity Analysis for 1973-74 showed that the University average of faculty time spent in research, scholarly, and creative effort was about 12 hours out of the average 60-hour workweek.

Student Personnel Services—Reorganized student personnel structure in 1973 implemented the transfer from the lower-division and upper-division system to the premajor and major system. The new plan assigns students to premajor or divisional advising offices according to their readiness to declare majors. Sophomores, juniors, and seniors make contact with major advisers and the appropriate divisional offices as soon as they elect their majors.

In addition to the appointment of an assistant dean for student personnel, an associate director was named to supervise advising operations. This structure followed the retirement of Dr. Mabel K. Powers as director of upper division after more than 20 years of CLA service.

Reorganization of student personnel offices included appointing an advising coordinator for each divisional office to work with departmental advising offices. The CLA Martin Luther King Program for educationally disadvantaged students began plans to expand services to juniors and seniors.

An advising office was initiated experimentally to advise students on career choices, and offices for advising prospective students and veterans were projected. *Prospectus*, the 250- to 300-page description of widely elected 1000- and 3000-level courses, was reissued in spring 1973 and spring 1974 (largely through student effort).

The University's new student record system and the new grading system went into effect and were adapted for CLA student purposes. The Committee on Student Scholastic Standing redefined college procedures for probation, course cancellation, and readmission.

Student membership on most college governing and policy bodies continued and, with the financial help and counsel of the Student Intermediary Board, student liaison groups were established in many CLA departments.

Opportunities to study abroad were facilitated by a new Study Abroad Committee, by departmentally arranged foreign study programs, and by the introduction of a plan to give formal approval to prearranged foreign study proposals. Much of the advising for these programs centered in OSLO.

Physical Facilities—The college's pressing need for additional laboratory facilities continued. New facilities in Rarig Center expanded theater and radio-television instruction, but the lack of satisfactory space for music and studio art laboratory and practice work continued to be a serious problem. The Anthropology Department's laboratory remained entirely inadequate for the work intended.

Small-classroom space continued in short supply as junior-senior registration and the consequent number of small classes increased. Little expansion in instructional equipment, which had been augmented in preceding bienniums by special legislative appropriations, was possible. The Departments of Communication Disorders, Studio Arts, Art History, and Music and the School of Journalism and Mass Communication were especially handicapped by lack of equipment funds.

Office space also continued to be at a premium, both in instructional departments and in administrative offices. Classroom and conference room space in Johnston Hall was converted to college offices as additional classrooms became available elsewhere. But the need remained critical. The location and diffusion of humanities and fine arts departments on the east campus, with their library resources across the river, was an ongoing problem.

Looking Ahead—It has been said that "the pursuit of knowledge and understanding is enriching and valuable not only to the individual but also to the society of which he is a member." The College of Liberal Arts is the University's primary agency for opening opportunity to realize such a purpose. The college of course has other missions: it provides professional education in several schools and lays the comprehensive groundwork students need for specialization in other University colleges, and it stimulates and supports research necessary to such education. Thus it is necessary that the University makes certain that CLA has enough resources to remain sound.

Despite the limitations on planned growth and on salaries of the last several years, CLA has remained sound. But remaining sound is not remaining static. As much as in any technical or specialized field, the offerings in a college of liberal education must keep pace with the world in which its students live. To do this demands constant progress, a constant moving forward, although not necessarily through extensions; the college must, however, in maintaining excellence, expand carefully in some areas as it contracts in others. The college's budget must continue to be drawn carefully to meet the needs of tomorrow's education.

More specifically, CLA must attract promising—the most promising—young teachers, drawing from minority as well as majority sources. It must keep its many kinds of instructional equipment up-to-date. It must continue to emphasize excellence in teaching, and to provide opportunity and support for the research without which teaching becomes hollow. And it must sustain its efforts, through the Century Council and other avenues, to explain its needs and purposes to the community and the state and to seek recognition and financial support for its educational, as well as civic and social, progress.

Important to the maintenance of excellence throughout the college will be the program of regular department review instituted during 1973-74. This program will assess the work, accomplishments, and future needs of each department in a seven-year cycle.

As the biennium closes, it appears that careful effort must go to strengthening the CLA program for junior and senior students (with no decline of attention to freshman-sophomore curricular excellence, a fundamental for strength at the advanced levels) since this has become the area of most marked growth. Generally, the college will continue its commitment to the most productive balance of teaching, research, and community service.

MEASUREMENT SERVICES CENTER

Patricia S. Faunce, *Director*

Curriculum and Program Evaluation—During the biennium, the Measurement Services Center (MSC) designed a number of evaluation projects for various University units and published the results of completed projects. Projects were completed on the Office of Career Development, the freshman biology colloquium, the Duluth Department of Secondary Education, the Minnesota Women's Center, the externship in veterinary medicine, the team teaching in general chemistry, the Department of Mechanical Engineering, the Introduction to Health Ecology course, the Media Resources department, and five programs in the College of Liberal Arts. A special study of distribution requirements in all colleges of the University was undertaken for the Council of Liberal Education.

Projects are now in progress for the veterinary medicine curriculum, the Office for Special Learning Opportunities, the Law School, and the Medical Technology, Youth Studies, Women's Studies, and Bachelor of Elected Studies programs.

MSC also provided extensive consultation services to numerous University units and to approximately 200 individuals concerning selection of samples, design of questionnaires, and the analysis and interpretation of evaluative data.

Teaching activities in this division included the development of four workshops to teach individuals how to carry out aspects of their own evaluation research. The workshops deal with questionnaires, study designs and response rates, question formats and phrasing, and the roles and uses of data in curriculum and program evaluation. MSC's teaching role is also carried out through the publication of the MSC newsletter, *MiSCellany*, which discusses curriculum and program evaluation, and the training of graduate students in the design and implementation of evaluative research.

Curriculum and program staff also served on committees, such as the CLA Research Committee of the Student Personnel Council; prepared research articles for publication in professional journals; and presented results of evaluation studies at professional association meetings.

Evaluation of Instruction—As the University's central program for the evaluation of instruction, MSC recognizes the breadth and the complexity of teaching and the need for checks and balances to assure responsible and meaningful evaluation. MSC emphasizes the

need for a diversity of information, such as colleague and administrator ratings, student achievement measures, and ratings of course materials, in the evaluation system. This point of view guides MSC's service and research activities and its consultation with academic units.

Student evaluations should play a major role in almost any instructional evaluation system, and MSC continued to provide faculty with materials and help in this area. Provision and processing of evaluation materials involved more than 140,000 students in more than 4,200 courses. In addition, MSC supplied 75,000 copies of the supplementary evaluation form, which gathers students' narrative evaluations of their courses. These figures represent a considerable increase over the previous biennium and signify a growing interest in evaluation on the part of faculty and students. Computer processing of the Student Opinion Survey (the student evaluation of instruction) began in 1973, and of the supplementary form of students' narrative evaluations shortly thereafter. Also introduced were two special computer-processed instruments for evaluation of reading materials and evaluation of examinations.

Division staff also consulted with units, individual faculty, and various collegiate committees on evaluation-related topics. In addition, technical reports, *MiSCellany* newsletters, announcements of services, and manuals help faculty benefit from evaluation services.

Research projects typically concerned policies and practices for evaluation, and the psychometric properties of evaluative data, with particular attention to possible weaknesses that might affect important instructional and administrative decisions. A number of formal reports were generated, including one of the systematic conceptualization of the field of instructional evaluation. The considerable number of requests for these reports and the number of invitations for MSC staff to participate in seminars, symposia, and colloquia in various parts of the country and Canada all attest to MSC's strong and growing national reputation for excellence in instructional evaluation.

Testing—This is the least developed and least active program due to lack of staff and funds. MSC staff occasionally consult with faculty interested in improving classroom testing practices, and are currently studying the validity of a particular graduate admissions test for use with minority and majority students. Without additional staff, it is not anticipated that this activity will increase, in spite of a growing nationwide concern about the validity of classroom and admissions testing practices.

Needs and Plans—The needs and plans of MSC generally revolve around the enhancement of the quality and variety of service, research, and teaching activities.

Current evaluative techniques measure traditional educational outcomes, such as grade point average, but there is also a need for methodologies that are appropriate in evaluating nontraditional education. It is difficult to measure educational outcomes by means other than student opinion, but other methods for measuring cognitive, affective, and vocational outcomes must also be developed.

Ways must be found to insure that evaluative data are used more comprehensively and effectively by departments and collegiate units. An efficient, psychometrically responsible procedure for collecting and reporting norms for student ratings is needed to help faculty interpret their own ratings.

Because MSC is unable to meet the increasing number of project requests, members of the University community must be provided with skills enabling them to conduct their own evaluations with minimal input from MSC. High usage also makes it necessary to implement more automated data-processing systems for the evaluation of instruction.

Devising questionnaires appropriate in content for a large number of very different courses is difficult. What is needed is a tailor-made evaluation form that allows instructors to work with MSC to devise questionnaires that will meet their individual needs for evaluation.

Recurring funds are needed to support service and research activities, as well as additional professional and support staff. MSC has inadequate office space and lacks office furniture and classroom furniture for use in workshops and teaching situations; partitioning open spaces may become necessary to create more offices. Data-processing areas need to be sound-proofed.

DEPARTMENT OF MILITARY SCIENCE

Lawrence H. Bulawsky, Jr., *Head*

Curriculum—The University and the Army ROTC Department continued in their efforts to implement the Regents' policy concerning further integration of ROTC programs with University course offerings. Planning continued for two new courses to be introduced into the 1974-75 curriculum with team-teaching instruction to be presented by military and civilian faculty members. Summer Session basic ROTC courses continued to be offered, allowing selected students to enroll in Army ROTC after completing up to two years of academic study. Academic enrichment programs were instituted in 1972; guest lecturers were invited to participate in seminar sessions, providing cadets with exposure to varied viewpoints.

The two-year program continued to gain acceptance by transfer and University students. This program enables students to earn advanced Army ROTC placement and credit for the first two years of Army ROTC by attending a basic ROTC camp at Fort Knox, Ky. Army ROTC continued its efforts to enroll veterans in the ROTC program by giving them advanced ROTC placement for their prior military service, experience, and training.

Enrollment and Commissions—The downward trend in overall Army ROTC enrollment, and in commissions tendered, continued through the biennium. This was attributed to the legacy stemming from the public's disillusionment with the Army's Vietnam involvement. However, the end of the draft and the acceptance of the all-volunteer Army has resulted in a more favorable attitude by high school students toward Army service. Enrollment was opened to women beginning with the 1973-74 academic year. Eight women enrolled as freshmen, and interest is growing.

Applications for four-year Army ROTC scholarships increased markedly during the biennium, and a new high of 18 statewide winners was achieved in 1974. The program met its officer production goals by commissioning 42 graduates, compared to 76 during the previous biennium. University of Minnesota Army ROTC graduates continued to perform well above the national average in U.S. Army Service Schools, with two thirds finishing above the 66th percentile.

END-OF-YEAR ENROLLMENT

Academic Year	Preprofessional Phase		Professional Phase		Total
	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	
1972-73	19	8	13	19	59
1973-74	23	8	9	14	54

COMMISSIONS

Academic Year	U.S. Army Reserve	Regular Army	Total
1972-73	19	6	25
1973-74	13	4	17

Activities—The largest portion of leadership training continued to be provided by Leadership Laboratory classes; ROTC Basic, Advanced, and Ranger Camps; ROTC-sponsored extracurricular activities; and classroom instruction. Airborne and flight training, provided on a voluntary basis, supplemented training for the more highly motivated cadets, with seven graduates from Airborne School and six from flight training. Army ROTC-sponsored extracurricular activities, particularly the University Ranger Detachment, Pershing Rifles, and Army ROTC Rifle Teams, have stressed development of leadership skills with related military skills and knowledge. The University of Minnesota Army ROTC Rifle Team captured the Army Area and National ROTC Championships in 1973. The same team, competing as the University's representative in both the Big Ten and National Collegiate Rifle Matches, was Big Ten Champion in 1973 and won the Big Ten Conference Championship in 1973 and 1974. The Pershing Rifle Company participated in six intercollegiate drill competitions. Other department-sponsored extracurricular activities included Company B-1 of the National Society of Scabbard and Blade, Kaper Company of the Kadettes (the coed affiliate of the Pershing Rifles), and participation in intramural athletics.

DEPARTMENT OF NAVAL SCIENCE

E. N. Bouffard, *Chairman*

During the biennium the Naval ROTC Unit (NROTC) continued to provide civilian college-educated leaders for the Naval Service through a program of summer training and naval science instruction, along with normal academic work. The unit also continued to have command and administrative responsibility for naval personnel attending the University under other college training programs sponsored by the Department of the Navy.

In January 1973 the Navy instituted the two-year Nuclear Propulsion Scholarship Program. Students desiring this scholarship program apply in the spring of their sophomore year and must agree to apply for the Nuclear Power Program after graduation. Those selected as two-year Nuclear Propulsion Program candidates attend a six-week Naval Science Institute at Newport, R.I., during the summer following the sophomore year. The final two years of NROTC are identical to the third and fourth years of the four-year program.

The unit opened its enrollment to women in the summer of 1973. The fall 1973 entering class included two women college program students.

The NROTC Flight Indoctrination Program continued to provide ground school and flight instruction through the University Flight Facilities to qualified junior and senior NROTC students desiring this instruction.

ENROLLMENT

	Scholarship	College Program	Total
Fall 1972	96	43	139
Fall 1973	101	26	127

COMMISSIONS

	1972-73	1973-74
Ensign, U.S. Navy	24	22
Ensign, U.S. Naval Reserve	3	1
Second Lieutenant, U.S. Marine Corps	4	3

SUMMER SESSION

Willard L. Thompson, *Director*

Enrollment—As in previous years, more than 60 percent of the students enrolled in the Summer Session were students regularly enrolled in the preceding academic year. Among the reasons for summer study advanced by these students were: acceleration of progress toward degrees, completion of prerequisites for courses to be taken in the following academic year, completion of courses not available to them in the preceding academic year because of enrollment limitations, and enrichment.

After experiencing declines for the four years from 1970 to 1973, enrollments increased in summer 1974, with a total of 27,124 in the two five-week terms. In summer 1973, enrollments had totaled 25,515. These figures are for the Twin Cities, Duluth, and Morris campuses. At Duluth the enrollments were 1,484 in 1973 and 1,689 in 1974. At Morris they were 189 in 1973 and 221 in 1974.

The academic unit with the largest percentage of enrollments in summer 1974 was the College of Liberal Arts, with 29.53 percent of all enrollments. Over a period of five years, this percentage has declined significantly, having been at 35.66 percent in summer 1969.

Other units with major shares of the summer enrollments are the Graduate School, which in 1974 had 15.74 percent of the total enrollment, and the College of Education, which had 14.63 percent.

Programming—In the 1974 Summer Session there were 2,272 course offerings, involving a faculty of approximately 1,600 persons. While the majority of the courses are the same as those offered in the regular academic year, providing students with opportunities to continue

their studies uninterrupted in the summer, the Summer Session continues to be a time for special course offerings and programs. A substantial share of these are designed for in-service teachers from Minnesota and the upper midwest, but many serve broader publics.

Special Programs—During the 1973 and 1974 Summer Sessions, many special programs for those attending during the summer only, as well as for regularly enrolled students, were offered by the Colleges of Education, Forestry, and Liberal Arts; the Institute of Technology; the School of Public Health; and other units.

The College of Education offered a variety of workshops for teachers, counselors, administrators, and other school personnel. Both the College of Forestry and the Institute of Technology planned special programs for teachers.

Popular programs of the College of Liberal Arts included intensive study in such languages as Russian, Chinese, Swedish, and Portuguese, for which students earn 15 credits—the equivalent of a full year's work—during the 10 weeks of the two summer terms. Annual programs in forensics, theater, and music for high school students also were held.

Field work was offered in geology, geography, archaeology, and water quality, in addition to the two five-week terms of study in the Field Biology Program at Lake Itasca. The Itasca Biology Session is among the finest of its kind, attracting to the University graduate students from throughout the United States.

Study abroad was provided through the College of Liberal Arts summer session in Bochum, Germany, and the College of Education's foreign language teachers' program in Spain (1973 only), France, and Germany. The Morris campus continued its 10-week Summer in Mexico Program, enabling students to study Mexican language, literature, and culture while participating in the daily life of the city of Cuernavaca.

Summer also is a time for relaxation and entertainment. Through the Department of Concerts and Lectures, the Summer Session arranged free programs, such as films, jazz and blues concerts, dance performances, and Minnesota Orchestra concerts on the mall.

Problems and Needs—The fact that the Summer Session is dependent upon tuition in large part for its funding continues to pose problems. While the 1971 and 1973 Legislatures provided limited support, the Summer Session remained largely self-supporting. In the summer of 1974, 81.98 percent of the \$2,781,000 budget was provided by tuition and fees. As a result of these limited levels of support, teaching loads were heavier than in the academic year; senior faculty were paid at a lower rate than junior faculty, a fact that limits the number of senior faculty teaching in the summer; and support for administration in academic units was minimal.

A major effort in the Summer Session is to hold tuition and fees at the same levels as in the academic year. At the same time, there are efforts to eliminate inequities that exist for faculty teaching in the summer. Goals here include eliminating the maximum on salaries paid to senior faculty; providing more equitable funding for supplies, expenses, and equipment expended by academic units in the Summer Session; providing contributions to retirement on salaries paid to those teaching in the summer; providing funding to fully support administrative costs incurred by academic units in the summer; and equalizing teaching loads.

To achieve these goals, added funding on a recurring basis will be necessary. The legislative request for the Summer Session for the 1975-77 biennium, if approved, will make possible first steps toward these ends.

INSTITUTE OF TECHNOLOGY

Richard A. Swalin, *Dean*

School of Architecture and Landscape Architecture—The Built Environment Communication Center continued to grow, and the Developing Countries Program, a study-exchange project with the University of Lagos, Nigeria, progressed successfully. An innovative program in the area of energy conservation, Project Ouroboros, has involved faculty and students in the production of two full-scale working prototypal dwellings, which utilize solar-energy collectors, wind-energy generators, solid-waste recycling, and environmental management control systems. Ultimately the houses will demonstrate to the public ways to reduce high energy consumption in residential architecture.

In spite of limited admissions the architecture program experienced growth, with some 600 students in the major degree programs, 300 students in the prearchitecture program, and 100 students in the graduate program. The school continued to have critical space problems.

The landscape architecture program grew from approximately 40 to 90 students in this past biennium. A joint program has evolved, integrating the horticulture program of the Institute of Agriculture and the architecture program of the Institute of Technology. The faculty, students, and facilities have been shared equally, although separate budgets, support staffs, and libraries still exist. A single chairman administers the program; however, the administrative coordinator is changed every quarter. Curriculum development is continuing to evolve within the young program, and a senior specialization year is now offered. A rigorous review process has been established to choose the 26 students, the number to which admission is limited, from the 75-100 applicants.

The landscape architecture department has found that the joint program suffers from its spatial fragmentation and the resultant lessening of communication among faculty, staff, students, and the community. A consolidation of space, and possibly administration, is under consideration.

Research projects included computer-aided land planning, sponsored with the Center for Urban and Regional Affairs by state and federal contracts. Community programs included efforts in the Community Design Center and the Urban Education Center.

Department of Chemical Engineering and Materials Science.—In the period following the merger of chemical engineering with the materials science component of the School of Mineral and Metallurgical Engineering, a principal concern has been the development of a unified department. The department has endeavored to maintain its traditional high level of involvement in both undergraduate teaching and graduate research. In curricular matters, the department has developed a system of "tracks" leading to a bachelor's degree in chemical engineering or materials science, with appropriate emphasis achieved by the proper grouping of electives. During this period, 12 master's and 19 doctoral degrees have been awarded.

In research, the development of a polymer program has been strengthened by the arrival of E. L. Thomas, while the electron microscopic skills of T.E. Hutchinson have led to some valuable microanalytical techniques. Hutchinson was called as an expert in the analysis for asbestos particles in Lake Superior waters. Although the energy crisis and its related problems have only recently come to the attention of the public, chemical engineering research has long dealt with such topics and no new research areas were indicated.

Department of Chemistry.—Professor Paul Gassman of Ohio State University has accepted the position of senior professor of organic chemistry and will assume the post in September 1974. Professor Gassman's special interest is in synthetic organic chemistry, and his research group will be supported by grants of approximately \$200,000 per year from the National Science Foundation and the National Institutes of Health. Funds to reestablish his laboratory will be provided by the Graduate School, the Institute of Technology, and the Office of the Vice President for Academic Administration.

The department's faculty was also augmented by the appointment of Dr. Harold Wittcoff as adjunct professor. Dr. Wittcoff, formerly vice president and director of corporate research for the General Mills Corporation and now special adviser to the president of General Mills Chemicals, Inc., developed a course in industrial chemistry that has been offered for two years. Since the majority of the department's graduates go on to industrial positions, the formal instruction in this area is of considerable importance. The course has been described by Dr. Wittcoff and Professor Robert Hexter in an article that will appear in the *Journal of Chemical Education*. The department has been recognized by the president of the American Chemical Society for pioneering in this area of instruction. Dr. Wittcoff's appointment is supported by a grant from the Smith, Kline, and French Company.

While undergraduate enrollment in chemistry has increased by more than 22 percent since 1970-71, the teaching-assistant staff was decreased by 31 percent. Thus undergraduate students, most of whom are in premedical or pre dental curricula, are receiving less individual attention in their laboratory courses. To solve this problem, enrollment limits were placed on these courses in 1973. These limits will, of course, diminish the number of applicants to the Medical School within a few years.

The department's most serious problem has been the maintenance of major chemical instrumentation. Over the past six years, the department has been successful in its annual proposals for National Science Foundation (NSF) chemical instrumentation support, receiving instrumentation worth more than a half-million dollars. Without such instrumentation, it would not be possible for the department to attract graduate students, not to mention their mentors. Unfortunately, it is not NSF policy to provide funds for the maintenance of this kind of major equipment, and the department's supply budget—roughly half that of other chemistry departments in the Big Ten—is primarily devoted to undergraduate teaching supply costs. It is thus insufficient. Without a major increase, we shall soon be unable to repair or operate these instruments. The problem is crucial, particularly since it comes at a time when graduate enrollment in chemistry is increasing.

Department of Civil and Mineral Engineering—Due to the increasing interest in the currently relevant topics covered by the department's programs (such as environmental engineering, transportation, water, energy, and mineral resources), steps have been taken to make undergraduate and graduate courses more accessible to all students by the early evening scheduling of all courses during a four-year cycle. The engineering intern program, combining academic study and work experience for selected students, continued to develop. The department was selected by the U.S. Army Corps of Engineers to provide an annual program of graduate instruction in geotechnology for senior corps personnel.

Mrs. Emma M. Sommerfeld generously bequeathed \$1 million to the department in 1973, the interest on this amount to be used to provide scholarships for worthy and needy students in civil and mineral engineering.

The department was visited by an external review committee in November 1973. In its report, the committee described the physical facilities as "a disaster—probably the worst of any major civil engineering department in the United States."

Withdrawal of state funding of the Mineral Resources Research Center provoked a major crisis, forcing a staff reduction from 34 to 18. The center has continued to operate through increased dependence on industrial contract research, pending restoration of state support.

The St. Anthony Falls Hydraulic Laboratory has conducted studies of water resources in several areas of Minnesota, including the Minnesota River basin and the St. Louis and Kawishwi watersheds. The analyses made of rainfall, run-off, and other conditions are helpful in predicting future water needs in the state of Minnesota. Field and laboratory studies have also been conducted on the problems of Minnesota lakes and streams, especially those related to the effects of warm-water discharges on ice formations.

Cooperation with state agencies and participation in research on state-related projects has increased, especially in environmental engineering. Considerable federal support has been obtained for research on underground construction, the Twin Cities and vicinity being ideally suited for such developments. Increasing attention is being given to various aspects of energy research.

Department of Computer, Information, and Control Sciences—The department now offers four degrees: the Bachelor of Arts, the Bachelor of Computer Science, the Master of Science, and the Doctor of Philosophy. This is the only computer science department in the state that provides training in modern computer science at the bachelor's, master's, and doctoral levels. The department is thus in a unique position to supply local and statewide industries with all levels of trained personnel, and many of the graduates are now working in Minnesota industrial plants.

In addition to the computer-manufacturing companies, many industries in the Twin Cities and surrounding area make a significant use of computers. These industries, which represent a major component in Minnesota's economy, have three needs: a flow of newly trained computer scientists at all levels; the continuing education of their own personnel, to keep abreast of the rapid advances in the computer field; and the research that helps to provide these advances. The department has worked closely with industry to fulfill these needs in an efficient and satisfactory manner. Much of the increase in enrollment, particularly at the graduate level, is accounted for by full-time employees who seek to augment their education by taking courses on campus or through the UNITE program. The Department of Computer, Information, and Control Sciences has consistently offered more courses each academic year on this television program than has any other department in the Institute of Technology.

In addition to training and continuing education, the department aids Minnesota industry by doing research directly related to the problems of the industry. A close cooperation with industry is achieved in a two-fold program. Members of the department act as consultants, particularly during summer, so they can direct their research to the problems confronting industry. In return, employees of industry act as adjunct professors in the teaching of courses, insuring that students are kept abreast of current developments in the applied field.

The primary problem of the department is that of a static number of faculty positions in the face of increasing enrollments. In addition to students who are majoring in the field, the department has a large service component to fulfill for students with other majors. Since no new positions have been available in the past biennium, the department has been forced to limit enrollment to keep up the quality of courses. This has meant that many nonmajors have been unable to take courses that, in some cases, are required by their own curricula. The lack of new positions has also prevented growth in certain subareas of computer science that are not being represented by our current personnel.

Although the acquisition of new positions, both at senior faculty and teaching assistant levels, is the number one priority for the department, another priority is for a computer laboratory. University-wide facilities are available, but there is no microprogramming computer available for first-hand experience by students or for research by faculty. A modest proposal to fund such a laboratory has been submitted to the NSF Instructional Equipment Program. If funding is granted, we should have this laboratory at least in partial operation by next fall quarter.

The plans of the department are dependent on budgetary considerations. The ability to accept additional students majoring in the field and to provide the needed service to nonmajors is dependent on new faculty positions. These positions are also essential to broaden the areas of computer science that are represented by the faculty.

School of Earth Sciences—During the biennium, undergraduate and graduate student enrollments increased so drastically that the teaching resources of the Department of Geology and Geophysics were strained to the limit. This was especially the case for teaching assistant positions. Enrollments during the biennium required a minimum of 7.6 full-time-equivalent teaching assistants and, for a more meaningful educational experience, 9.1 would be required. Allocations for the department were significantly below these levels. If enrollment trends continue, certain class sections will have to be closed.

Major changes in the undergraduate curriculum were instituted during this period. These changes reflected upgrading course contents, as well as formulating a core sequence of courses for all undergraduate majors. At the beginning level, a significant innovation was the introduction of a series of courses, limited to enrollments of 60-80, in which specific topics of geology (such as plate tectonics, origin of life, planetary aspects of Earth) were taught. These courses drew students from various disciplines and colleges, and student evaluation ratings were consistently high.

Three major research activities concerned with lunar-sample analysis have continued in 1972-74 under the direction of Professors Alexander, Banerjee, Murthy, and Weiblen. Major publications by the faculty dealt with lunar petrology, evolution, magnetism, and early lunar history and chronology. The increase in all research activities can be seen in the increases in the sponsored-research funds in the department and the publications of the faculty members in scientific journals.

A new textbook of beginning geology by Professors Sawkins, Chase, and Rapp has been published by Macmillan Publishing Co., Inc., and has been highly acclaimed by the geological community. It has already been adopted in a large number of major universities and colleges in the country.

The Limnological Research Center continued various projects on Minnesota lakes and lake history, largely financed by federal research grants. Of particular interest was the study of the lakes under the jurisdiction of the Minneapolis Park Board, which showed that the principal source of pollution is the storm water draining from city streets, and that the water level that has been maintained in the lakes by pumping is probably an unnatural level. Other projects concerned the pollution problems of Lake Minnetonka and Shagowa Lake. An interdisciplinary project with ecologists and soil scientists in the Boundary Waters Canoe Area showed that a major forest fire had a negligible effect on the wilderness lakes. Study of

short cores of lake sediment at various localities around the state documented the effects of agricultural land clearance, forest cutting, mining, and town development on the water quality and microorganisms of lakes.

During the biennium about 30 publications were added to the contribution series of the Limnological Research Center, most of them in national scientific journals, authored by faculty and graduate students.

A particularly interesting development during the biennium was a project to enlist the assistance of the public in classifying Minnesota's lakes according to the water transparency. Volunteers were instructed to lower a special white disk into the water at 2-week intervals during the summer to record the development of algal blooms. This project, supported by funds from the Minnesota Resources Commission and the University's Center for Urban and Regional Affairs, will probably be continued by the Minnesota Pollution Control Agency.

The major achievement of the Minnesota Geological Survey was the completion and publication of *Geology of Minnesota: A Centennial Volume*, edited by P. K. Sims and G. B. Morey. This 632-page volume is truly a milestone in the synthesis and documentation of Minnesota geology. Through the contributions of 33 authors, it presents the current status of thought on almost every aspect of the state's geology.

During the 1973 fiscal year bedrock geologic mapping and gravity mapping were carried out in northern Minnesota in areas related to the potential occurrence of copper-nickel sulfide and base-metal sulfide mineral deposits. A contract was negotiated with the Rochester-Olmsted Council of Governments to study the protection and management of water resources in the Rochester area.

A major change in the funding of the Geological Survey occurred with the inception of the new legislative biennium, July 1, 1973. All direct support of Geological Survey programs from the state, other than the state legislative special, was withdrawn. The state special for the 1974 fiscal year was not sufficient to cover the salaries of the Geological Survey staff, and no funds were available for any operations. However, funds were appropriated by the Legislature to support work on soils and geology in the state for the State Planning Agency. A contract was negotiated with the State Planning Agency, and two contracts were negotiated with the Department of Natural Resources for the continuation of gravity mapping in northern Minnesota. The contract with the State Planning Agency called for the compilation of all available geological information related to planning and developmental needs in the Twin Cities metropolitan area.

Funding also continued for work in the Rochester-Olmsted County area, and a contract was negotiated with the U. S. Bureau of Mines for work on a drill core storage facility and catalogue of drill cores at the regional office of the Bureau of Mines in Minneapolis. The Geological Survey also negotiated grants and contracts with federal, state, and local agencies to support geologic work. Approximately a dozen contracts and grants, which were successfully negotiated to begin July 1, 1974, will provide the principal operating funds of the survey for 1974-75.

A major change in the personnel of the Geological Survey also occurred in the 1974 fiscal year. Dr. Paul K. Sims, who had been director of the survey since 1961, resigned. Dr. Matt S. Walton, a consulting geologist in Denver, Colo., with a practice in engineering and environmental application of geology and an extensive background in research, teaching, and state and federal geological surveys, was appointed director, effective August 1, 1973. Dr. Walton undertook a study of what the functions of a geological survey for the state of Minnesota should be, how the survey should relate to the University and the state, and the personnel, facilities, and funding needed to establish and maintain such an organization. Results of this study were presented to the University administration in March 1974, in support of the Geological Survey budget request to the University. This study called for increases in the permanent staff from 11 to 24, and in the annual budget for the 1976 fiscal year, based on 1974 salary schedules, from \$248,386 to \$543,367.

School of Mechanical and Aerospace Engineering—The School of Mechanical and Aerospace Engineering continued to strengthen ties between the two constituent Departments of Mechanical Engineering and Aerospace Engineering and Mechanics. Cross-disciplinary committees have been formed, and a Promotions Advisory Committee has been constituted to review and recommend on all promotions and tenure matters proposed by the two

departments. Several new courses under the aegis of the school, rather than under either department, have been added to the curriculum.

The solar-power research program, sponsored by an NSF Research Applied to National Needs grant, was continued by the Department of Mechanical Engineering. Four major reports have been prepared and released, and field studies are being conducted in Arizona. In addition, the department has gained three three-year NSF scholarships for graduate students in the solar-energy field.

The environmental division continued to grow in national and international stature. During the past two years, studies have been conducted with the Air Resources Board of California on the characterization of California aerosols, on approved instrumentation and techniques for measuring mine contamination by coal dust (as well as other areas of technical assistance to the Bureau of Mines), and on the development of instrumentation and standards for mining, emission measurements, and ambient atmospheric monitoring for the Environmental Protection Agency. A conference for review of production measurement, transformation, and control of atmospheric fine particles, which is scheduled to be held in Minnesota in May 1975, will be sponsored by the Environmental Protection Agency.

A design center has been established in the department as a focal point for engineering design education. The central purpose of design education is to couple the technical disciplines with innovative thought and open-ended problem-solving. The center's program embraces both undergraduate and graduate study, and includes an interdepartmental engineering design program. The program is aided by adjunct professorial appointments of personnel from local industry; this serves as a liaison between the University and the industrial community.

School of Physics and Astronomy—In 1974 the Department of Astronomy, with Regents' Professor Edward P. Ney as chairman, was made a separate administrative entity under the School of Physics and Astronomy. The research budget of the school remained at a level of \$3-\$3.3 million per year.

A particularly timely piece of research was done by Jon Rosner in collaboration with members of the Fermi Laboratory in predicting the existence of new particles that were later discovered experimentally.

College Level Activities—A number of activities that cross departmental lines and serve the Institute of Technology as a whole were continued or begun during the biennium.

UNITE Instructional Television—The UNITE (UNiversity-Industry Television for Education) system offered approximately 20 daytime courses, seminars, and evening courses every quarter of the biennium. The number of students has grown each year, with over 250 enrolled at the beginning of the 1973-74 term, and enrollment for the next year expected to be even greater. These students are employed by eight companies (including one government laboratory) at 12 sites in the Twin Cities and Rochester areas.

Fees paid by the participating companies cover the University's operating expenses, including amortization and interest. There has been no state or federal support. In order to keep the UNITE program self-liquidating, company fees are somewhat higher than desired. In effect, this discriminates against employees of smaller companies that cannot afford the cost. The first three years of UNITE have clearly demonstrated its value and its importance to engineers employed in Minnesota. A modest amount of nonrecurring state support would now make it possible to expand the number of engineers to whom continuing education could be made available.

Continuing Education in Engineering and Science Program—The position of director was established in 1973 as full-time and is funded jointly by the Institute of Technology (IT) and Continuing Education and Extension. This is an increased commitment to continuing education by IT. Morris E. Nicholson was appointed as director of this program.

The first six candidates completed the Professional Development Recognition Programs described in the 1970-72 *Biennial Report*. A special video-tape series to help engineers prepare for the Professional Registration Exam was offered at several locations in the state, in cooperation with the Minnesota Society of Professional Engineers. An Engineers Information Registry was established to aid in determining needs and informing engineers of continuing education offerings.

Project Technology Power—The Peer Teaching Program grew enormously over this period. About 10 youngsters were trained to teach mathematics in their own inner-city schools in 1971-72; in 1973-74, about 75 students took part. We also took teachers into the training program because we found they needed to learn how to work with peer teachers in their classes. The program seems to be meeting its goals by improving attitudes towards math and science in inner-city schools and by increasing the individual instruction in those subjects. Funding for this program is a major problem for the schools and for the University.

The special calculus course for students with poor math backgrounds proved to be inadequate in dealing with the problem and was abandoned after one year. In its place, an individualized precalculus course was developed and will be offered for the first time in fall 1974.

The Project Technology Power program illustrates the commitment of IT toward increasing the number of students from minority backgrounds in engineering and science fields.

Extending the Social Dimensions of Engineering Education Project—This project was funded by the Alfred P. Sloan Foundation from July 1, 1973, to June 30, 1975. The grant of \$280,000 is being used to develop a coherent set of lower-division and upper-division courses in social sciences for IT undergraduates. Courses that offer the tools needed to solve engineering problems brought about by changing priorities have been set up in IT. A joint graduate-degree program is in the final stages of formalization by IT and the School of Public Affairs. The program is designed to prepare IT graduate students for positions of responsibility in public institutions at the local, state, and federal levels. There are five students in this program now.

Articulation Conferences—Several very successful articulation conferences were sponsored by IT during the biennium. One of these, relating to engineering careers for women, was held in February 1974, and was attended by approximately 100 high school junior and senior women who had career interests in engineering. Many of these students later registered and were admitted to the Institute of Technology. Another highly successful conference sponsored by IT was for high school mathematics teachers in the seven-county area and involved an interchange of ideas and comments between the teachers and University mathematics faculty. The conference was repeated at the Duluth campus with the same general format.

Women's Scholarship Program—A merit scholarship competition for potential women students in engineering was sponsored by the Institute of Technology, and nearly 100 women high school seniors applied. Approximately 38 merit scholarship awards were made, ranging from \$50 to \$1,000. About 95 percent of the awardees actually attended the University of Minnesota in the Institute of Technology and received the scholarship money. This program and other efforts at increasing the enrollment of qualified women have essentially doubled the enrollment of women in IT in the last two years. These programs will be continued in the future.

Center for the Study of the Physical Environment—Professor Perry Blackshear has been appointed director of the center. The center is currently funded by grants from the Minnesota Resources Commission for work on fuel energy recovery from organic residues, from the Minnesota Pollution Control Authority for a project on extraction of energy from farm solid-waste and timber production residues, and from the Sloan Foundation for a Steady State Earth Seminar series. These are all energy-related activities of high importance to the Minnesota environment.

UNIVERSITY COLLEGE

Barbara Knudson, *Dean*

The 1972-74 biennium served as an important developmental period for University College (UC). An additional experimental program on one of the coordinate campuses was created, existing programs were continued, and the first of UC's experimental programs was phased out. The feasibility of implementing a number of new educational ideas as programs was studied, to create and continue the cycle of institutionalized self-renewal and continuous experimentation.

Governance and administration underwent changes that reflected and complemented the programmatic changes. In 1972-73, UC made the shift from part-time to full-time administration. A new college constitution was approved by the Regents in August 1973. It provided for membership on the governing body of UC staff and students and representatives from other segments of the University. This governing body replaced the University College Governing Council, which had been composed entirely of persons with appointments in other colleges. Other initiatives taken by the dean's office included efforts toward staff development, a series of faculty seminars on directed and independent study, increased efforts to serve coordinate campuses, and the publication of a history of University College.

Enrollment in the Inter-College Program (ICP) continued at the level of 180-200 students per year, with increasing numbers of registrations through the extension division. Student programs evidenced two new trends—increasing numbers of programs in business concentrations and increasing multiple concentrations (with thematic organization). New developments undertaken by ICP included the establishment of an interdisciplinary seminar for graduating seniors, to help them integrate the various components of their programs, and the development of the pilot University Scholars program, approved in spring 1974, which allows upper-division students to work for degrees with individual professors serving as mentors.

In 1972 the Living-Learning Center (LLC) combined its two programs, the Teacher Service Corps and the Intercultural Specialist program, into the Service Learning Corps. In June 1974, in keeping with UC's mission of experimenting with programs and then spinning off what was learned from them, LLC became the first experiment to reach the end of its life span. Many of its functions were absorbed by the Office of Special Learning Opportunities in CLA and by other departments and colleges.

Experimental College continued to offer students an alternative educational approach. Major efforts during the biennium were directed toward writing a new constitution, developing curricula and a new peer-group/staff advising system, streamlining and refining academic and governance processes, and evaluating the program. Enrollment decreased slightly, and seemed to reach a plateau of 65-85 students.

University Without Walls (UWW) served approximately 150 students each year of the biennium, and graduated 27 students. Several new program developments included the Teacher Corps in Corrections project, a high school UWW program, and a pilot Learning Center on the Morris campus.

Students' College (SC) was begun as a pilot program on the Duluth campus in 1972. SC is not a degree-granting program, but was designed to grant credits toward degrees for supervised work and documented learning gained by the implementation and management of new programs. Such new programs have included the Free Univer-City, the Human Resources Bank, the Student Assistance Center, the Problem Solving Institute, the SHARE program, and the Neighborhood Youth Corps Mini-U. One faculty member and two or three teaching assistants serve as advisers/consultants to the program, supervising crediting, evaluation, and development, and providing a link to various departments on the Duluth campus. In 1973 Students' College was approved as an experimental program with a five-year life span. Program support services were added in communications, personnel, programs, and research and development. An Internship Program was added in 1973-74, with support from the All-University Educational Development Committee.

At the close of the 1973-74 year, as University College's first experimental program ended, development focused on new programs, a pilot project, and increased research potential for the college. Studies were done on the feasibility of awarding UC degrees on the basis of examination only; community education program needs, focusing in south Minneapolis; and the design of a center to aid nontraditional students (older persons, minority persons, women) in their beginning year at the University, in terms of both the academic skills and the personal supports necessary to remain in school. The college's research capability was enhanced with the addition of one staff position, designated to administer an ongoing evaluation of UC's experimental programs.

A more detailed report, "University College: 1973-74 Annual Report and Brief History," is available at University Archives.

UNIVERSITY COMPUTER SERVICES

Frank Verbrugge, *Director*

An appropriation by the 1973 Legislature made possible an enhancement of the University's largest computer for instruction and research. The central processor of the CDC 6600 was replaced by a newer version of the system, a Cyber 74. Replacement of the processor and its central memory proved to be more cost-effective than a simple upgrading of the system. By this enhancement the usable lifetime of this system is extended by two or three years, that is, probably through 1979. The system was installed in 1967.

The University continued to manage the CDC Cyber 72 computer as the statewide time-sharing system for higher education. In the spring of 1973 the Minnesota Education Computing Consortium (MECC) was established to include the State Department of Education as well as the three systems of higher education. It was agreed in the spring of 1974 that the Cyber 72 system should be enlarged and that approximately half of the computing for secondary education should be carried out on that system during 1974-75. This decision allowed more time for MECC to establish its own time-sharing system.

During the biennium additional remote-job-entry stations were established for the Cyber 74 system, including one at both Crookston and Waseca. By this development, all coordinate campuses of the University were connected to the Cyber 74 system.

The operating system of Cyber 74 was modified to make it fully compatible with the Cyber 72. Plans were completed for the Cyber 72 to be moved to the Duluth campus during the summer of 1975, when it will no longer be needed for statewide time-sharing. Support for purchase of the system was included in the request to the 1975 Legislature.

In order to optimize the availability of time-sharing terminals to students, eight instructional computing laboratories were established with three to 12 terminals in each laboratory. The establishment of these laboratories has been a major factor in the growth of the time-shared computing at the University. One of these laboratories is devoted entirely to computer-assisted instruction in a variety of subject areas.

Effective July 1, 1974, a full-time position of director of the Computer Center at Morris was formally established. By this development, computing on the Morris campus achieved a status comparable to that existing on the Twin Cities campus and at Duluth.

UNIVERSITY OF MINNESOTA LIBRARIES

Ralph H. Hopp, *Director*

The 1972-74 biennium was noteworthy primarily for the gradual shift in emphasis from collection development and resource building to the servicing aspect of libraries. Several factors urged this change. First, a significant reduction in the purchasing power of the book budget necessitated a search for resources beyond new acquisitions. Second, a rapid development of computerized access to information data bases occurred. The cost of this addition to the service dimension of University Libraries necessitated a service charge, a relatively new experience in academic libraries, and further analysis will be required to determine the full implications of this approach to information.

Development and Support of Collections—On June 30, 1974, the holdings of all libraries in the University totaled 3,479,139 volumes, an increase of 233,399 volumes during the biennium. This increase was 22 percent smaller than that of the previous biennium. Current holdings include 3,164,140 volumes in Twin Cities libraries, 197,527 volumes at Duluth, 87,018 at Morris, 15,814 at Crookston, and 14,640 at Waseca. Growth rates for the biennium were 5.6 percent in Twin Cities libraries, 21.8 percent at Duluth, 30.6 percent at Morris, 16.2 percent at Crookston, and 72.2 percent at Waseca.

All the libraries continued to suffer from the decreasing purchasing power of the book budget, caused by inflationary increases in prices and devaluation of the dollar in foreign purchases, which represent one third or more of all purchases. Unfortunately, the economic situation in higher education did not permit corresponding increases in the book budget and, in fact, the real dollars available this biennium increased less than 8 percent while inflation was estimated at 24 percent or more.

The following table shows expenditure comparisons with the last year of the past biennium:

EXPENDITURES FOR BOOKS, PERIODICALS, AND BINDING						
	Twin Cities	Duluth	Morris	Crookston	Waseca	Total
1971-72	\$1,199,669	\$245,222	\$98,251	\$25,352	\$23,270	\$1,591,764
1972-73	1,171,723	262,227	93,334	26,464	29,682	1,583,430
1973-74	1,412,391	249,445	94,321	34,363	32,933	1,823,453

Personnel—Among the personnel changes during 1972-74 were several retirements. Bruno Greene, law librarian for 13 years, retired June 30, 1973, and was succeeded by George Grossman, who was previously law librarian at the University of Utah. Other retirements were Janet Rhame, assistant reference librarian, who had been on the staff more than 40 years; Margaret Swenson, with service totaling 35 years; Evelyn Furber, 36 years; Evelyn Thompson, 31 years; and Pearl Kunz, 11 years.

Among the major appointments were Elizabeth Ann Lange as head of the Catalog Division; Joe Dwyer as curator of Immigrant Archives; Bob Denney and Gene Lourey as research associates in the Biomedical Library's minicomputer development; Fred Hearth as assistant head of the St. Paul Campus Libraries; and Joseph Szeplaki as head of the Acquisitions Division.

In May 1974 Theodore Peck, head of the Reference Services Department, began a two-year assignment as assistant librarian of Haile Selassie University in Addis Ababa, Ethiopia. His service is under the auspices of the University, through its overseas participation in the Midwest Universities Consortium for International Activities.

Organization—The organization of the Twin Cities Campus Libraries as an academic unit, with its own constitution, was completed and received the approval of the Board of Regents on September 8, 1972. Following this, faculty groups were elected to serve the objectives set out in the constitution and to guide the academic governance of the library. For the first time, policy determination became the province of the library faculty. This conversion from a strictly hierarchical management system to a combination of administrative and faculty organization required continuing analyses of functions to differentiate management matters from policy issues, but it went fairly smoothly and the results appear to be mostly positive. Given national trends, the development was timely and inevitable, and it attracted considerable interest beyond Minnesota. What weaknesses did develop will be reviewed this coming year and the procedures strengthened.

Physical Facilities—The largest construction project was the phase II addition to the library on the Morris campus. The completion of this unit relieves severely overcrowded conditions for library materials experienced since Morris was designated as a coordinate campus.

On the Crookston campus, the Kiehle Building was remodeled and a small addition on the north end now houses the library. The remodeled building includes other facilities in the Learning Resources Center complex, such as an auditorium and television and other media facilities.

A new Learning Resources Center was built on the Waseca campus, providing 16,000 square feet of space for library materials, media resources, and production facilities. This handsome building serves as a focal point for academic activities at Waseca.

On the Minneapolis campus, the Chemistry Library was moved into the basement level of Walter Library and an underground walkway was constructed connecting Kolthoff Hall to Walter Library, providing easy access by chemistry faculty and students to their prime library resources.

The Biochemistry Library on the St. Paul campus moved from Gortner Hall to quarters in the new Biological Sciences building.

The Elmer L. and Eleanor J. Andersen Horticultural Library was completed in the new education-research building at the University Landscape Arboretum. This handsome new facility, in keeping with the environmental setting, has beautiful wood cabinetwork, hand-hewn timber construction, and peg-wood flooring. The solid walnut furniture was designed and built by George Nakashima of Pennsylvania. The building was dedicated in June 1974.

The Owen H. Wangenstein Historical Library of Biology and Medicine, a part of the Biomedical Library in Diehl Hall, was dedicated November 1972. This attractive facility honors Dr. Wangenstein, a distinguished scholar, teacher, and surgeon, who personally led a campaign to raise funds for the facility and much of the rare book collection it houses.

A legislative appropriation of planning funds for new Law Library quarters has improved the prospect of meeting this outstanding need. A small appropriation was also obtained for the initial planning of a several-phase addition to the St. Paul Campus Library, which has reached its maximum capacity. As the biennium ended, concerted attention was given to the need for an Archives Research Center building, to provide space for the rapidly expanding archives collections. The need was emphasized by the necessity of moving existing archives units from their present quarters in the Northern States Power building, which will now house a statewide computer facility for higher education.

Services—The development of remote access to computerized data bases has brought about a small revolution in library services in information-centered units. Although relatively expensive to use, compared to the more laborious printed indexes, on-line data base services provide an instantaneous search of increasingly comprehensive files, with a printed bibliography available either in immediate rapid-response typed form or by overnight mail. This service is only available on a customer charge basis, which partially defrays the costs involved. Among the units now providing such services are the Biomedical, Engineering, St. Paul Campus, Education, and Chemistry Libraries.

The MINITEX program, which extends the use of the University's library resources to other institutions and individuals throughout Minnesota, has gradually included resources from other libraries. At present, nearly a hundred units are cooperating in this resource-sharing program. A major effort was given throughout the biennium to the compilation of the *Minnesota Union List of Serials* (MULS), which lists the holdings of significant state collections. A preliminary edition of MULS, containing primarily University Library holdings, was issued in August 1972 and served as a base for the project. It is expected that the MULS first edition will be published by January 1975. The MINITEX program is supported by legislative appropriation to the Minnesota Higher Education Coordinating Commission, which contracts with the University Library for the service. MULS and MINITEX services to public libraries are also supported by the State Department of Education and through Title III of the Library Service and Construction Act.

The declining economy has had a particularly adverse effect on libraries. As a consequence, librarians of midwest university libraries, including the University of Minnesota, began discussions in spring 1973 on cooperative efforts that might stem rising processing costs and bring about needed services. These discussions may result in the formation of a nonprofit corporation in which member institutions would develop a common bibliographic data base, with on-line access, thus enabling the libraries to increase their efficiency in processing new acquisitions while better utilizing the resources held by the various institutions.

Automation—Throughout the biennium, the Biomedical Library continued to develop a minicomputer system for complete library data management, for immediate application to its own operations and as a prototype for wider use. The experimental development has proceeded to the simulation stage and preliminary results appear to be very favorable. The system should be in operation early in 1975.

Aside from the use of computerized data in information services, data-processing facilities of the University were used in the development of the *Minnesota Union List of Serials* under MINITEX sponsorship.

Conferences—The James Ford Bell Library sponsored a conference on the American Revolution on May 2-4, 1973. This was attended by over 1,700 people, in four sessions, and brought together 11 distinguished scholars of history. The proceedings will be published in 1975 as a volume appropriate to the American bicentennial celebration.

The Immigrant Archives and Center for Immigration Studies sponsored a conference in April 1974 on the Finnish experience in the western Great Lakes region. The conference, held in Duluth, lasted three days and was attended by over 600 people, including scholars from all parts of the United States, Canada, and Finland, as well as many nonscholars of Finnish-American descent.

UNIVERSITY OF MINNESOTA PRESS

John Ervin, Jr., *Director*

Mission—During the 1972-74 biennium University Press undertook, with the Committee on the Press, an extensive review of the Press's mission and editorial policies. On August 9, 1973, the committee approved a statement concerning the Press's mission, its catalytic role, the types of books published and not published, and related policies. The statement affirmed that the Press's principal emphasis is on scholarly publications that advance knowledge in research or instruction; that the Press reaches out in an educational role to serious general readers, as well as to specialists and students; that a significant number of Press publications will focus on Minnesota and the upper midwest; and that the Press seeks, in carrying out its mission, to contribute to the general mission of the University. These and other points are elaborated in the statement, which was published by the Press in the November 1973 issue of *Notebook*, a periodical circulated to the faculty.

Finances—The University Press also reviewed its financial program during the biennium and concluded, with the University administration, that it would decrease its dependence on the University's general financial support over time. The original schedule for general-support reduction was revised because of the decreased purchasing power of the libraries and other markets to which the Press sells its books.

Inflationary pressures on publishing costs continued and, in the case of materials such as paper and binding cloth, the pressures intensified during the second year of the biennium. The Press's sales income was \$930,357.88 for the biennium as a whole, and an additional \$63,829.62 was earned in subsidiary-rights income.

The Press, like a number of other book publishers, began during the biennium to make increasing use of strike-on composition, which resembles conventional composition but is accomplished by the use of typewriter equipment. Pages composed this way, after any corrections, can go directly before the printer's camera for plate-making, effecting savings over conventional composition.

Publications—Sixty new titles were published during the two years, 49 of which were hardback editions, 8 were paperback editions, and 3 were in pamphlet form. Among the books issued was the authorized edition of Alexander Solzhenitsyn's play *Candle in the Wind*, which thus appeared for the first time in English. It had been brought to the attention of the director of the Press by Michael Langham, artistic director of the Guthrie Theater, and Mr. Ervin negotiated rights to the publication. The translation was accomplished by Keith Armes of the Department of Slavic and East European Languages, in association with Arthur Hudgins.

The first volume reporting the work of the interdisciplinary group headed by William A. McDonald was issued. This work, titled *The Minnesota Messenia Expedition: Reconstructing a Bronze Age Environment*, was edited by Professor McDonald and Professor George Rapp, Jr. Publication of a three-volume series on *The Comparative Anatomy and Histology of the Cerebellum* was concluded with the volume on *The Human Cerebellum, Cerebellar Connections, and Cerebellar Cortex* by Olaf Larsell and Jan Jansen. Harold W. Chase's *Federal Judges: The Appointing Process* drew attention to an important part of our judicial and political system, and the series of Wesley W. Spink Lectures was launched with the publication of *Frontiers in Comparative Medicine* by W. I. B. Beveridge.

The first volume of Harold Allen's extensive study of upper midwest dialects emerged as *The Linguistic Atlas of the Upper Midwest*. Luther P. Gerlach and Virginia H. Hine collaborated to identify the dynamics of social change in America in a volume entitled *Lifeway Leap*, which the Press brought out in hardback and paperback. Anwar Chejne's *Muslim Spain: Its History and Culture* was an unusually comprehensive study of the many centuries of Muslim influence in Spain. Louis Auchincloss's *A Writer's Capital* set forth the development of a writer in an autobiographical form. Harold Deutsch's *Hitler and His Generals: The Hidden Crisis, January-June 1938* further established Deutsch as a leading expert on the Nazi period. And a new revised edition of *Northern Fishes* by the late Samuel Eddy and James C. Underhill was published for both specialists and amateurs interested in fishing.

CENTER FOR URBAN AND REGIONAL AFFAIRS

John R. Borchert, *Director*

The Center for Urban and Regional Affairs (CURA) seeks to facilitate changes in programs and priorities for the faculty and students in a time of great change in the wider community. Hence, all CURA programs are pilot, experimental, or short-term. CURA's objective is to probe and evaluate, to complete short-term projects, to discard unsuccessful projects, and to help build successful ones into the appropriate part of the academic structure.

Organization—A new research office, the Office of Planned Residential Development and Housing Research, was opened during the 1973-74 academic year. The Center for Youth Development and Research will be transferred from CURA to the College of Home Economics on July 1, 1974.

Activities—Through the almost 100 projects undertaken during the 1972-74 biennium, CURA provided the opportunity for the cooperative action of more than 50 units within the University with over 180 agencies and organizations, representing all levels of government and a diversity of public concerns.

Programs and studies at the coordinate campuses included a cooperative program with the Arrowhead Regional Development Commission and the University of Minnesota, Duluth (UMD). This program was established in 1972-73 to promote the application of UMD's resources to the solution of community and regional problems. In cooperation with UMD staff and students and with the city of Duluth, CURA sponsored a study of transient housing facilities in Duluth in 1973-74. CURA also assisted Continuing Education and Extension (CEE) and the Agricultural Extension Service by providing funds for a community resource development program that was based at the University of Minnesota, Morris.

The Office of Career Development operated two major community programs during the biennium: the Community Healthworker Program and the Family Day-Care Training Project. In cooperation with the Psychology Department, CURA established a Vocational Assessment Clinic for Career Planning in 1973-74. In its pilot phase, the program is focusing on women and minorities.

A public forum series on revenue sharing was sponsored by CURA in 1973-74, in cooperation with the School of Public Affairs and CEE. The Environmental Studies Program added a number of new projects the same year, including the Minnesota Energy Study and a series of copper-nickel studies done in conjunction with the State Planning Agency. In cooperation with KUOM, a radio series on environmental issues was initiated.

The Urban Education Center continued to expand its student involvement during 1973-74, and undertook many new projects throughout the state. Projects in the area of correctional education were also undertaken during the biennium.

Publications—A newsletter, *New Concepts in Urban Transportation*, was developed by CURA in 1972-73, to provide information on new developments and current research on urban transportation. Publication of the newsletter was assumed by the Transportation Research Board of the National Research Council in Washington, D.C., on July 1, 1973.

The *CURA Reporter* continued to be published throughout the biennium, as were a number of publications on specific programs and projects of the center. A partial list of publications prepared during the biennium includes the *Center Quarterly Focus*; the second edition of the *Bulletin of Environmentally Related Courses and Programs*; *Public College Enrollment in Minnesota's Changing Population Pattern*; *Catching Up: Bus Operation and Potential in the Twin Cities Metropolitan Area*; the *Field Experience Catalog*; *Minnesota County Housing Profiles*; *New Homes, Vacancy Chains and Housing Submarkets in the Twin City Area*; and *Public Programs and Minnesota's Development Regions*, part I (*Atlas of Program and Survey Areas, 1972*) and part II (*Manual for Use of the Atlas in Development of Regional Agendas*).

COLLEGE OF VETERINARY MEDICINE

S. A. Ewing, *Dean*

Administration—In January 1973, Dr. S. A. Ewing, former head of veterinary parasitology and public health at Oklahoma State University, was appointed dean of the College of

Veterinary Medicine. In July 1973 the college was reorganized administratively. Previously, departments were organized roughly according to academic disciplines, but this structure did not provide the flexibility, economy of effort, and collegiate focus needed for the faculty to realize its full potential in the areas of teaching, research, and service. The administration is now organized on programmatic lines, and three associate deans, or programs directors, are responsible for carrying out the missions in the areas of teaching, research, and service. Dr. T. H. Brasmer is associate dean for veterinary medical services. Dr. E. C. Short is associate dean for professional and undergraduate education. The third position, associate dean for research and graduate education, was held by Dr. B. S. Pomeroy during the biennium. On July 1, 1974, Dr. Pomeroy will begin serving as coordinator for alumni and public affairs.

The Administrative Council of the college, comprised of the dean, associate deans, and two department chairmen, is the executive body of the college. The constitution provides for the Faculty Council to advise and make recommendations to the dean on matters of faculty concern, and many committees provide opportunities for faculty members to contribute to the administration of the college.

Admission Requirements—Although admission requirements have not been changed during the past two years, the average collegiate experience of students admitted to the curriculum has increased from 3.5 to 3.75 years. Since the minimum required for admission is two years, students who are admitted to this college average almost twice the required collegiate background. The average grades received by students prior to their admission to the College of Veterinary Medicine have also risen. The mean grade-point average in required courses has increased from 3.26 in 1972, to 3.44 in 1973, and to 3.55 in 1974. Increases in educational experience and improved scholastic performance reflect the increasing desire of students for opportunities to enter the veterinary medical profession. The number of fully qualified applicants for the 73 entering class positions in the college has increased from 320 in 1972, to 392 in 1973, and to 474 in 1974. A further increase is anticipated in 1975, based upon the number of application forms that have been requested by potential applicants.

Educational Program—The Task Committee for Curriculum Revision, composed of representatives of the College Curriculum Committee and the Measurement Services Center, has undertaken an extensive evaluation of the present curriculum. Judgments are being sought from students and faculty in the college, from veterinarians throughout the region, and from all veterinarians who were graduated from the college during the past 10 years. The task committee will take into account information gathered during the self-evaluation, information obtained from other colleges, recommendations contained in a National Research Council-National Academy of Sciences report, and recommendations made by the Council on Education of the American Veterinary Medical Association.

During the past year the college adopted the following program statement. "The program of study offered by the College of Veterinary Medicine leads to the Doctor of Veterinary Medicine (D.V.M.) degree and provides the educational foundation and training for the practice of veterinary medicine and for careers in animal disease control, laboratory animal medicine, zoo animal medicine, public health, environmental health, health research, etc. The program leading to the D.V.M. degree requires at least two years of collegiate preparation and four years of study in the College of Veterinary Medicine."

Plans and Needs—The College has planned an increase in first-year admissions in 1975 from 73 to 80 students (a 10 percent increase). The major reasons for agreeing to a gradual expansion in enrollment are: to provide increased opportunities for Minnesota students and meet Minnesota's veterinary medical manpower needs, and to qualify for federal capitation. On behalf of the faculty, we must make it clear that increases in the number of faculty and civil service staff must accompany the increased enrollment, if the college is to reverse the downward trend in its standing among veterinary medicine schools.

Recruitment of new faculty is difficult, partly because the national demand for veterinary medical faculty is at an unprecedented high, but chiefly because inadequate staffing has reduced the attractiveness of this college to a level well below that of the top third of the veterinary schools. Continued erosion of resources by the process of annual retrenchment would virtually assure relegation to the lower third of American veterinary medical colleges.

This college, located on the campus of one of the nation's major universities, should have grown since its inception in 1947 to be one of the outstanding veterinary medical education institutions in this country. It has not. In fact, over the past four years of repeated retrenchments, it has lost ground.

The Council on Education, following a recent review of our programs, changed the status of the college from full accreditation to probational accreditation, and made the following recommendations. Clinical case material for in-depth hospital instruction in food animals and equine medicine and surgery should be increased significantly. Additional field service activities should be developed in the areas of food animal and equine practice. Exposure to patients throughout the four years of the instructional program should be increased. Opportunities for professional development of the faculty, including technical and post-doctoral program support, should be increased. An instructional program in laboratory animal medicine should be instituted, as recommended in the previous report, and general standards for laboratory animal care should be made equivalent to, or higher than, the USDA standards.

It is clear that implementation of the above recommendations will require additional faculty resources. Without relief, the college will continue to lose some of its most able faculty, resulting in further deterioration of a professional program that is available nowhere else to the young people of Minnesota.

Regional Education—Nineteen colleges of veterinary medicine continue to provide the educational opportunities in veterinary medicine for the entire nation. Four new southeastern colleges, in varying stages of development, will not relieve the pressure in the upper midwest region.

The University has accepted students from states within the region it serves and recently began to assess these contracting states the full cost of the veterinary medical education of their students. At the present time 21 positions in each entering class are potentially available to these states. It seems likely that Wisconsin, which has contracted for 17 positions in each entering class, will establish a veterinary school of its own within the next decade. Other states outside the economic region have expressed strong interest in obtaining spaces in the college. All contracts will require full-cost reimbursement and will provide increased resources for the college.

Research Activities—The College of Veterinary Medicine faculty continued to be involved in a wide range of research related to mechanism and control of disease, although a continued decline in federal support for research has hampered progress in the past two years. Presidential veto of the Animal Health Research Act in 1974 was especially damaging to the development of animal disease research. There is a critical need for new knowledge related to disease problems. In addition, graduate veterinary medical education can flourish only in an environment where active research is in progress. A major effort is being made to encourage additional faculty members to seek funds for research and for graduate education.

At a time when attention is focused on food production, the college has many contributions to make in control of food animal disease and increasing fertility of food animals. Emphasis on these activities is certain to increase in the years to come.

Physical Facilities—Construction of Phase I veterinary medicine and animal science facilities began in fall 1973, and the building should be ready for use fall quarter of 1975. Phase I includes new facilities for professional classes of 120 students in the disciplines of anatomy, physiology, pharmacology, and biochemistry and for undergraduate nonprofessional students in animal physiology. Theriogenology (reproductive disease of animals) will be housed in Phase I near the animal reproduction section of the Department of Animal Science. The Large Animal Holding Unit, a portion of Phase I, will replace outmoded units and provide large animal housing and laboratory teaching space for physiology, pharmacology, surgery, medicine, and theriogenology.

Phase II of the veterinary medicine facilities has been continued in the planning stages through programmatic design. The 1971 and 1973 Legislatures, together, authorized \$480,000 for planning purposes.

Veterinary Diagnostic Laboratory—The Veterinary Diagnostic Laboratory continued to provide diagnostic service to veterinarians and animals owners of Minnesota. New types of diagnostic procedures and increased numbers of specimens placed additional time and cost

demands on personnel and equipment, and the 1973 legislative appropriation for the laboratory proved inadequate. In October 1973 a minimal service fee, which is new in Minnesota, was instituted, and has helped to provide funds for operation of the laboratory. The future expansion and quality of services will depend on the level of state special appropriations.

Veterinary Teaching Hospitals—Following departmental reorganization in July 1973, the Veterinary Teaching Hospitals became a single administrative unit under the associate dean of veterinary medical services. The 1973 Legislature authorized a state special appropriation of \$50,000 to aid in the support of the teaching and service missions of the hospitals. Internal accounting systems have identified cost and income sources by disciplinary sections. As a result, additional technical positions have been established to support faculty and students in teaching and service roles. Although hampered by inadequate and antique buildings, income funds have been used to remodel and redesign several areas to provide better service and animal care. Collegiate funds have been used for major equipment items essential to teaching and service. Among these was \$131,500 for modern radiology equipment.

The inadequate number of large animal patients is a major concern. Urban sprawl, declining livestock values, and loss of key personnel have all contributed to what is now a critical situation. A variety of solutions is possible, but the long-term solution may require one or more food animal medicine clinics located outside of the Twin Cities area.

Continuing Education and Extension—During the biennium the college met increasing demands for continuing education programs. Participation by veterinarians increased from 1,275 in 1971-72 to 4,218 in 1972-74. The programs offered increased from fewer than 20 in the 1971-72 academic year to 84 during the 1972-74 biennium. In addition, 220 veterinary extension programs related to food-producing animals were conducted with approximately 11,000 participants, and 312 companion animal programs, concerned with equine and companion animal species, were presented to approximately 14,680 lay persons.

The increase in program demands has drastically increased the burden on those faculty specifically funded for continuing education and extension functions. Methods must be found to identify and support the demands made on faculty who are not formally considered a part of the joint programs of the Agricultural Extension Service and the College of Veterinary Medicine, if the college is to continue to provide a vital service to the state and region.

Divisions of Administration

Stanley B. Kegler, *Vice President*

There were a number of changes in the Office of the Vice President for Administration during the biennium. Vice President Donald K. Smith, who had been on leave since August 1971, resigned to accept a position at the University of Wisconsin in Madison. The responsibilities of the office were assumed by Stanley B. Kegler, associate vice president for coordinate campuses and special assistant to the President, who was named vice president for administration on August 1, 1973.

In June 1974, the Board of Regents appointed Kegler to the new post of vice president for institutional planning and relations. Kegler will assume the new position on August 1, 1974. Walter H. Bruning will begin serving as vice president for administrative operations on the same date.

Reporting to the vice president for administration during the biennium were the Department of Emergency Preparedness, Management Planning and Information Services, the University Attorney, and the University Police Department. The Department of Insurance and Retirement was merged into the University Personnel Department in December 1972, and its report is included in that section of the *Biennial Report*.

DEPARTMENT OF EMERGENCY PREPAREDNESS

Wallace A. Caryl, *Coordinator*

The University of Minnesota Office of Civil Defense was created in April 1967 and reported, at that time, to the director of Plant Services. For a short time during the 1970-72 biennium, the office reported administratively to the Department of Safety and Development. Later in that biennium it began to report directly to the vice president for administration. In 1973 the name of the office was changed to the Department of Emergency Preparedness. Wallace A. Caryl has served as coordinator since the department's inception.

The emphasis of the department's programs has been on emergency planning, operational readiness, public information, training, and professional development. The goal has been to provide an orderly response to all emergencies, natural or man-made.

Emergency plans have been developed for and tailored to the special needs and requirements of each University campus. Emergency service assignments for law enforcement, fire rescue, physical plant, medical, housing, feeding, and logistical support have been made. Liaisons with county and city agencies and with state and federal departments have been established and maintained.

The training required to prepare these emergency services has also been developed and implemented on each campus. The emphasis in training has been on emergency medical response and has included first aid, advanced first aid, cardiopulmonary resuscitation, and emergency medical technician (EMT) courses. During the 1974 fiscal year, 100 law enforcement and emergency medical personnel successfully completed three EMT courses. Other emergency response training has included fire prevention and fire fighting, tornado and severe weather precautions, and general safety. A study and pilot probe into the field of emergency mental health and social service response has been initiated. This program includes personnel from a number of agencies in several states and is pioneering this effort nationwide.

Assistance was given the University of Minnesota Hospitals in developing a plan for the rapid expansion, relocation, and effective implementation of medical personnel during a disaster. This plan has been tested twice each year to challenge its workability. A similar emergency medical plan was developed and tested for the Morris campus-Stevens County medical response.

A survey of all University facilities was made to determine which areas could provide adequate protection for campus occupants during severe weather situations. Warning and communications systems, which are manned by trained personnel, were developed and maintained for all campus facilities. Emergency information booklets developed for each campus were widely distributed to supply the various campus communities with the information vital to safety and emergency conditions.

Several incidents have proved the value of emergency response techniques. In the summer of 1972, a major flood situation on the Duluth campus tested our emergency program for that area with successful results. Severe weather situations and man-caused accidents have been resolved with no loss of life and with a minimal number of injuries and incidents of property loss.

Emergency medical treatment centers have been developed in those facilities that house athletic events. These centers are fully equipped and manned by personnel trained to respond with life-saving techniques and to provide patient stabilization and transportation.

The coordinator of the department has served as the University representative to the state during the biennium in the allocation of fuel and emergency supplies for all campuses.

The University emergency preparedness program meets or exceeds all requirements and specifications of the state of Minnesota and the federal government. The federal government participates in the program with financial and technical assistance.

MANAGEMENT PLANNING AND INFORMATION SERVICES

David J. Berg, *Director*

In July 1973, the name of this unit was changed from Budget Planning and Information Services to Management Planning and Information Services (MPIS) in order to better reflect the nature of its work. While all of the activities described in the 1970-72 *Biennial Report* have continued, special efforts have occurred in some areas.

A Faculty Activity Analysis, based on a stratified statistical sample, has been developed and is in use. Its purpose is to provide management and accountability information, while protecting faculty time and privacy to the greatest possible degree.

There has been an increasing demand for systematized, comparable data about the operations of colleges and universities, and MPIS has been involved in several such efforts. The public university members of the Association of American Universities are working toward useful data exchange on a reasonably comparable basis. The Minnesota Higher Education Coordinating Commission is designing a data system to be used in budget review. The Minnesota Department of Finance is designing and implementing a computerized biennial budget system. And the Minnesota Department of Administration has continued and expanded its activity analysis. MPIS has attempted to influence the design of each of these systems and will be active in compliance efforts as they go forward.

MPIS staff members have continued their special interests in unit cost studies and in tuition policy, as related to student demand and management strategies. Several publications have been produced or accepted in the latter field. Many internal studies and policy papers have been produced.

The central problem faced by MPIS has been the difficulty of stretching the staff and budget beyond the routine budget cycle tasks, to permit a deeper and more creative exploration of the University's policy choices. Resource limitations have also dictated a very slow rate of improvement in the internal data systems on which good analysis depends. Progress has, nonetheless, been made and several strategies to speed that progress are being explored.

UNIVERSITY POLICE DEPARTMENT

E. W. Wilson, *Chief*

Personnel—In March 1973, E. W. Wilson was named chief of police, replacing Captain John Brooker who had been acting chief since the resignation of A. R. Vernes in September 1972. Chief Wilson restructured the department, making several appointments and promotions. Captain Brooker was named assistant chief of police and made responsible for the entire uniform division. William House was promoted to the rank of captain of the investigative division. Captain James McDonough was made head of the service division and handles training, planning and research, student interns, and budget and records.

Lt. Donald L. Wiebe was put in charge of the security development division. This division, which is concerned with crime prevention, handles Operation ID, building security

inspections, and dormitories. It also supervises the student-monitor force that assists sworn police officers in the medical complex, West Bank, and athletic areas. Most of the monitors were under work-study qualifications. The primary purpose of this program is to deter crime by having campus buildings patrolled, during the closed hours, by students equipped with portable radios who report anything suspicious to the police dispatcher. This program encourages a good police-student relationship while deterring crime at minimal cost. The 23 students who were employed as monitors have reported 255 incidents during the 14 months they have been used.

This department was one of the first police departments in the state to hire female patrol officers: three women were hired in spring 1974. The women have completed the basic police science course with the Bureau of Criminal Apprehension and attended Rape Counseling School. One woman is now assigned to each shift to handle situations in which female officers have an advantage over male officers. The department also employs four minority employees on its staff of 65 people.

Training—A career development program designed to train officers for future promotions in various phases of law enforcement will go into effect in fall 1974. This program will include a temporary appointment to the rank of sergeant (to test and improve supervisory ability) and will allow the officer to work with the Minneapolis Police Department in planning and research, the Bureau of Identification, and the Juvenile Division, and also in the various precinct stations in which new techniques are being employed.

Crime Report—During the 1972-74 biennium 4,073 complaints were handled by the University Police Department. The total value of property stolen was \$352,508. The value of University property stolen was \$197,465. The total value of property recovered was \$26,582.

Of the 622 bikes reported stolen during the biennium, 195 were recovered. The value of those stolen was \$53,360. Those recovered were valued at \$18,503. Forty juveniles and 10 adults were arrested for bike theft.

It is interesting to note that bicycle thefts dropped from 1,148 in 1970-72 to 622 in 1972-74, and recoveries from 310 bikes in 1970-72 to 195 in 1972-74. However, the total value of the 195 bikes recovered in 1972-74 was \$1,000 more than the value of the 310 recovered in the previous two years. It is quite apparent that crime prevention has had some success and that the value of bikes has increased greatly.

Equipment—A new ambulance, equipped with the latest vital signs equipment, was purchased in 1974 to transport newborn infants to the University of Minnesota Hospitals. This vehicle makes runs up to 75 miles from the campus; aircraft are used for longer runs throughout the five-state area. State statutes 144.801-144.806, which will go into effect July 1, 1975, require at least one person in an ambulance to be a trained attendant. To comply with this requirement, University police officers attend an 81-hour emergency medical technician course, which meets the specifications of the Minnesota State Board of Health. These officers will use the new ambulance to provide the most highly trained professional care to the staff and students at the University, while serving the University community without charge.

We received a Law Enforcement Assistance Administration (LEAA) grant for a new communications system that was recommended by the Kelly Montgomery study. Minneapolis and St. Paul campus police radios are now on ultrahigh frequency (460.075 MHz). A new repeater, or base station, was located in the Health Sciences Unit A building, which has an emergency power supply. An antenna 279 feet above ground level helps to insure uninterrupted radio signals for many miles in any direction. Part of our old equipment went to University police on the Morris campus and the remainder to the Physical Plant and Transportation Services on the Minneapolis campus. The remainder of the grant was used to buy new radio equipment for the Duluth campus police, enabling them to contact the Duluth Police Department when necessary. We are deeply grateful to the Governor's Commission on Crime for granting the LEAA federal funds and to the University for the matching funds that guaranteed us the finest radio equipment for many years to come.

Divisions of Finance, Planning, and Operations

James F. Brinkerhoff, *Vice President*

The vice president for finance, planning, and operations continued to administer the budget, business administration, investments and cash management, planning and operations, and physical planning sections of the University.

One major personnel change was the appointment on July 1, 1973, of Clinton N. Hewitt as assistant vice president for physical planning, to succeed the late Hugh Peacock.

On July 1, 1974, the Office of the University Attorney, headed by R. Joel Tierney, will begin reporting to the vice president for finance, planning, and operations.

BUSINESS OFFICE

Clinton T. Johnson, *Assistant Vice President*

The Business Office continued to be responsible for centralized fiscal functions for all campuses and for the implementation of the annual budget, the preparation of the annual *Financial Report*, and the biennial budget information required by the State Department of Administration.

For the year ending June 30, 1974, over 490,000 invoices and 262,000 expense checks involving a dollar volume of \$219 million were processed. For the academic year ending June 15, 1974, the average number of monthly payroll checks issued was 49,690; total salaries paid from all funds for the fiscal year ending June 30, 1974, were in excess of \$192 million. In addition to its primary function of accounting for all University capital assets, the Property Accounting Division obtained federal excess property valued at more than \$11 million for the fiscal year ending June 30, 1974. Other financial data is included in the University's annual *Financial Report*, which is available on request.

The Research Grant Accounting section, which has fiscal responsibility for all sponsored research-training programs at the University, reported on more than 1,780 programs representing more than 400 federal and state agencies and other sources in 1972-74.

The Business Office was responsible during the biennium for the format development of the new interim management reports, which are distributed monthly to deans, department heads, and parent departments.

The office is currently making extensive changes in its accounting recording, with the anticipation of preparing the June 30, 1975, financial report along new guidelines recommended in *College and University Business Administration* and in the American Institute of Certified Public Accountants' *Audit Guide*. These changes include the adoption of accrual accounting and changes in the functional breakdown of income and expenditures.

OFFICE OF INVESTMENTS AND CASH MANAGEMENT

Donald P. Brown, *Director*

The Office of Investments and Cash Management was formed on July 1, 1972, by the combination of two existing University offices—one for the short- and intermediate-term money, and the other for the endowment funds and the Permanent University Fund—to function as the central office for the investment of the University's money. Donald P. Brown is the director of the office and Daniel P. Benda is the investment manager.

The investment of short-term money and of intermediate-term trust fund and construction money is handled by the investment office staff. On June 30, 1974, the market value of the temporary investment pool of short-term money was \$54.6 million, and of the group income pool of intermediate-term money was \$32.8 million.

The endowment funds and the Permanent University Fund are invested by external, professional money managers under the control of the investment office. Currently, these managers are Alliance Capital Management Corporation; First Trust Company of St. Paul; Investment Advisers, Incorporated; Thorndike, Doran, Paine and Lewis; and T. Rowe Price Associates. Two other managers, Northwestern National Bank of Minneapolis and Crocker National Bank of Los Angeles, handle two individually invested endowment funds. The total

market value of all externally managed funds on June 30, 1974, was \$72.6 million, which included \$950,000 of assets retained by the University.

In addition to the investment responsibilities, which are the major function of this office, other responsibilities are monitoring cash flow and administering the endowment funds.

OFFICE OF PHYSICAL PLANNING

Clinton N. Hewitt, *Assistant Vice President*

PLANNING

Twin Cities Campus—Transportation plans for the Twin Cities campus continued, and now include the University car pool service. Preliminary system design and recommendations on intercampus transportation have been completed and will be released during the 1974-76 legislative session.

Over the past few months, the Office of Physical Planning has been preparing the groundwork for a Long-Range Development Plan for the Minneapolis campus. General issues relating to academic, administrative, and physical planning have been identified and extensive base data have been gathered. Base maps and inventory data pertaining to a variety of subjects, such as the general environment, physical facilities, and utilities, were developed. An updating of past transportation surveys has been initiated. A detailed analysis of existing space utilization and space needs will be used as base data. The Long-Range Development Plan will provide a framework for future expansion of the Minneapolis campus.

Of specific import in St. Paul campus planning is the detailing and staging of the parking and circulation concept, as it relates to the development of the new Continuing Education Center.

Duluth Campus—The Duluth campus has undergone extensive planning over the past three years. A final draft of a Long-Range Development Plan has been prepared and is awaiting final review and approval. A space utilization study was undertaken to examine the use of space on campus and to determine how that usage might affect future programs. A study dealing with campus circulation and the identification and design of a central entrance to the campus has been initiated, and completion is anticipated early in 1975.

Morris Campus—The Morris Planning Committee, with assistance from the planning office, continues to reevaluate and update the campus plan when appropriate. The most recent updating involved parking and traffic circulation changes necessitated by the new east-end parking facility, the relocation of Cyrus Road, and the Minnesota Highway Department plan of constructing a major roadway east of the campus.

Crookston Campus—The design framework and development concept plan for the technical college and the Northwest Experiment Station continues to serve as a reference for the Crookston Physical Planning Committee and the Office of Physical Planning on individual, specialized, and development issues.

Waseca Campus—As this technical college continues to grow, projects and improvements are implemented based on the design framework and concept plan. This effort is monitored by the Waseca Physical Planning Committee and the Office of Physical Planning.

Rosemount Center and Station—The planning office is completing a Long-Range Development Plan for the Rosemount property. It is anticipated that the report will be completed in draft form before the end of the current legislative session.

NEW CONSTRUCTION

Twin Cities Campus

Minneapolis—The Rarig Center was completed and occupied in January 1973. Of the total project cost of \$7,883,141, private donations accounted for \$400,000 and \$7,483,141 was provided by legislative appropriations.

The Auditorium-Classroom Building, a facility of approximately 80,000 square feet located on the West Bank, was constructed at a cost of \$3,482,200. Legislative appropriations totaling

\$2,342,623 were made in 1965, 1967, and 1969. The remaining amount was provided by a \$798,377 federal grant, \$223,200 in food service funds, and \$118,000 of University funds.

Construction of the Health Sciences Unit A building is essentially complete and the building will be occupied in fall 1974. The state's share of this \$46,016,995 building project was \$23,622,968. A federal grant of \$22,394,027 provided the remainder.

St. Paul—The 131,000 square-foot Classroom-Office Building for agricultural economics and rural sociology was completed and occupied in July 1973. The \$4,112,100 project was funded by the 1967 and 1969 Legislatures.

The Meat Science Laboratory, which was funded by the 1967 and 1969 Legislatures for \$3,420,640, was completed and occupied in August 1973. This 56,000 square-foot building provides office space, laboratories, and meat processing facilities.

The Forest Products facility has been completed with legislative appropriations totaling \$1 million. It will be occupied in October 1974.

Construction of the third floor of the Soil Science building and of an addition to complete the greenhouse unit partially constructed in 1956 has been completed with a \$188,000 appropriation from the 1971 Legislature.

The St. Paul Commonwealth Terrace Housing and Community Center, funded by Support Services and Operations, has been completed. The project consists of 102 town-house-type units, each with two or three bedrooms. No state funds were involved.

Duluth Campus—The 36,000 square-foot Classroom-Laboratory Building, designed to house the Department of Physics, the Computer Center, and the Dental Hygiene Program, was completed and occupied in June 1972. The \$3,296,000 project was funded by the 1969 and 1971 Legislatures.

A new theater was recently completed. Of the total \$2,692,940 project cost, \$1,472,033 was funded by the Legislature, \$482,392 came from a federal grant, \$176,410 from the Duluth reserve fund, and \$562,105 from private donations.

Phase I of the Plant Services Center, funded by the 1969 Legislature for \$460,000 was completed in February 1974.

Morris Campus—Phases I and II of the Humanities Building have been completed with legislative appropriations of \$4,854,352. This structure provides facilities for art, music, theater, and television production.

Phase II construction of the Library has been completed, providing reading space for an additional 400 students and shelving for 100,000 volumes, and permitting the development of an audio-visual and educational materials center. The 1969 and 1971 Legislatures granted \$1,185,000 for the project.

Crookston Campus—All projects funded by the 1971 Legislature have been completed. This includes construction of a plant science instructional facility, renovation of Knutson Hall and the Kiehle Learning Resources Center, and remodeling and renovation of the Health Service and of the second and third floors of Selvig Hall. A campus storm-sewer extension was also constructed, and Stephens Hall was razed.

Waseca Campus—The Student Activities Link and Learning Resources Center, Phase I, funded by the 1971 Legislature, has been completed. This three-story building provides library facilities, as well as classrooms in the basement.

A light-horse facility, with horse stalls and an enclosed heated riding arena, was constructed for \$60,000 as part of a larger \$309,500 appropriation for renovation of school facilities.

Construction of a ring road, funded by the 1973 Legislature for \$50,000, has been completed.

Research and Experiment Stations

Agricultural Experiment Station, Rosemount—Construction of four swine research buildings and three turkey research buildings has been completed with a \$567,460 appropriation from the 1971 Legislature.

Cloquet Forestry Center—Construction of student cabins and interconnection of wells and a water main has been effected. The 1971 Legislature appropriated \$79,000 for these projects.

Horticultural Research Center, Excelsior—Remodeling of the office and laboratory building, replacement of curbs and gutters, and resurfacing of roads have been completed. The 1971 Legislature appropriated \$66,000 for these projects.

Lake Itasca Forestry and Biological Station—Two student cabins and Phase I rehabilitation of station facilities have been completed with 1971 state funds of \$61,000.

Landscape Arboretum, Chaska—Two parking lots, connecting driveways, and walks to serve the education and research building have been constructed, and the present irrigation system has been expanded. Landscaping has also been undertaken. A \$70,000 appropriation for these projects was made by the 1971 Legislature.

North Central Experiment Station, Grand Rapids—One herdsman's residence has been completed and a second is scheduled for completion in spring 1975. Both are being built by station personnel. The 1973 Legislature appropriated \$35,000 for this construction.

Northwest Experiment Station, Crookston—A 2,400 square-foot dairy warm-confinement facility was completed in 1974 to replace a two-story barn lost by fire in August 1970. Construction of a herdsman's residence and a garage and the resurfacing of roadways and operational areas were completed with a \$40,000 appropriation from the 1971 Legislature.

Southern Experiment Station, Waseca—A centralized grain-drying and storage facility has been constructed with a 1969 legislative appropriation of \$35,000. A dairy research facility, including adjacent silos and a feed-mixing and -handling structure, was completed. The 1969 and 1971 Legislatures appropriated a total of \$198,000 toward the project. Surfacing of roadways and operational areas has been completed for \$10,000.

Southwest Experiment Station, Lamberton—Construction of a pond and drainage system has been completed with 1971 and 1973 appropriations totaling \$52,536.

West Central Experiment Station, Morris—An office, laboratory, and continuing education building, funded by a 1971 legislative appropriation of \$230,000, has been completed. Two herdsman's residences were completed, and an existing greenhouse was moved to the east farm. Appropriations of \$52,000 and \$15,000, respectively, were made by the 1971 Legislature for these two projects.

REMODELING AND REHABILITATION

Twin Cities Campus

Minneapolis—Alterations to meet safety requirements for industrial shop operations and to effect flexibility for programmatic functions in Peik Hall have been completed with a 1973 appropriation of \$100,000.

All projects scheduled at this time for the continued upgrading of Walter Library have been completed, including improved lighting in the main reading rooms, minor construction to meet safety requirements, and upgraded ventilation in portions of the building.

Initial remodeling of the Zoology Building has been completed with a portion of the 1971 appropriation of \$280,000. Planning through schematic design has also been carried out and forms the basis of the 1975 Legislative Building Request.

Remodeling of the University Hospital's emergency receiving facilities has been completed with a \$684,000 appropriation made by the 1971 Legislature.

St. Paul—Phase III of the Coffey Hall remodeling project has been completed. This project was funded by a \$750,000 appropriation from the 1971 Legislature.

LAND

During the biennium, additions were made to the Twin Cities Campus/East Bank as follows:

In St. Anthony City Addition, Blocks 30 and 31, bounded by Washington Avenue S. E. and by Walnut, Delaware and Union Streets S. E., 5 parcels	41,132 sq. ft.
In St. Anthony City Addition, Block 48, bounded by River Road East and by Fulton and Oak Streets S. E., one parcel	2,722 sq. ft.
In Baker's Addition to St. Anthony, Blocks 7, 9, 10 and 11, bounded by Washington Avenue S. E. and by Erie, Fulton and Oak Streets S. E., 23 parcels	113,330 sq. ft.
Vacation of Delaware Street between Oak and Ontario Streets S. E.	24,000 sq. ft.

In Meeker Island Land and Power Company's Addition, Blocks 7 and 8, bounded by River Road East and by Oak, Fulton and Erie Streets S.E., 2 parcels 8,968 sq. ft.
 Land previously leased from the Burlington Northern Railroad was purchased to permit permanent developments at the east end of Bierman Field, in Brott's Addition of Outlots to St. Anthony and in unplatted part of the E½ of the SE¼ of Section 24, T29N, R24W, one transaction 126,955 sq. ft.

For the development of the Twin Cities Campus/West Bank, the following transactions were completed:

In Hancock and Rice's Addition, Blocks 4, 5, 7 and 8, bounded by Washington, 19th and 21st Avenues South and by 1st Street South, 13 parcels were acquired (add) 66,448 sq. ft.
 In Town of Minneapolis Addition, Block 194, bounded by Riverside, 21st and 22nd Avenues South and by 5th Street South, 6 parcels were acquired (add) 20,734 sq. ft.
 Vacations of Washington Avenue from 19th Avenue South to the east line of 20th Avenue South; of 20th Avenue South from the south line of 1st Street South to the north line of Washington Avenue South; and of 2nd Street South between 19th and 21st Avenues South (add) 142,032 sq. ft.
 Of the two gas holder sites acquired in 1959, one remains inside the area for West Bank developments at 20th Avenue South and 1st Street South. The other site, at 20th Avenue South and Bluff Street, is not inside the development area and was sold (deduct) 44,867 sq. ft.

Adjustments to land on the Twin Cities Campus/St. Paul were as follows:

For southward extension of Fairview Avenue, a 0.966 acre parcel at 1940 West Larpenteur Avenue was purchased (add) 42,095 sq. ft.
 At 1689 North Cleveland Avenue, the south 94.5 feet of the north 561.5 feet of the east 216.84 feet of the west 433.67 feet of the east 466.67 feet of the SE¼ of the SE¼ of Section 17, T29N, R23W, Village of Falcon Heights, Ramsey County, was purchased (add) 20,491 sq. ft.
 Land acquired in 1960 for drainage at the intersection of Fulham Street and Roselawn Avenue, was sold (retaining an easement for tile line and access for maintenance): Lots 10, 11 and 12 together with the adjacent easterly half of the vacated alley, Block 1, Garcelon's Addition to St. Paul (deduct) 19,602 sq. ft.
 A parcel between Raymond and Cleveland Avenues and south of Scudder Avenue was sold to the City of Saint Paul in exchange for vacation of previously platted but undeveloped streets and alleys east of Cleveland Avenue in the Commonwealth Terrace housing area: Parts of Lots 1, 2, 3, 15 and 16, Block 50, St. Anthony Park North Addition to the City of St. Paul (deduct) 18,750 sq. ft.

In the Twin Cities Campus/Midway area, land and a building were acquired as follows:

Adjacent to the west from the Administrative Services Building, the east half of Lot 25 (except the east 55 feet), Auditor's Subdivision No. 9, and the building thereon at 2642 University Avenue, St. Paul 28,993 sq. ft.

Off campus in Minneapolis, the Community-University Health Care Center at 2016-16th Avenue South, previously rented, was purchased:

Lots 18 and 19, Foster's Addition to Minneapolis 14,679 sq. ft.

At the Rosemount Research Center, a parcel of land was sold to the Dakota County Area Technical and Vocational Institute:

The northerly 1,400 feet of the SE¼ of Section 27 and the northerly 1,400 feet of the westerly 290 feet of the SW¼ of Section 26, T115N, R19W (deduct) 94.37 acres

Additions were made to the Minnesota Landscape Arboretum near Chaska in Carver County as follows:

Parts of the SW¼ of the SW¼, Section 8, T116N, R23W 20.118 acres
 Parts of the NW¼, Section 17, T116N, R23W 17 acres
 Parts of the NE¼, Section 17, T116N, R23W 38.98 acres

Additions were made to the campus of the University of Minnesota, Duluth, as follows:

In Motorline Park Division, City of Duluth, north of St. Marie Street and west of Oakland Avenue, Lots 4, 5 and 6, Block 9 7,695 sq. ft.
 In Superior View First Division, City of Duluth, north of Allen Avenue, south of Lyons Street and east of Brainerd Avenue, Lots 18, 20 and 22, Block 2 14,940 sq. ft.
 In Superior View Second Division, City of Duluth, north of Buffalo Street, south of St. Marie Street and east of Brainerd Avenue, Lots 16, 18, 20, 22, 32, 34, 40, 42, 44 and 46, Block 19 31,100 sq. ft.
 Vacation of Montrose Avenue between the alleys south and north of Worth Street, and vacation of Worth Street from Oakland Avenue to the end of Worth Street 389.89 feet (more or less) west of Montrose Avenue 71,342 sq. ft.

A deduction was made from the campus of the University of Minnesota, Duluth, as follows:

A strip of land 10 feet wide and 203 feet in length located immediately east and adjacent to Lot 22, University Heights Addition, Duluth, was sold (deduct) 2,030 sq. ft.

At the Northwest Experiment Station, Crookston, a parcel of land formerly leased as a substation site was sold to the electric power company:

The south 140 feet of the east 100 feet of the west 647.5 feet of Government Lot 4, Section 19, T150N, R46W (deduct) 0.321 acres

At the North Central Experiment Station, Grand Rapids, a parcel of land was acquired:

The part of the SW¼ of the SE¼, Section 11, T55N, R25W lying west of the Burlington Northern Railroad right-of-way 31 acres

At the Southern Experiment Station, Waseca, farmland was purchased:

The W½ of the NE¼ (except the south 560 feet of the north 1,436 feet of the east 322 feet thereof) and all of the NW¼, Section 19, T107N, R22W, Waseca County 231.11 acres

SUPPORT SERVICES AND OPERATIONS

C. L. Carlson, *Assistant Vice President*

The challenges from inflation and the energy crisis dominated the management concerns in the operation of the service departments at the University. To maintain efficient plants and provide needed services to students and University departments, efforts were directed toward keeping informed on new methods for time and cost effectiveness. A list of the departments administered through this unit is given in the accompanying table of comparative earnings.

University Housing—Due to continually increasing costs through the biennium, only those projects essential to the immediate welfare and safety of residents were undertaken. Electrical and fire safety conditions were brought to code requirements at Comstock Hall, with more extensive electrical rehabilitation temporarily postponed. A new walk-in freezer and a dishwasher were provided at Pioneer Hall, while study was continued on extensive rehabilitation of the heating, plumbing, and other deterioration of this 45-year-old building. In general, the office complied with priority items recommended in Occupational Safety and Health Administration inspections.

When it appeared that residence halls might not be filled for the fall of 1972, one floor of 65 accommodations in Middlebrook Hall and an area of 108 accommodations in Frontier Hall were rented as office space for University departments. After renting these areas the residence halls were unable to accommodate all applicants for housing.

The individual halls maintained their unique characters, while functioning consistently with University policies and goals. The functions and numbers of resident advisers were continually assessed, resulting in cost reductions. In some halls judiciary boards were rejuvenated, and in others hall-level administrative hearings became the most common due process method for handling complaints. In September 1973 an interim alcohol policy was instituted in the residence halls, protecting the rights of those who chose not to possess and consume alcohol. Visitation alternatives continued as a necessary choice available to residents. The closed-circuit television program at Middlebrook attracted high resident participation. A new tutoring program was implemented in all halls for the past year, but the low-level use of the service did not justify continuation. A new film, "A Place to Live," was developed for publicizing residence halls. A task force on residence hall energy was established to develop suggestions for energy conservation in halls, to communicate with residents and to effect cost savings.

Following the official vacating of streets between Centennial, Territorial, Pioneer, and Frontier Halls, the "Super Block" landscaping project was completed.

The Commonwealth Terrace Cooperative, Inc., continued to operate all married student housing through a management agreement with the University. The fourth phase of Commonwealth Terrace, consisting of 24 three-bedroom and 78 two-bedroom townhouses, was nearing completion at the close of the biennium. Study was under way on rehabilitation of the 38-unit Thatcher Hall, originally built in 1939.

The Como housing project, which is still under construction, is located on Como Avenue midway between the Minneapolis and St. Paul campuses. It will consist of a community center and nine buildings, containing 27 two-bedroom apartments for the handicapped, 60 regular two-bedroom apartments, 156 two-bedroom townhouses, and 36 three-bedroom townhouses. A cooperative organization may manage the project for the University.

Temporary rental units on land purchased for approved University expansion received no major upgrading, but were maintained to the extent necessary to avoid appearance or safety deterioration, which would adversely affect the relationship of the University and the surrounding community.

Food Services—To provide food service for students and staff in high density areas, the Riverbend Cafeteria and Dinghy Snack Bar were opened in the Auditorium-Classroom Building on the West Bank, and the Spectrum Cafeteria was completed in the new Health Sciences Unit A building. In addition to the staffed units, a vending lounge was established in the Classroom-Office Building at St. Paul, and other vending lounges are being considered.

The second phase in the remodeling of Coffman Union Food Service was started to provide a modernized kitchen and a variety of service areas, including the Apple Barrel and the Grocery Deli, equipped for the new fast-food methods. A variety of menus were planned and flexible hours of service complement Union programming. While the cafeteria areas were being remodeled in Phase I, their services were offered in temporary areas.

Renovation of St. Paul dining facilities was begun to increase productivity, capacity, and attractiveness. A modest renovation of Shevlin Hall Cafeteria was being planned.

All new construction and renovation programs were designed for simplification of operating systems. The newly opened service areas in all locations were developed as satellite operations, with frozen entrées and desserts produced at the Coffman Union kitchen. Experience gained was evaluated in the consideration of a food service production center. Significant payroll reduction was achieved by not filling vacancies resulting from employee terminations.

Special Events Services began a multi-year remodeling program of upgrading concession stands in Memorial Stadium and Williams Arena to meet environmental health recommendations and improve appearances. In consultation with the athletic department, a line of novelties was added for sale.

The Milk and Cream plant was renovated for improved operating effectiveness. The pasteurizing operation was modernized, the piping system redesigned, and the filling operation expedited.

Bookstores—Plans for a new East Bank bookstore that will replace the Nicholson and Engineering stores were revised to include the University Admissions and Records department in the building. Design work for the new enlarged bookstore was finished, and a preliminary interior layout was developed.

At the close of the biennium, preparations were complete for opening a new store in the Health Sciences Unit A building.

Customer needs were reviewed, in reaction to energy shortages and to operating cost increases. As a result, evening hours were changed for the Harold D. Smith store on the West Bank and for the off-campus book centers patronized by evening class students. Textbook information and ordering programs were improved and pocket calculators were added as a new product line.

Transportation Services—Parking lots were phased out where construction projects materialized, and new parking areas were developed for contract, meter, and disabled customers. Opening of the Health Sciences Ramp was postponed beyond the close of the biennium because of corrections required for deficiencies found in the structure. Review of operations in response to rising payroll costs and energy scarcity resulted in the elimination of all-night, Sunday, and holiday service in the Northrop Auditorium garage. Staffing was reduced in various lots while still maintaining adequate convenient parking. Lighting in ramps and garages was reduced 50 percent for energy conservation.

Flight Facilities purchased two used training planes and an instruction simulator for private pilot and advanced licenses and ratings for students, staff, and faculty. Only twin-engine equipment was used for transportation of University personnel. Compliance with federal aviation regulations necessitated continual updating of equipment and training.

Bus programs were evaluated by Transit Services in recognition of the changing needs of riders. Express bus routes were increased, and a fully computerized car-pool service was implemented.

Funding of general-purpose University vehicles was decentralized, and previously bud-

geted funds were distributed to departments in accordance with past usage. Increases in gas and repair costs resulted in higher vehicle service charges to customers. Smaller cars and station wagons were purchased when practical to benefit from lower investment costs and fuel economy. The Fleet Maintenance staff assisted University departments with vehicle purchase specifications, rental arrangements with outside sources, title cards, licensing, gas credit cards, and vehicle insurance. Continuing education of department employees was provided for updating knowledge of vehicle maintenance and improving office operations. The critical need for a new garage and office facility for vehicle operations was not resolved.

Auxiliary Services—Changing techniques and new equipment in the printing industry were evaluated by the Printing Department throughout the biennium. Methods were converted on a priority basis for time and cost savings to customers. Typesetting and press costs in the Printing Plant were reduced by additional changes from the hot metal to the cold-type processes. A feasibility study was planned for photocomposition. Tape binding of books was automated through purchase of a machine. A program was initiated for the editing of bulletins and other copy for printing. The value of the service was confirmed, but permanent funding has not been arranged.

Graphic Design effected notable savings by an overall cover design for a University bulletin series, and also began a general photo reference file.

After remodeling and expanding several times during the years it was located in Johnston Hall, Central Duplicating had no further room for expansion but the work load continued to grow. Plans were finalized for moving the production center to 2642 University Ave., St. Paul, leaving four copy centers for customer service on the Minneapolis campus.

To eliminate paper waste and reduce overtime, printing services from outside sources were purchased whenever economical.

Operating efficiency was increased and economies realized in the University Laundry with the completion of an addition to the Poucher Building, which provided expanded production, storage, and service areas. Extensive time and cost studies were conducted to evaluate the price schedule, resulting in adjustments because of changes in weights and processing time for new synthetic fabrics.

The Office Machine Rental Service maintained a small stock of commonly used typewriters to provide fast response to departmental requests. More elaborate office machines were special-purchased for rental to customers who committed themselves to long-term usage.

Scientific Apparatus, Glass Technology, and Scientific Instrument Shop services established a satellite location in the Biological Sciences Center on the St. Paul campus for convenience and accessibility to departments throughout the Twin Cities campus. An early opening was planned for a small machine shop in the new Cardiovascular Research Center. Consideration was given to updating equipment for increased shop capabilities in design, construction, repair, and service of teaching and research apparatus.

At the close of the biennium study was continuing on the merits of establishing a mobile campus-mail distribution system using a van in which collection, sorting, and delivery would be accomplished by two individuals capable of both driving and sorting. In conjunction with the remodeling of the post office area in Coffman Union, plans were under consideration for supplementing window service with a stamp vending unit accessible during all hours the building is open.

Physical Plant Maintenance—Conservation of energy and expansion of automation centers and computer systems received major consideration. Efforts were directed toward reducing heating plant and lighting loads, replacing deteriorated windows with double glaze or thermoglass, increasing roof insulation, and studying new conversion processes such as gasification and pyrolysis systems.

In compliance with Minnesota Pollution Control Agency regulations, smoke recording equipment was installed by the heating plants at various locations. As a result of energy conditions, transition was made back to coal as the University's main standby fuel, to be used in conjunction with gas and fuel oil. In 1973-74 no fuel oil was used.

A new training program in the custodial division resulted in an improved employee-supervisor ratio.

The department responded to Occupational Safety and Health Administration programs by initiating safety meetings and offering continuous counseling on specific problems. Noted deficiencies were corrected as funds were available.

In fall 1972 a program for managing firm bid projects was instituted. A WATS system was incorporated in the telephone services. Solid-waste disposal remained under study at the close of the biennium.

COMPARATIVE EARNINGS, SUPPORT SERVICES AND OPERATIONS DEPARTMENTS

	1972-73	1973-74
Centennial Hall	\$ 991,756	\$1,041,712
Pioneer Hall	692,496	720,123
Territorial Hall	528,114	590,438
Frontier Hall	538,305	559,684
Comstock Hall	654,258	739,596
Sanford Hall	592,033	617,859
Middlebrook Hall	1,100,695	1,182,846
Bailey Hall	140,851	174,242
Commonwealth Terrace	213,063	252,362
Thatcher Hall	15,595	19,762
Pillsbury Court	84,281	84,270
University Grove Rentals	8,899	8,949
Coffman Union Food Service	678,271	691,433
Shevlin Hall Cafeteria	90,829	90,887
St. Paul Dining Center and Snack Bar	522,194	480,971
Blegen Hall Food Service	127,304	145,437
Auditorium Classroom Building Food Service	42,477	145,773
Health Sciences Unit A Food Service .....	..	1,061
Milk and Cream Department	337,486	380,923
Food Stores	1,838,496	2,066,983
Special Events Services	242,999	222,762
Vending Service	1,195,645	1,271,688
Printing Department and Graphic Design	1,364,970	1,342,767
Bindery	152,738	149,207
Central Duplicating Service	490,390	544,465
Duplicating Services and Bulletins (St. Paul)	256,307	256,241
Addressing and Mailing Services	78,222	95,534
Laundry	715,057	634,490
Calculating Machine Rentals	33,880	35,931
Typewriter Rentals	28,730	37,015
Vehicle Leasing, Rental, and Shop	502,254	756,883
Lockers	9,382	11,653
Como Clinic Building	990	930
Centennial Hall Student Services	4,032	5,026
Pioneer Hall Student Services	2,930	3,318
Territorial Hall Student Services	1,459	2,298
Frontier Hall Student Services	2,349	3,412
Comstock Hall Student Services	1,403	817
Sanford Hall Student Services	4,934	3,452
Middlebrook Hall Student Services	5,461	5,164
Bailey Hall Student Services	1,721	2,224
Professional Colleges Bookstore	944,267	1,272,882
Nicholson and Smith Bookstores	2,734,656	3,019,170
Coffey Hall Bookstore	399,412	474,872
University Parking Lots—Minneapolis	811,305	846,898
St. Paul Parking Lots	149,812	151,843
River Flats Parking Lot	95,635	99,220
Fairgrounds Parking	12,945	19,389
Washington Avenue Parking Ramp	135,280	134,716
Union Ramp	382,394	388,580
University Garages	258,852	226,218
University Flight Facilities	225,630	211,827
Physical Plant Shops (13)	226,212	242,974
Heavy Equipment Rentals	52,560	55,654
Transit Services	60,553	66,322
Scientific Apparatus Services	146,233	176,149
Class Technology Services	42,868	35,502
Fleet Maintenance	43,058	-4,651
Post Office	2,833	3,000
TOTAL	\$21,017,761	\$22,810,153

Divisions of Health Sciences

Lyle A. French, *Vice President*

The Office of the Vice President for Health Sciences completed its second biennium of unifying the academic health disciplines during 1972-74, under the continuing leadership of Dr. Lyle A. French. The collegiate units of dentistry, medicine, nursing, pharmacy, and public health, together with the University of Minnesota Hospitals, pursued the primary objective of educating health care professionals for the state. The deans and directors of each of the health sciences units continued to serve in their respective leadership roles.

Within the vice president's office, the appointment of coordinators for minority programs and for learning resources initiated two additional support services designed to maximize resources in areas where common purposes, programs, and goals exist among units.

The Health Sciences Minority Program was developed to recruit minority students for the health disciplines. The program seeks to better inform students of the wide variety of health careers available, provides counseling and advising, and has developed course sequences for underprepared students.

The Learning Resources Program assists faculty in the design of educational experiences, using resource materials that were developed as components of other course or curricular plans. Technical capability is being expanded, and the program will emphasize the use of nonprint media for classroom instruction, independent study, and continuing education, as well as the off-campus use in affiliated institutions and agencies that also train students for health professions.

A pilot learning resource center was established in the Biomedical Library to provide health sciences students with access to nonprint learning resources such as computer terminals for programmed instruction, tapes, cassettes, filmstrips, slides, autotutor teaching machines, video-tape playback units, and projection and recording equipment. This experience has provided useful information for the development of a resource center designed to meet the needs of the total health sciences student population.

The programs in minority activities and learning resources, together with the previously established support services for programs in affiliations, allied health, health care systems research, and student affairs, assist the vice president in the integration of health sciences activities.

Major concentration during this biennium continued to be on the expansion in programs, enrollments, and facilities, as noted in the unit descriptions below. Total enrollments increased by approximately 1,000 students, with the largest increases occurring in the Medical School and the School of Dentistry.

Planned facilities construction is somewhat behind the enrollment increases, requiring makeshift arrangements for increased student and faculty numbers. Adequate funding for facilities construction must be acquired to keep pace with these enrollment increases.

SCHOOL OF DENTISTRY

Erwin M. Schaffer, *Dean*

The 1972-74 biennium was a significant period in the history of the School of Dentistry because new facilities became available for our educational, research, and service programs. In August 1973, the School of Dentistry began moving into quarters in the new Health Sciences Unit A building. As additional sections of the building were completed in 1973-74, other teaching and research programs began to occupy the facilities. As of June 30, 1974, most of the dental programs had moved from Owre Hall and the Jackson-Owre Addition, but a few research programs still remained in the old quarters. It is anticipated that all areas in the new building except the animal quarters will be occupied by the close of 1974.

The new facilities permitted the School of Dentistry to increase enrollment in all its educational programs and to implement a number of program revisions developed by the faculty. An entirely revamped clinical system will allow operating in private cubicles. It will incorporate a central method of sterilizing and distributing clinical instruments, which will now be owned by the school, providing better quality control and sterility and a cost saving and convenience for the students. Centralized patient records will be kept, and patient

assignments, student progress, and clinical treatment will be monitored by computer. The new facilities will also allow greater use of small-group teaching. A more flexible curriculum will utilize our clinical facilities on a year-round basis, expanding our clinical teaching program and extending more dental services to the public. Curriculum changes will also include more electives, autotutorial opportunities, and the option to proceed at a pace commensurate with abilities and desires, allowing students to complete their undergraduate dental education in less than the traditional four years. The new facilities have also allowed the School of Dentistry to improve and expand the research and research training programs. These efforts will be described later in this report.

Undergraduate D.D.S. Program—The educational background of entering dental students has continued to increase. By 1974, 100 percent of these students had completed three years, and 75 percent had completed four years, of liberal arts study.

In 1972-73, the Admissions Committee began using geographic location as a guide in its selections to help distribute our dental graduates more equitably in Minnesota. Studies at the School of Dentistry have shown that students from smaller communities are more likely than students from large communities to practice in smaller communities.

During the 1973-74 year, the School of Dentistry began participation in the centralized application service of the American Association of Dental Schools. This new plan, which permits students to apply to a number of dental schools with a single application, resulted in a sharp rise in the number of nonresident applications and increased the work of the Admissions Committee. Virtually all dental schools now participate in this service.

Five years ago, the School of Dentistry formed a Committee for Minority and Disadvantaged Students. As a school, we are committed to the stand that blacks, Mexican-Americans, and American Indians, in particular, have been underrepresented in the dental profession, and that there is a need to increase the number of dental practitioners from these minority groups. In this regard, school and committee efforts during the biennium focused on information, publicity, and recruitment; tutoring and counseling; and financial aid. Admission of Minnesota regional racial minority students to the school is our primary goal.

The school also cooperates closely with the Opportunities in Health for Minorities Program. This program, funded in 1973 by the Department of Health, Education, and Welfare, is designed to increase minority enrollment and ensure the graduation of minority practitioners.

The program to recruit racial minority students has had some positive results. In the D.D.S. program, the number of black, Mexican-American, and American Indian students increased from two in 1971-72 to 10 in 1973-74. In addition, there were eight Asian-American, Asian, or Indian students enrolled or accepted.

Since 1970, a specific effort has been made by the School of Dentistry to publicize the advantages of a dental career to women through newspaper articles, discussions, and lectures. These efforts, and the national trend of women seeking professional careers, have resulted in a marked increase in the number of women applying to, and being accepted by, the School of Dentistry. In 1969, two women applied for admission and one was accepted; 75 women applied for 1974 admission and 17 were accepted. In 1971-72 there were eight women enrolled in the D.D.S. program; by 1973-74 there were 35 women either enrolled in the D.D.S. program or accepted for fall 1974 enrollment.

As part of the long-range plan to obtain new facilities, enrollment in the D.D.S. program was to be increased from 110 students in 1966 to 150 students when the new facilities were fully completed. Some phased growth took place between 1967 and 1972, increasing the class size gradually to 130 students. In fall 1973, when the fourth floor of the Health Sciences Unit A building was open for the School of Dentistry, the entering class was increased to 145 students, with plans to increase to the projected 150 by fall 1974.

A major change was made in the D.D.S. curriculum starting in fall 1972. The entering students began a new flexible curriculum that permitted them to graduate in less than the traditional four academic years. Earlier completion of graduation requirements was made possible by extension of the academic school year and by moving all required courses from the fourth year into earlier years. Fall quarter was extended by four weeks and summer sessions were available for clinical activity, although no formal lectures were scheduled. All formal lectures, seminars, special clinics, and demonstrations (except for some special lectures) were

scheduled within three calendar years. There was no elimination or reduction of any of the courses prerequisite to the D.D.S. degree. Our standards of academic and clinical proficiency remained at the same high level, but the variable demands of our students were more efficiently and effectively met. Students taking advantage of this flexible curriculum could elect to specialize early in their studies and thus enter graduate programs, internships, private practice, or other opportunities at an earlier date. This change does not produce more dentists, but it does provide more efficient utilization of staff, facilities, and the students' educational dollars and it potentially can add one year to the professional career of the students.

Many students enrolled prior to the inception of the flexible curriculum also took advantage of it. In 1972-73, 18 students earned the D.D.S. degree in less than four years, while in 1973-74 the number increased to 46. The opportunity for students to graduate at different times in the academic year has been made more practical by the development of Regional Dental Board Examinations that are now offered four times a year.

Dental Assisting Program—In 1972, a decision was made to increase the dental assisting program from one to two years, and the transition from a one-year to a two-year program began. This curricular change was made to permit the students to earn the Associate in Arts degree through a combination of dental assisting courses and liberal arts study, usually taken through the University's General College. In the two-year curriculum, approximately 60 percent of the course work is in dental assisting and 40 percent in liberal arts. The two-year program permits a better background for the students and also provides uninterrupted time in the clinic, which is helpful to both the dental assisting and the dental students who work in a team setting.

During the biennium several achievements were made through curricular changes. The Bachelor of Science teacher-training program produced three graduates, all of whom became employed in dental assisting education. The University's Dental Assisting Program began providing clinical training to dental assisting students from other schools in the Twin Cities area. The program of teaching expanded duties to the students, which was started in 1971-72, stabilized, improved, and increased.

The enrollments in the Dental Assisting Program increased over the biennium. There were 30 students training in 1970-71, 52 in 1971-72, 60 in 1972-73, and 72 in 1973-74. The 1973-74 enrollment included students in the two-year Associate in Arts program and the four-year Bachelor of Science teacher-training program, and students from affiliated institutions who received clinical training only.

Dental Hygiene Program—No significant changes were made in the dental hygiene admission requirements, but decisions were made to increase program enrollment and to admit some nonresident students. Increased enrollment was allowed by the new quarters in the Health Sciences Unit A building, which were first available in January 1974. Entering class size was increased from 60 students in fall 1972 to 100 in fall 1973.

For the 1974-75 school year, 150 students were accepted to begin in two groups: 75 in fall 1974 and 75 in winter 1975. These students are expected to graduate in August and December; other dental hygiene schools in the state graduate students in June. This new policy will distribute the entrance of graduates into the job market more evenly over the year.

In recent years, the academic quality of students entering the program has increased sharply. One apparent reason for this is the marked increase in the number of applicants.

During the 1973-74 academic year, curricular and scheduling changes were made to accommodate the increased class size of 100 and to gain experience for the larger class size of 150 planned for the following year. Methods were devised to offer course modules and to organize class groups of 25 students for better teaching and counseling. Because students enter dental hygiene with a great variation in educational background, a more flexible curriculum has been developed to permit more self-paced instruction.

As a result of improved admission practices, individualized instruction and counseling, and a more flexible curriculum, a remarkably low rate of attrition has been maintained. Some minor attrition has often been offset by transfers or returnees. Of the 60 first-year students enrolled in 1972, 60 graduated in June 1974. Of the 100 students enrolled in fall 1973, 96 remain in that class.

Community Programs—During 1972-74, the dental hygiene faculty developed and implemented an extensive program of providing dental hygiene clinical services and dental health education in a large number of nursing homes, hospitals, clinics, and day care centers. The program centered around learning experiences for the dental hygiene students, but also included dental health instruction to teachers and health personnel; dental health information to students, patients, and nursing home residents; and clinical care to a large number of patients in the Greenbrier Home for Mentally Retarded Men, the Neighborhood Involvement Program, and the St. Cloud Veterans' Administration Neuro-Psychiatric Hospital. In addition, students and faculty provided clinical care in 13 other agencies, and dental health education in 34 locations.

Program for Dental Care of Handicapped—During 1974, the Robert Wood Johnson Foundation made available \$4.7 million for competitive bids by schools of dentistry to assist the grantee schools in improving their programs in the care of handicapped persons. Of the 47 dental schools that applied 11, including the University of Minnesota, were selected. The award to the University of Minnesota in April 1974 was \$395,000, extending over a four-year period. The award was given not only to improve the abilities of dental students in caring for handicapped persons, but also to improve the attitudes of students toward handicapped persons and to overcome any inherent reluctance they might have in caring for the handicapped. The program, developed by the Division of Pediatric Dentistry of the University of Minnesota, encompasses didactic instruction and extensive clinical training for all students, enrichment training for selected students who have the aptitude and motivation for the care of the handicapped, and a continuing education program for practitioners in Minnesota and the upper midwest.

Dental Information Service Center—In 1971-72, the Division of Health Ecology initiated the Dental Information Service Center (DISC). This center was designed to apply information-systems technology to health manpower information and service requirements. In July 1972, a federal contract was awarded to develop and implement this statewide manpower information system. Since the awarding of that contract, the center has pioneered in the development of several highly acclaimed service and research activities.

DISC developed a three-pronged placement service, providing a computer-based practice-location search of Minnesota's communities, a computerized clearinghouse for all types of dental manpower placement information, and a community liaison activity to facilitate local recruitment of health manpower. These services have recently been expanded to include all major health professions in the state, under funding from the University's Council of Health Sciences Deans and Directors. The center has undertaken a census of Minnesota's dental manpower and provides manpower reports and studies oriented toward planning requirements. It also has attempted to identify dental manpower shortage areas.

The center has drawn the attention of health professional organizations across the country, and many states are involved in adopting portions of the DISC system for their own use. Several of the service components are being considered for regional or national implementation.

Rural Dental Program—This program, initiated in summer 1968, was designed to acquaint dental students with the opportunities and advantages of dental practices in rural Minnesota. From the start of the program, most participants indicated a desire to include more students and to lengthen the externship period.

Public funding was obtained to support the program through a special grant from the National Institutes of Health. The grant was awarded July 1, 1972, to permit program expansion in summer 1973. The student externship period was extended from one week to 10 weeks, and the students became more actively involved in rendering dental care in the rural dental offices. In 1973, Montana was included in the program, and in 1974 South Dakota joined.

Over the past six years, 95 students have been involved in 66 communities through the program, and it has influenced these students in their decisions about practice locations. Students involved have been able to gain insight into practice situations and thus better prepare themselves for their profession.

Faculty Publications—During the 1972-74 biennium, the faculty published more than 300 journal articles, textbook chapters, abstracts, and special papers. In addition, several faculty wrote or revised textbooks and manuals. The new textbooks were *Textbook of Practical Oral Surgery* by Daniel E. Waite, and *Chromosomes and Human Cancer* by Jaroslav Cervenka and Lucien Koulsischer.

Faculty Retreat—On June 2-4, 1974, the School of Dentistry held its first faculty retreat to provide the faculty with an opportunity, away from the University environment, to discuss topics of importance to the School of Dentistry. The discussions centered on curriculum and patient care. A total of 110 faculty and five students participated in the retreat. (One section of the program was presented by students.) The consensus of the meeting was that it was indeed worthwhile and that, if at all possible, the retreat should be an annual event.

Visiting Faculty and Lecturers—During the 1972-74 biennium, the visiting faculty under the Lasby Visiting Professorship Program were Dr. Jules A. LeRoy, Department of Genetics, University of Antwerp, Belgium, and Dr. Poul Holm-Pederson, Department of Periodontology, Royal Dental College, Aarhus, Denmark. Other visiting faculty were Dr. Arne R. Hagen, Department of Pedodontics and Caries Prevention, University of Oslo, Norway, and Dr. Roger Cooke, Government Cancer Institute, Maharagama, Ceylon.

The school was fortunate in having a considerable number of visiting lecturers and consultants during 1972-74 from many states in the United States and from several foreign countries. The distinguished foreign scientists included Dr. Finn Praetorius Clausen, Royal Dental School, Copenhagen, Denmark; Dr. Vernon L. Duffong, Montserrat, West Indies; Dr. Lars Hammerstrom, Sweden; Dr. Martin Hobbell, London, England; Dr. S. A. Leach, Liverpool, England; Dr. N. J. Navasimahan, Physiology Research Center, Bombay, India; Dr. Harry W. Saul, Mainz, West Germany; and Dr. Leon M. Silverstone, London Hospital Medical College, London, England.

Research Efforts—During the biennium, the School of Dentistry was awarded a substantial increase in research project grants. In 1972-73, grants totaled \$701,649, while in 1973-74 the total increased to \$1,481,105.

The new facilities in the Health Sciences Unit A building allowed the school to improve and expand the research and research training programs. These efforts included fundamental research into the basic causes of dental caries and periodontal disease, two of man's most prevalent diseases; investigation of new health care delivery systems through more efficient and effective utilization of auxiliaries; and studies of new clinical concepts and methods to improve the therapeutic, technical, preventive, and personal care of dental patients. A few specific research projects are described below.

Antimicrobial Agents—The primary objective of this research is to analyze various antimicrobial agents that could aid in combating cariogenic bacteria in the oral cavity with few, if any, side effects. By inhibiting specific unique features of the growth of oral bacteria, the quantity of inhibitor necessary for effective prevention of caries should be low and problems in application will be simplified.

Viral Morphogenesis—The overall objective of this research is to define the events leading to the assembly of bacteriophage $\phi 29$. The investigators will attempt to isolate and characterize each subunit and structure on this morphogenetic pathway, and to identify the functional role of each nonstructural protein in the morphopoietic process. An important facet of our long-term goal is a complete description of the function of the $\phi 29$ viral genome as it interacts with the *Bacillus subtilis* host. The genome of $\phi 29$ is 11 million daltons in molecular weight, and thus an attempt to identify each viral gene product and its function is a reasonable goal.

Fluoride—The anemia of mouse pups given a low-fluoride diet has been confirmed and has been shown to be a microcytic hypochromic anemia, which is related to the utilization or availability of iron in a marginally adequate diet. Female animals on a low-fluoride intake exhibit a decrease in fertility compared to animals on the same diet but higher fluoride intakes. Guinea pigs fed a low-fluoride/high-lipid diet have significantly greater levels of triglycerides and cholesterol in plasma compared to animals given the same diet but a higher fluoride intake. Fluorine studies of human plasma are exploring these findings about the lipid patterns of the blood. Studies with mice calvaria have explored in tissue culture the effect of fluoride content of the bone on turnover of calcium, action of parathormone and calcitonin,

and level of enzymes and metabolites produced. Chemical studies of cementum and collagen of teeth of persons afflicted with the genetic disease dentinogenesis imperfecta were carried out.

Development Palate—To understand cleft lip and cleft palate formation and eventually reduce their occurrence, it is necessary to understand normal palatal development. We have been studying one aspect of normal palatal development, the occurrence of embryonic programmed cell death, which we have suggested is a necessary event to permit subsequent development. We have shown biochemically, histochemically, and electron microscopically that changes in energy-generating systems in specific embryonic cells precede any overt evidence of the death of these covering cells. Most recently we have shown that maternal thyroxine localizes in these tissues at critical embryonic stages and is a good candidate as a triggering factor in the programmed cell death.

Acid-Etch Restorative Procedures—The interrelationship between tooth preparation, concentration of acid conditioner, and retention of restorative materials used in the acid-etch technique was investigated. Seventy-two extracted maxillary incisors were separated into six groups. Variables used in the comparison included scalloped or flat cavity preparations; a concentration of 25 percent, 50 percent, and 75 percent phosphoric acid acrylic resins; and composite resins. One of the latter materials was polymerized with the same ultraviolet light that was used for the acid-etch restorations. The retentive strength of all restorations was tested using tangentially applied forces in the laboratory. The ultraviolet-light polymerized material tested was shown to have the strongest bond, and scalloping of the cavity preparation margins generally enhanced this bonding. Retention of the restorations was also affected by the concentration of phosphoric acid used.

Speech—Studies employing intraoral displacement transducer appliances to monitor the movement of the soft palate during speech were carried out. This technique was used with cleft palate patients to teach more extensive movement of the soft palate during speech by providing a visual feedback of soft palate movement. The results indicated that the degree of soft palate elevation could be increased using this technique.

The transducer appliance was also used with normal speakers to obtain information about soft palate movement during a variety of speech and nonspeech tasks. This information was compared to previous studies of soft palate movement using radiographic techniques. It was demonstrated that the transducer technique did provide a sensitive, reliable, and valid index of soft palate movement during a variety of tasks.

Problems, Needs, and Plans—To meet our program opportunities and obligations in the new facilities, we required marked increases in staff and faculty and in our supplies budget. These increases were essential to offset increasing enrollments, to implement our new clinical and educational programs and systems, to permit the lowering of student-teacher ratios in the laboratories and clinics, to assist the maintenance and expansion of our research and research training programs, and to satisfy the special requirements unique to operating in a new and more complex environment. While the School of Dentistry is very grateful for the increased funding it received to operate the programs and systems in the new facilities, the increases have not been sufficient to carry out the programs in the efficient and effective manner that was intended and is clearly needed. Therefore, the most serious problem in the School of Dentistry is the great need for more staff and faculty. The most critical staff needs are for secretaries, dental clinic supervisors, dental assistants, clerks, cleaning personnel for our clinics, and laboratory technicians. Additional faculty are needed in virtually all our divisions and programs.

As part of the program and physical facilities planning for dentistry since 1964, specific attention was given to the future growth and development of hospital dentistry. As the planning developed, the hospital dentistry facilities were designed for the seventh floor of Unit B-C, thus linking up with the seventh floor of Unit A, which houses several dental clinics. This concept and architectural design were included in the grant application for Unit B-C submitted November 1, 1970, and again April 1, 1974. Currently, the hospital dentistry program is housed in 487 net square feet of space on the third floor of University Hospitals. This space is totally inadequate. Therefore, a second serious need of the School of Dentistry is for the completion and occupancy of the new hospital dentistry facilities. Additional space for hospital dentistry is needed until Unit B-C is completed.

In the new facilities, innovative and progressive programs have been implemented in education, research, and service. One program, which we intend to develop much further, is in the area of self-instruction systems, for dentistry lends itself well to using autotutorial methods and programmed learning. These innovative educational systems will permit more efficient teaching and learning for a greater number of our students. The autotutorial system allows students to proceed at their own paces and to separate subject matters into units commensurate with their own abilities. In our new facilities in Unit A, dentistry has an autotutorial room close to our teaching clinics and laboratories. As funds are available, we want to have study carrels in this room capable of providing information via films, tapes, slides, and programmed materials. They will be self-contained carrels at first, but will have the potential for cable television and computer transmission from central information storage facilities.

The self-learning materials in the School of Dentistry will be for the convenient reference of students working in nearby clinics and laboratories. The school recognizes that a centralized Health Sciences Learning Resources Center is essential, and we strongly support that development. For dentistry's needs, that center should provide self-instruction materials in basic subjects common to many of the health sciences, such as the human biological sciences. Further, the school supports the plan of the center to assist health science schools in the development of self-instructional techniques, concepts, and materials.

Clinical instruction emphasizes total or comprehensive care for our patients. In the adult care clinics, for example, this approach has been coordinated to involve all clinical divisions and programs, and has focused on the technical and therapeutic aspects of dental care. In recent years, concepts and methods of preventing dental disease and conditions have been improving and increasing. This philosophy has been included in the teaching programs of several of our clinical divisions. Our plan now is to implement an ambitious program of coordinated instruction in preventive measures for the benefit of our patients and students. In order to be successful, the program needs to be implemented in a manner that is coordinated and comprehensive through all clinical areas in which patients receive treatment.

Finally, one of the key plans of our School of Dentistry is to implement a more aggressive effort in curriculum review and course evaluation. This concept has been given special attention by the school over the past decade, but will be expanded further because of the growing complexity of our educational programs.

MEDICAL SCHOOL

N. L. Gault, Jr., *Dean*

Mission—The primary objective of the Medical School is to provide opportunities and programs, in the form of undergraduate and graduate medical education for the future physicians and related health professionals who will serve the health care needs of the state and nation, and as continuing medical education to maintain and develop the competence of health professionals in practice.

A second objective is to engage in research that will advance the health sciences. In the broadest sense, this includes basic biomedical research; investigations of the normal functions of the human body, the mechanisms of disease processes, and the prevention of disease and maintenance of health; studies of health care and health services organization in relation to community needs; and studies of the processes of communication and education through which the effectiveness of all the health sciences may be increased.

The third major objective of the Medical School is to provide health care and health services to the people of the state. This objective is closely correlated with the education and research missions of the school, since each is supportive of the other. The faculty provide health care services that are used as teaching laboratory and demonstration models for the health professions. To obtain the most effective delivery of health care, that opportunity must be widely available to maintain the competence of the practicing health sciences professionals. Direct patient care is essential to maintain the proficiency of the faculty and to establish appropriate educational relationships with health professionals throughout the state.

Administration and Organization—During this biennium, Regents' Professor Robert A. Good resigned his appointment as head of the Department of Pathology. Dean Gault, upon

recommendation of a faculty committee, consolidated the Department of Laboratory Medicine and the Department of Pathology and on January 1, 1973, appointed Dr. Ellis S. Benson to head the new Department of Laboratory Medicine and Pathology. This consolidation provided the essential combination of resources to improve educational and research programs in these disciplines.

Dr. Roby C. Thompson, Jr., was appointed head of the Department of Orthopedic Surgery, replacing Dr. John H. Moe who retired June 30, 1974. Dr. Thompson will assume his post on August 1, 1974.

With the increasing number of students, the Office of Student Affairs and Admissions required additional staffing. On July 1, 1973, Pearl P. Rosenberg, Ph. D., and Dr. George E. Williams were appointed assistant deans. Both were appointed from within the faculty to serve half time in this role.

Dr. John J. Sciarra resigned his appointment as head of the Department of Obstetrics and Gynecology, effective June 30, 1974. Dr. Curtis J. Lund will serve as acting head of the department.

Dr. Wallace D. Armstrong, on the medical school faculty since 1929, retired as head of the Department of Biochemistry, a position he had held since 1946. Professor Charles W. Carr was named acting head. Regents' Professor of Medicine Wesley W. Spink retired June 30, 1973, after serving on the faculty since 1937. Dr. Burtrum C. Schiele, professor of psychiatry, also retired, having served on the faculty since 1937.

Graduates—In 1973, 181 graduates received Doctor of Medicine degrees; in 1974, there were 261 graduates. During the biennium 15 graduates were from minority groups and 44 were women.

Recognition exercises honoring the senior class in medicine were held each June in Northrop Auditorium. Regents' Professor Spink addressed the class in 1973 and Professor James B. Nelson of the United Theological Seminary of the Twin Cities in 1974.

Enrollment—Enrollment in the undergraduate curriculum has increased from 830 in 1971-72 to 960 in 1973-74. The 1972 entering class had 239 students, 207 male and 32 female. The 1973 class had the same number of students, but 192 were male and 47 were female. Affirmative action in recruiting led to the admission of 12 minority students in 1972 and 23 in 1973.

Continuing its role of providing a degree program for the students graduating from the two-year medical schools in North and South Dakota, the Medical School admitted 24 students with advanced standing in 1972 and 27 in 1973.

In accordance with the mission of the Divisions of Health Sciences, a graduate program was established for the first time in summer 1973 to enroll physicians studying the clinical sciences in the new category of medical fellow specialists. This program parallels the long-standing one in the Graduate School, but has the nondegree goal of qualifying the students for the various specialty boards. Approximately two thirds of the physicians engaged in graduate medical education chose this status with a new tuition structure.

Primary care programs attracted increasing numbers of graduates. With the development and growth of the Department of Family Practice and Community Health and the expansion of educational experiences into community clinics and hospitals, the number of graduate medical students has increased by several hundred. An analysis by the Association of American Medical Schools revealed that the family practice faculty teaches more students than are taught at any other academic health center in the country. Internal medicine and family practice programs enrolled 49 percent of the 1974 graduates. In addition, 41 percent took rotating first-year post-graduate programs.

Curriculum—Only minor changes in the curriculum occurred during the biennium. A human genetics course was introduced in 1973, and human sexuality courses were incorporated into the Phase B program.

The Rural Physician's Associate Program, described in the previous *Biennial Report*, continued to be an innovative experience for students, faculty, and preceptors. More evaluation is needed to determine whether this experience attracts physicians to practice in rural communities for any length of time.

Facilities—The Health Sciences Unit A building was ready for occupancy in January 1974. Unit A will provide superior teaching auditoriums and laboratories for the basic health sciences. The Cardiovascular Research and Training Center (Unit K-E) became available in spring 1974. It contains a central receiving area, as well as the cardiovascular research center, and has been financed by federal and private funds.

The rapid growth of the faculty, which was necessitated by the increased number of students, forced the utilization of office space in Powell, Centennial, and Frontier Halls. Full use was made of the research laboratories at 2630 University Ave. S.E., Minneapolis; 421-29th Ave. S.E., Minneapolis; and 1633 Eustis St., St. Paul.

The necessary certification by the Metropolitan Council and the Board of Health for the Health Sciences Unit B-C building met strong opposition, and the announcement of federal funding, which was expected June 30, 1974, was delayed. State and private funds are available but are contingent upon the federal award. The existing ambulatory-care clinics are old, nonfunctional, and impossible to use to demonstrate exemplary care. Consequently, teaching in these areas was inhibited by the old facilities.

Financing—The federal government, through health manpower legislation, began a formula grant based on per capita medical students. The Medical School qualified for this program and was granted \$1,779,643 in 1972-73 and \$1,696,242 in 1973-74. These funds were distributed to the Medical School departments, using a base grant plus increments reflecting each department's work load in teaching medical students.

For the first time, a legislative special appropriation provided funding to subsidize community hospitals for teaching medical students. Although appropriated at \$8,000 per full-time equivalent (FTE) student, each hospital with an established critical mass of 4.5 FTE students received a subsidy of approximately \$3,000 per FTE student. The appropriation was not sufficient to subsidize the work load being provided by the community hospitals.

Research—The faculty continued its success in competing for research and training funds from the government and foundations. Sponsored research and training support ranged from \$30 million in 1972-73 to \$32.5 million in 1973-74. The faculty contributed hundreds of papers for publication and maintained a national, as well as an international, presence in biomedical research.

SCHOOL OF NURSING

Isabel Harris, *Dean*

Organization and Administration—Major appointments during the biennium included Barbara Redman as associate dean in August 1973, Ida Martinson as chairman for research in September 1972, and Georgia Park as student personnel officer in January 1973.

The Constitution and Bylaws of the School of Nursing were revised and were adopted by the faculty in March 1974. At the close of the biennium, the Constitution had not been ratified by the Board of Regents, but the Bylaws were being implemented.

Admission Requirements—The number of applicants continued to increase, and a higher proportion of those who applied to the undergraduate program were fully qualified for admission. This was a consequence of efforts to provide effective prenursing counseling.

The proportion of minority and disadvantaged students admitted has increased to 5 percent. Retention of this population continued to be a problem because, in many instances, the students were not prepared to cope with basic medical science course work.

Three special groups of applicants have gradually increased in the undergraduate program, and each now comprises about 10 percent of the applicants. These groups are men, college graduates from other disciplines, and registered nurses who are graduates of associate degree or diploma programs.

In recent years, the uncertainty of continuous federal traineeship support has kept graduate enrollment from expanding to meet the need for individuals prepared at this level. A new project grant from the Division of Nursing of the Department of Health, Education, and Welfare (HEW), awarded in June 1974, enabled graduate faculty to institute a study designed to ascertain whether registered nurses with baccalaureate degrees in disciplines other than

nursing can successfully enter graduate study in nursing. We hope the project will identify the kinds of remedial work that might be needed to increase the success of these students.

Curriculum—The federally funded five-year undergraduate curriculum project has moved forward and a modular curriculum design was implemented for the sophomore and junior years. This design permits greater flexibility, allowing highly able students to accelerate their programs and less able students to proceed more slowly.

In fall 1973, an accelerated program was initiated for individuals with previous preparation in nursing. This program requires extensive preentrance counseling, as well as challenge exams in nursing, related sciences, and liberal arts course work. Successful applicants can complete the required nursing and related science course in five quarters or 15 months. This is in contrast to the three or more years previously required for the registered nurse to earn the baccalaureate degree in nursing.

At the graduate level, a childbearing and childrearing family nursing area of concentration was initiated in fall 1973. Students in this program may prepare for certification as nurse midwives, or may elect options of teacher preparation, leadership, or clinical and practitioner skills.

At the present time nurses whose major field of doctoral study is in a related area may elect to minor in nursing. The feasibility of a doctoral program in nursing, developed independently or in cooperation with other upper midwest universities, is being studied.

There have been increasing demands to have off-campus credit offerings for nurses. Negotiations are in progress in three areas to provide career mobility opportunities. In the Agassiz Valley area of northwest Minnesota and northeastern North Dakota, the project has been initiated by the Agassiz Valley Nursing Consortium, which is comprised of nine educational institutions. This innovative project would enable licensed practical nurses to earn an associate degree and qualify for registration. The program would be further designed to articulate with baccalaureate programs, so that it would be possible for the students to complete baccalaureate degrees either at the University of North Dakota or the University of Minnesota without loss of time. At Rochester there appears to be a need for a career mobility program for a very large number of associate and diploma graduates working in various agencies. Explorations are also under way in the Area Health Education Center region surrounding St. Cloud on the possibility of developing career mobility there through a consortium effort. Funds are being sought to explore the possibility of a partially external graduate degree in nursing, to extend career mobility opportunities to the graduate level.

Enrollment—There has been a modest increase in undergraduate-student enrollment, and graduate-student enrollment has been maintained at roughly the same level. Further increases are seriously jeopardized by the lack of resources in faculty positions, space, and clinical experience opportunities.

Community Programs—With the establishment of the major in childbearing and childrearing family nursing, there was a concomitant development of a center designed to provide care for childbearing and childrearing families. The major thrust of the center has been to develop a midwifery service, but it is anticipated that other aspects of ambulatory nursing care will be developed as well.

Continuing education offerings have grown from serving approximately 1,200 registrants in 1972 to more than 4,000 in 1974. Tele-lecture continues to be a means of reaching many areas of the state that could not otherwise be served.

Research—The appointment of Dr. Ida Martinson as chairman for research has resulted in the initiation of a number of research projects. A research development grant has been approved by the Division of Nursing of HEW, but is awaiting funding. Of particular interest is a research project that helps the families of terminally ill children to care for those children at home, if they wish to do so.

Problems, Needs, and Plans—The most critical need in this region of the country is for nurses prepared at the master's and doctoral levels. Expansion of the graduate program has been difficult because of the lack of financial resources to attract well-qualified graduate faculty. It seems probable that the grant mentioned above will be funded and it will support the development of the research program, which is a requisite for further expansion of the graduate program.

Projects presently under way do hold a potential for expanding the interchange with the community and for experimenting with health care delivery systems.

COLLEGE OF PHARMACY

Lawrence C. Weaver, *Dean*

Organization—The administrative structure of the College of Pharmacy was reevaluated during the 1973-74 academic year. The result was a new organizational structure that abandons the departmental approach, except in the graduate area. The dean will continue to serve as the chief administrator of the college and, in addition, a great deal of responsibility and authority will be given to the assistant deans of the four newly constituted divisions. Those divisions are student affairs, graduate studies and research, professional studies, and administration. It is hoped that this structure will allow for greater freedom and flexibility in serving the needs of the college.

A joint venture was undertaken in January 1973 with the formation of the Pharmacy Review Committee. Eleven members were appointed to study the existing relationship between the College of Pharmacy and the University of Minnesota Hospitals, and to make recommendations for their continuing relationship. A final report of the committee's findings, including an organizational plan, was published in fall 1973.

Enrollment—Because the four-year program in pharmacy was discontinued in 1972, only three classes were enrolled that fall. The three-year program enrolled 80 new students, who were added to the 40 students admitted as the last freshman class in 1971, for a total enrollment of 120. In 1973-74, the three-year program enrolled 123 new students, who had been chosen from more than 250 applicants. This number was considered to be the limit for the available classroom space. Enrollment has doubled in the 12 years that the College of Pharmacy has occupied Appleby Hall, creating a shortage particularly in laboratory facilities.

The total number of students enrolled in the Bachelor of Science program in 1972-73 was 312, and the total enrollment for 1973-74 was 354. The Doctor of Pharmacy program accepted 12 new students in fall 1972 and 15 students in fall 1973. The number of graduate and post-doctoral students in the college (about 40) did not change significantly from the preceding biennium since it is limited by available funds and facilities.

Of the 120 students enrolled in 1972, 48 were women. This 40-percent figure declined to about 31 percent for 1973. The national average at present is about 23 percent.

Since the number of applications from both domestic and foreign students has continued to increase, high priority has been given to qualified resident students. Almost 90 percent of the class enrolled in 1973 were Minnesota residents. The remaining 10 percent came from two neighboring states and two foreign countries.

Tuition and fees increased by more than \$200 in 1973 for both resident and nonresident students. However, over \$138,000 in loans and scholarships was available to students from the federal government and \$10,000 from University and state-managed funds for the 1973-74 academic year. These funds were essentially the same amounts available to students in the previous year.

Programs—A number of pharmacy programs, both new and continuing, were active during the biennium. Some of them will be described below.

Doctor of Pharmacy Program—Begun in 1971, this program graduated its second class in the spring of 1974. The quality and high caliber of the Minnesota program is recognized nationally as evidenced by the positions offered to our graduates and also by the large number of inquiries regarding the program that come from all over the country.

Graduate Program in Pharmacy Administration—This was another program instituted during the last biennium. During the 1973-74 academic year, three new courses were introduced, bringing to 11 the number of courses offered through the program. In addition, faculty members cooperated in course offerings through several of the other health sciences units. Research projects covered a broad range of topics relating to health care delivery, and more than 40 publications resulted from this work. In 1973 this program became the second largest in the country, with 13 graduate students.

PharmaSYST—The Center for the Study of Pharmaceutical Systems (PharmaSYST) is an innovative program of the college and utilizes an interdisciplinary approach to research to deal with the increasing complexity of information. The center joins scientists, scholars, and practitioners of various disciplines in a synergistic approach to research, and it is believed that this approach will result in important, high quality work. PharmaSYST is a component of the College of Pharmacy, and its policies and planning are governed by a board of 16 directors. The activities of the group include conducting research sponsored by outside agencies, submitting unsolicited proposals for research, publishing original papers and reports, conducting national symposia for the dissemination of findings, and providing consulting and management services. Once the program becomes fully operational, the college will undoubtedly benefit from the resulting increase in research money, the increase in personnel, and the steady interchange of ideas.

Externship Program—Operating on a small grant from the University, a demonstration project placed 15 pharmacy students in community and hospital pharmacy practice sites in June 1974. These specially selected and trained pharmacy preceptors will follow specific educational objectives, and their learning experiences will be reinforced with biweekly examinations. This demonstration group is expected to score significantly higher in pre- to post-test gains than all other students participating in instructional programs involving practical experiences at pharmacies of their choice.

Plans have been made to extend the program if it is successful. Up to five students per quarter will be paired with medical students to obtain practical experience in rural settings. This joint placement would demonstrate how interdependent health services are in rural communities, and might induce health professionals to return to rural Minnesota practice.

Clinical Pharmacokinetics Laboratory—Clinical pharmacokinetics is a relatively new discipline that deals with the absorption, distribution, and elimination of drugs and uses that information to provide effective, therapeutic management of individual patients. It combines knowledge from the areas of clinical pharmacy, pharmacokinetics, and analytical chemistry, among others.

As a result of combined faculty and student interest in this area, a clinical pharmacokinetics laboratory began operating on a trial basis in the College of Pharmacy. The specialized services provided by the laboratory include the measurement of serum drug concentrations and the refinement and readjustment of drug dosages for individual patients, based on the results of those measurements. These services have been made available to physicians and hospitals in the state. In addition to the drug analyses and consultation services provided, the laboratory staff is investigating new areas of drug therapy in which serum drug analysis and the application of pharmacokinetics could improve individual patient care. These areas include hypertension therapy and the treatment of acute psychoses and neuroses.

Continuing Pharmacy Education—The Office of Continuing Pharmacy Education, under the direction of Thomas McKennell, has continued to expand its programming to serve the needs of pharmacists registered in the state of Minnesota. To meet the increased demand for programming due to the recent mandatory continuing pharmacy education requirements, the office has presented seminars on a wide variety of topics to assist pharmacists in updating their knowledge and increasing their competencies.

During the biennium, sites for the Pharmacy Television Lecture Series were expanded to include 21 locations throughout the state. The seventh lecture series, entitled "Practical Dermatology," was presented at all 21 sites.

In an effort to provide additional options in educational format, the office recently produced a programmed instruction text and will continue to provide audio-cassette programs. Computerized record-keeping in the form of continuing education units is now being implemented to record program credits earned. As of May 1974, the staff was expanded to include a full-time assistant to the director.

Drug Education Programs—The Drug Information and Education Program (DIEP) has continued to grow and develop its programs over the past two years. Dean Weaver continued to serve as director for the program and Marc Kurzman as associate director. The main objectives of the program are the coordination of all curricular, research, and service activities at the University in the area of drug abuse, and also the facilitation and initiation of community involvement in dealing with this problem.

Two committees were established this year to assist the program staff. The Program Advisory Committee includes members from each campus of the University and from various state agencies directly involved in dealing with drug-abuse problems. The function of this committee is to serve as liaison between the University and state agencies, so that the needs of the state can be effectively communicated to the University. The Program Implementation Committee includes members from each University college and department involved in actively alleviating drug-abuse problems. The function of this committee is to provide a forum for the exchange of ideas and to foster interdepartmental cooperation.

DIEP assisted in the development of nine new courses and was involved in the development and initiation of five drug-related research projects.

The Drug Information Center (DIC), which is funded by DIEP, has developed a specialized drug-resource library, which maintains over 3,000 articles, 600 books, and numerous subscriptions to relevant newsletters and journals. The catalog of DIC was computerized, and an updated catalog has been distributed to each of the state colleges and University campuses, as well as to numerous area mental health and state agencies involved in combating drug misuse. DIC continues to operate under the direction of Roger Schroeder.

Facilities—In the 1970-72 *Biennial Report* it was noted that plans were being completed with federal and state agencies to fund the construction of a pharmacy building in the new health sciences complex. Completion of the project was anticipated for 1975. However, despite the fact that a federal construction grant application was approved by all review committees and recommended for funding, there were not enough funds available to carry out the recommendation. As a result, the request for state funding for the building was withdrawn, and construction of a new pharmacy building has been delayed indefinitely.

Research—Research in the basic pharmaceutical sciences has continued to be an important function of the college. During the 1972-73 academic year, individual faculty members and the college secured a total of \$665,566 in new grants. For the 1973-74 academic year, new grants totaled \$750,411. In addition to these new grants, many research programs continue to operate on funding from previous years.

One of the largest grants recently obtained was a National Institutes of Health (NIH) grant of \$102,746 for prostaglandin research by Dr. Philip Portoghesi. A special projects grant from NIH in the amount of \$105,000 was received by Dr. Abdel-Monem. Dr. Hugh Kabat obtained a grant from the Northlands Regional Medical Program to support two studies with the Helping Hand Health Center and two cooperating community pharmacies in St. Paul. The college also has a contract to review drug utilization in all nursing homes in Hennepin County. This program is directed by Dr. Karl Schuttenhelm and staffed by students enrolled in the Doctor of Pharmacy program. Other grant money has been awarded for research in the areas of drug misuse, alcohol education, and the clinical role of the community pharmacist.

Publications—Well over 100 research papers were published during the biennium, a number of books were written or coauthored, and several chapters were contributed to various textbooks. Dr. John Staba and Dr. Ali Shafiee had a patent granted to the University of Minnesota for the production of allergens by a plant-tissue culture technique.

More detailed annual reports of the College of Pharmacy for the 1972-73 and 1973-74 academic years are available at University Archives.

SCHOOL OF PUBLIC HEALTH

Lee D. Stauffer, *Dean*

The increasing demand for public health programs and the increasing need for trained public health professionals resulted in a rise in enrollment in the School of Public Health. Enrollment grew from 322 students in fall 1971 to 375 in fall 1973. During the same time period, the federal government was attempting to reduce financial commitments to public health schools and other advanced health-training programs. Because Congress maintained an interest in providing advanced public health training, money has continued to be available, but the financial uncertainty has drastically reduced the amount of time available to plan educational programs.

Curriculum—The training program to prepare pediatric nurse associates for ambulatory child health care was expanded and was also made available to public health nurses in our graduate programs. Building upon our experience in this area, we requested and received legislative support for the development of a program to expand nursing skills for adult and geriatric nurses in out-state Minnesota. While this is largely a continuing education effort, the curriculum is being developed to permit advanced degree credit. In addition, we received a federal grant to expand the education of public health nurses at the master's degree level in the areas of family planning and of adult, geriatric, and maternal health. This will provide a master's-level base for preparing faculty to teach expanded nursing skills at the adult and geriatric level, and will supplement our out-state nurse practitioner education program.

Since February 1, 1974, a faculty member of Health Education has been working 60-percent time with the St. Cloud Area Health Education Center to determine health and consumer education needs and interests and to develop educational programs to meet those needs. The practical problems uncovered in this service work are brought back to the classroom to be used for students' professional preparation.

In response to increasing need for such programs, the school added a full-time faculty person to serve as a counselor and program director for persons wishing to prepare for leadership positions in public health and preventive dentistry. This program has relied heavily on cooperative relationships with the School of Dentistry, and has provided supportive teaching for dental programs in human ecology. This is an excellent example of the benefits to be gained from the broad health sciences resources available.

Hospital and Health Care Administration received a grant from the federal government to develop an experimental training program for mental health administrators. The growing number of community mental health centers, day activity centers, and other treatment modalities require highly skilled administrative personnel who understand the community and the mental health treatment process.

Through the extensive independent study programs that were pioneered in Hospital and Health Care Administration, an alternate route to the professional degree of Master of Hospital Administration was developed during this biennium. A student may now complete all but 18 credits of work toward this degree in carefully supervised and monitored independent learning procedures. This is a pioneering venture and we believe it will set the tone for many professional education programs in the future.

For a number of years, the demand by consumer health agencies and research institutions for trained epidemiologists has exceeded the supply of physicians trained for this purpose. Epidemiologically trained veterinarians and dentists have only partially met this increased demand. The need for epidemiologists led the Division of Epidemiology to establish a two-year master's program (M.P.H. or M.S.) for biologically oriented students whose backgrounds did not include professional training in medicine, veterinary medicine, or dentistry. The goal is to develop individuals who are well oriented to disease processes, etiology and control of disease, and research approaches relevant to these areas.

In early 1973 Environmental Health faculty produced the first textbook to cover all phases of environmental health and safety in health care institutions. The book, entitled *Environmental Health and Safety: Health Care Institutions*, contains 16 chapters authored by 13 staff members of the Environmental Health program. The unique relationships that have existed over the years between the professional staffs of the University Health Service and of Environmental Health have made possible a group that is nationally and internationally famous for its expertise in problems of environmental control in health care institutions.

Professor Barbara Spradly of Public Health Nursing completed a book, *Contemporary Community Nursing*, which will serve as a valuable textbook resource for our programs in Public Health Nursing.

Research—To capitalize on the resources of the School of Public Health, a Research Committee was formed to plan, develop priorities for, and implement a major research contribution by the School of Public Health within programs and as an interdisciplinary effort, and to bring to the attention of the school authorities and the state Legislature the important role of basic and applied research in improving the health and health care of Minnesotans. A number of research projects are described below.

Cancer—The Minneapolis-St. Paul metropolitan area components of the Third National

Cancer Survey and the special Skin Cancer Survey, under contract with the National Cancer Institute, were completed. Copies of the survey results have been distributed to all physicians, hospitals, and health agencies in the five-county area. The data have already proven extremely valuable in planning therapeutic, preventive, and control programs in the population at large. Data collection on the cost of cancer care for this area is being analyzed and should prove to be invaluable in planning health care delivery systems.

A collaborative study with Johns Hopkins University on the influence of contraceptive drugs in the development of breast cancer, the leading cancer in the female, was undertaken.

Epidemiology—In this biennium an exponential increase in the requests for epidemiologic consultant services to clinical departments of the Medical School, other schools of the University, and community agencies has occurred.

Cardiovascular Disease—One result of the long-term research by the Laboratory of Physiological Hygiene on preventing major cardiovascular diseases was the initiation of major preventive programs, operating locally and nationwide, against heart attacks and strokes, the largest public health problems of our times. National efforts have been implemented by the National Heart and Lung Institute. These efforts included mass screening for individuals with high risk of heart attack and stroke, due to their personal characteristics, habits, and cultural attitudes. The Laboratory of Physiological Hygiene, in collaboration with other programs of the school and other community health facilities, has contacted and screened almost 100,000 Twin Cities households in the last two years for high-risk candidates, and referred half of these high-risk subjects to their usual sources of medical care and half to special preventive programs under the aegis of the School of Public Health. Accomplishments of the program have included a description of the risk characteristics and disease in the community, the detection of health problems and elevated risk characteristics of thousands of adults, the initiation of specialized treatment programs for those at high risk, and an analysis of the effectiveness and the cost of ideal individual and community treatment programs, with the object of reversing the rates of premature disability and death.

In the largest program (the Multiple Risk Factor Intervention Trial), for which Minnesota serves as the national center, 66,885 households in selected census tracts of the Twin Cities were screened. Of these households, 97 percent were successfully entered, 14,720 age-eligible individuals were examined, and 500 men with excessive risk of heart attack were put under observation.

The Laboratory of Physiological Hygiene expects to take on major new research projects in the coming biennium. Studies will be done to determine the most effective means of getting individuals to accept advice and modify their health behavior in order to reduce their cardiovascular risk. Mass behavior and mores, marketing practices, and industry approaches will be studied with the intent of directing them toward more balanced and healthful ways of living. Specific important diseases, including cardiovascular diseases, and their risk characteristics in the community will be sampled and monitored, so that disease trends in Minnesota can be better interpreted in terms of individual and socioeconomic changes. Studies will also be done on ways to reduce abnormal heart rhythms, which lead to sudden death. Long-term programs will be developed for the early detection of risk factors relating to blood pressure, overweight, blood fats, and smoking habits in children.

The laboratory intends to encourage undergraduate, graduate, and post-graduate training facilities to improve their preventive approaches to disease in order to complement the important efforts going on in Minnesota in the effective treatment of manifest cardiovascular disease. Factual bases on which to establish state and national public health policy on the prevention of premature disabling and lethal cardiovascular diseases will be developed, as will innovative approaches to professional and public health education. Medical and public health students will be involved in efforts to prevent the major, preventable diseases in our locality.

The laboratory will also contribute recommendations to the Federal Trade Commission on the labeling and advertising of food and health products, and will actively participate in the U.S.-U.S.S.R. Health Treaty on problems of sudden death.

Water Quality—Beginning July 1, 1973, Environmental Health was awarded a three-year grant through the Water Resources Research Center to study the water-quality status and trends in Minnesota, with respect to drinking-water supplies. The specific objectives of the project relate to the health aspects of water supplies, as indicated by chemical analyses; the

adequacy of water treatment in Minnesota; the relation of water quality to natural and man-made sources of ground-water contamination; and the development of indices to evaluate the statewide water-quality status and trends.

Hypertension—Biometry received a contract from the Veteran's Administration to serve as a biostatistical and data processing center in determining the feasibility of the Cooperative Study on Mild Hypertension, a long-term, double-blind, out-patient trial of the efficacy of treating mild, uncomplicated hypertension.

Community Service and Continuing Education—The epidemiology planning committee of the American Public Health Association and the Association of Teachers of Preventive Medicine have continued to accept the University of Minnesota as the site for the special three-week Graduate Summer Session in Epidemiology, conducted in collaboration with the Nolte Center. It is obvious that the facilities we offered, the supporting staff, and the central location of the University of Minnesota for a national (or international) program were contributing factors to this selection. Despite the lack of federal funding, the program became self-supporting. In the second year of this biennium, the program provided instruction to 92 post-graduate registrants.

Environmental Health continued to present a series of short courses on biohazards and injury control in biomedical laboratories, under a contract with the National Cancer Institute. Approximately 35 nationally recruited participants attended each 3½-day course on campus in June, September, and October. About 80 participants attended the course at the National Institutes of Health in Bethesda, Md., each December.

Environmental Health also expanded its interest in institutional environmental health to include correctional institutions. A faculty member served on the Health Advisory Committee of the State Board of Corrections, which was evaluating the physical, mental, and public health problems in correctional institutions.

Faculty members were involved in a number of joint projects with the State Health Department. Projects involving Environmental Health faculty included assessing ground-water contamination problems; studying radiation safety practices in nuclear medicine clinics; advising on the planning, training, and organization aspects of occupational health; and participating in a training course for long-term care surveyors. Faculty and students from Hospital and Health Care Administration cooperated in developing background studies on the need for and strategies involved in hospital regionalization, the efficacy of the certificate-of-need legislation currently in effect, and the revision of procedures regarding health services licensing. These were all useful studies for the State Department of Health, and provided useful teaching involvement for faculty and students, as well. Maternal and Child Health and Public Health Nursing faculty members worked at great length with State Health Department personnel to develop the Early Periodic Screening, Diagnosis, and Treatment Program for the state of Minnesota. In addition, these faculty members were instrumental in developing a pilot program to expand the health screening and diagnosis skills of school nurse specialists, enabling them to function in the early periodic screening program as well as to become a more integral part of the health care system. It is hoped that this program will be funded in the coming biennium by a state legislative special appropriation.

With support from the Kellogg Foundation, the Office of Continuing Hospital and Health Care Education initiated two additional independent study programs to serve the needs of health professionals in the region. The first of these is an independent study program aimed at improving the administration of patient care and the delivery of health care. This program uses multiple methods of learning, including introductory residential sessions, residential review sessions, independent study, preceptor student dialogues, and decentralized seminars throughout the region. It has received an enthusiastic response from patient-care administrators now occupying management positions who have had no previous academic training as background for those responsibilities. An independent study program for health care trustees was also developed, as a continuing education opportunity for members of governing boards of health care facilities, aimed at improving governance of these facilities. This is a pioneering effort to increase the knowledge, improve the skills, and provide opportunity for attitudinal change for volunteers who are elected to positions of responsibility on governing boards of health care facilities.

Facilities—During this biennium the School of Public Health shared in the facilities expansion provided by the new Health Sciences Unit A building. The program in Epidemiology and the Laboratory of Physiological Hygiene found new quarters in approximately 15,000 square feet of new space in Unit A.

Problems and Needs—The continuing over-riding problem throughout this biennium was the maintenance of support from external funding sources for the programs in the School of Public Health. In January 1973 the Nixon administration systematically eliminated support for graduate education in public health from the federal budget requests and, through impoundments, delayed the spending of money previously authorized. While congressional over-ride of vetoes and court fights against the impoundments were successful in ultimate release of the monies for the school, as well as certain other health sciences programs, the uncertainty of future federal directions continued throughout the biennium. Since approximately 70 percent of the School of Public Health's educational and research programs hinge upon the continuing of federal support, this has created significant problems for our planning process, for our ability to make commitments to key faculty, and for our ability to make commitments to students in our various programs. In spite of this, school enrollment continues to grow and expectations for our graduates continue to rise. There is a great need, however, to assure a more stable base of state support for the key tenured faculty within the school to remove uncertainties of program continuity.

UNIVERSITY OF MINNESOTA HOSPITALS

John H. Westerman, *General Director*

The 1972-74 biennium was a period of significant policy determination in shaping the future of the University hospitals and clinics. The Department of Health Services Administration devoted a great deal of energy to the major issues of governance, medical staff organization, quality assurance, and the development and diversification of care programs.

As part of the health sciences organization, the hospitals and clinics participated with the academic units in health sciences-based approaches to education and patient care. Through the support and development of the Office of the Vice President for Health Sciences, University of Minnesota Hospitals undertook thorough examinations of a number of major issues, which will be described in this report.

Governance—There are 62 university-owned hospitals in the country. All but one (North Carolina) are governed by the same boards that govern their universities. Under this arrangement, the hospital is often looked upon as a service enterprise of the University, and rarely receives the attention and effort the rest of the educational enterprise does. Indeed, the trustee functions of a hospital board have been identified as being separate from the trustee functions for a sprawling university multisite educational organization.

University of Minnesota Hospitals suffered from the lack of accountable trusteeship in two visible ways. First, the usual and customary strengths of responsible trusteeship were absent from hospital affairs. Issues of finance, long-range planning, and community mission became major problems. Second, the absence of a responsive, identifiable line of trustee accountability was being viewed with increasing discomfort by government agencies, consumer constituents, operating officials, and the Joint Commission on Accreditation of Hospitals.

In early 1974, the Board of Regents recognized the issue, made the judgment that they did not have the time to devote to hospital trusteeship, and authorized the study of a subordinate hospital board of trustees that would be delegated maximum authority. Whatever the immediate outcome of this study, the University of Minnesota is the first such institution to reorder a governance structure out of sound management practices rather than in reaction to a real or legislated crisis.

Medical Staff Organization—There was a time when a faculty appointment was equivalent to a hospital-staff appointment. In the early 1960's, University Hospitals was forced to formally make a distinction between faculty and medical staff by the adoption of medical staff bylaws, rules, and regulations.

In 1972 it was recognized that the creation of the new health sciences organization would require a substantial change in the medical staff bylaws. Dr. John Najarian, chief of staff from

1970 to 1973, appointed a select committee to update the bylaws. The current bylaws committee is chaired by Dr. Donald Hastings, who was elected chief of staff as of July 1, 1972. The medical staff organization continues to grow and develop, building on the leadership of Dr. H. O. Peterson, chief of staff from 1966 to 1968, and Dr. Lyle French, chief of staff from 1968 to 1970. The current committee has completed a first draft dealing with total medical staff organization and relationships with other administrative groups.

There has been a continuing emphasis on medical staff accountability and responsibilities since the early 1960's, and the medical staff organization has surpassed the legal form of organization. It is expected that the completion of the new bylaws will coincide with the restructuring of hospital governance, so that the new governing body will receive updated bylaws for approval.

The reason for the emphasis on governance and medical staff organization is to provide the hospitals and clinics with a health delivery decision-making body. Previously, the research and educational functions operated with rather well-defined mechanisms for programmatic decisions, but patient-care concerns rested upon voluntary participation by interested parties. The demands on the patient-care-delivery system have increased markedly over the past six to eight years. Health delivery issues will continue to be a high priority item for the institution through the implementation of national health insurance. The hospitals and clinics are grateful that they now have the kind of organization that can respond to the delivery issues.

Quality Assurance—Teaching hospitals have historically prided themselves on the quality of care provided patients. University of Minnesota Hospitals is no exception. Distinguished faculty and medical staff, motivated students, dedicated hospital professionals and staff, and all that goes into the dynamics of an academic health center have provided the basis for our quality of care.

The federal government asked for a formal, measurable mechanism of quality assurance in public law 92-603. This legislation is noteworthy in its contrast to the attempts of other industrialized countries to assure adequate delivery systems. Such countries generally tried to provide quality health care by hiring those who provided the care, by controlling the reimbursement-for-care system, or by a combination of ownership and monetary control.

The Joint Commission on the Accreditation of Hospitals also shifted emphasis to quality assurance mechanisms. University Hospitals has responded to these changes by thoroughly reviewing existing practices and by developing a sophisticated system of quality review. The Minnesota system involves all staff and will increasingly involve the health sciences students. This system is further evidence of staff recognition of the obligations attendant with our designation as a resource hospital for the state under the statewide Hill-Burton planning program.

Development and Diversification of Care—A great deal of emphasis has been placed on examining the missions of the various University hospitals and clinics. A mission statement is a part of each certificate-of-need application submitted to the local planning agency and the State Board of Health.

The creation of the Department of Family Practice added another dimension to the delivery programs, and the replacement of University clinics is a major commitment to the broad spectrum of care and educational programs. Further integration of health science educational programs will present expanded opportunities for additional delivery models.

A home care program has been created and planning is under way for the operation of an outreach primary care clinic. An adult component will be added to the child and youth project in the Community-University Health Care Center program. The feasibility of a health-maintenance organization in a University setting is being studied. And programs to strengthen the tertiary care role are being implemented.

The 1972-74 biennium has marked a period of planning and developing the organizational framework for new and exciting health delivery programs.

Hospital and Clinic Trends—Certain trends have become evident as the hospitals and clinics continued to serve as a major referral center. The table, Hospital Patient Data, 1972-74, reviews the important statistics for the biennium.

A decrease in patient days and length of stay took place during the biennium, while admissions and clinic visits increased. Hospital occupancy decreased from 72.6 percent in 1972-73 to 68.6 percent in 1973-74. These changes resulted from a shift in emphasis toward ambulatory care, and do not reflect an impairment of the educational program.

HOSPITAL PATIENT DATA, 1972-74*

Service	Admissions		Avg. Length of Stay		Patient Days		Avg. Daily Census	
	1972-73	1973-74	1972-73	1973-74	1972-73	1973-74	1972-73	1973-74
Anesthesiology	14	8	17.4	8.8	1,028	88	2.8	2
Clinical Research Center	289	240	8.1	8.3	2,402	1,983	6.6	5.4
Dentistry	133	148	4.4	3.9	584	595	1.6	1.6
Dermatology	121	94	15.1	12.1	1,934	1,185	5.3	3.2
Family Practice	45	72	9.2	9.1	397	712	1.1	2.0
Gynecology	911	1,458	9.4	5.3	8,998	8,005	24.7	21.9
Medicine	3,194	3,226	9.3	9.0	33,045	31,238	90.5	85.6
Neurology	1,501	1,296	10.3	10.8	17,061	14,999	46.7	41.1
Neurosurgery	1,414	1,206	8.9	9.2	13,788	11,725	37.8	32.1
Obstetrics	745	719	4.3	4.6	3,282	3,373	9.0	9.2
Ophthalmology	929	918	6.9	6.8	6,595	6,387	18.1	17.5
Orthopedics	652	633	11.6	10.4	8,304	7,039	22.8	19.3
Otolaryngology	723	739	5.7	5.7	4,307	4,355	11.8	11.9
Pediatrics (general)	3,347	3,617	10.3	9.8	35,903	36,396	98.4	99.7
Pediatrics (NB)	599	599	4.8	5.1	2,902	3,072	8.0	8.4
Phys. Med. & Rehab. (Adult)	144	150	18.5	22.9	4,754	5,529	13.0	15.1
Phys. Med. & Rehab. (Peds.)	78	90	41.1	32.1	4,272	3,943	11.7	10.8
Psychiatry (Adult)	358	354	33.7	33.3	14,931	12,497	40.9	34.2
Psychiatry (Peds.)	66	41	45.9	51.7	3,395	2,325	9.3	6.4
Radiation Therapy	38	31	15.8	8.2	932	287	2.6	.8
Surgery	2,996	3,249	10.0	9.9	34,282	35,523	93.9	97.3
Urology	727	764	8.5	8.2	6,754	6,748	18.5	18.5
TOTAL	19,137	19,644	10.9	10.1	210,290	198,016	576.1	542.5

*1972-73 figures include the Student Health Service; 1973-74 figures do not.

It is interesting to note that the number of operations increased, elevating operating room utilization to approximately 90 percent. A typical community hospital will operate at 50-60 percent. Total major operations increased from 6,961 in 1972-73 to 7,099 in 1973-74; minor operations increased from 5,403 in 1972-73 to 6,665 in 1973-74. The 1972-73 figures do not include the Student Health Service.

A \$600,000 emergency room renovation was completed. The number of patients seen in the emergency room has increased from 19,152 in 1972, to 19,776 in 1973, and to 20,036 in 1974, necessitating this major renovation. It is not anticipated that this renovation will in any way disrupt the exemplary emergency care systems now operating in the state and metropolitan area. Of the 20,036 patients seen in the emergency room in 1974, 20 percent required immediate diagnosis or treatment to preserve life or diminish morbidity, 5 percent were dead on arrival, and 16 percent were admitted to the hospital.

The table, Clinic Visits, 1973-74, indicates the dynamics of change within the clinics system. While only 24 clinic areas are grouped, there are over 100 specialized clinics. Clinic visits increased from 157,234 in 1972-73 to 167,885 in 1973-74. The percentage of change indicates that the clinic system is able to meet the demands of referring professionals for the latest in diagnosis, care, and treatment. Clinic patients are returned to the local physician or professional for ongoing care. This exemplifies the close working relationship with the practicing community.

CLINIC VISITS, 1973-74

Service Area	Total Visits	% Change from 1972-73
Audiology	4,640	6.3
Clinical Psychology	1,304	- 4.5
Dental	5,033	29.7
Dermatology	6,201	16.3
Ear, Nose, and Throat	10,889	6.4
Eye	19,989	- 3.3
Family Practice	5,593	37.9
Masonic	6,196	13.1
Medicine	15,701	14.0
Neurology	6,993	- 2.8
Neurosurgery	3,548	- 15.2
North Clinic, miscellaneous	447	33.4
Obstetrics-Gynecology	18,234	16.3
Obstetrics-Pediatrics-Gynecology	214	999.9
Oral Pathology	8	- 52.9
Orthopedics	4,686	5.3
Pediatrics	16,253	2.3
Physical Medicine and Rehabilitation	3,394	11.6
Proctology	1,456	16.1
Psychiatry	3,582	- 21.2
Radiation Therapy	1,604	39.2
Surgery	6,477	3.2
Tumor	942	- 9.0
Urology	4,465	29.0
Subtotal	147,849	7.4
Emergency Department	20,036	2.1
TOTAL	167,885	6.8

Divisions of State and Federal Relations

Stanley J. Wenberg, *Vice President*

Formerly the Office of the Vice President for Coordinate Campuses and Educational Relationships, this office was reorganized as the Office of the Vice President for State and Federal Relations with the specific responsibilities of developing and maintaining relationships with the state and federal governments, with educational associations, with institutions of post-secondary education in Minnesota, and with the general public. Administrative responsibility for the Department of Alumni Relations, the Department of University Relations, and the Department of Intercollegiate Athletics also remained in this office, but the responsibility for the coordinate campuses was shifted to the Office of the Vice President for Administration.

The 1972-74 biennium was characterized by several changes in federal policies and support for higher education. Revenue sharing became a significant form of federal support to state and local governments, categorical research and training programs were cut back significantly and often abruptly, and federal funds for a number of programs were impounded by the Administration.

Vice President Wenberg was active during this period in the efforts of the University and a number of educational associations in lobbying for more stable federal policies and improved understanding of the proper role of the federal government in the support of universities that carry on programs of national significance.

With the retirement of Dr. Wenberg as vice president at the end of the biennium, the office will be reorganized as the Office of the Vice President for Institutional Planning and Relations. Stanley B. Kegler, who served as vice president for administration during the biennium, was named vice president for institutional planning and relations and will begin his duties August 1, 1974. The Office of State and Federal Relations has been abolished under the new administrative structure.

The responsibilities of the Office of Institutional Planning and Relations will include the coordination of budget and legislative planning; the maintaining and developing of relationships with the Governor's office, the Higher Education Coordinating Commission, state agencies, and state, community, and private colleges; and the administration of the Department of Intercollegiate Athletics. The Department of Alumni Relations will report to the President's Office, and the Department of University Relations will report to the vice president for administrative operations.

DEPARTMENT OF ALUMNI RELATIONS

Edwin L. Haislet, *Director*

Officers—Those serving as officers of the Minnesota Alumni Association during the biennium were as follows:

1972-73

President	John E. Carroll, '33 B.Chem.E.
First Vice President	Harry E. Atwood, '31 B.A.
Second Vice President	George T. Pennock, '34 B.B.A.
Secretary	Barbara Stuhler, '52 M.A.
Treasurer	Franklin Briese, '28 LL.B.
Past President	Oscar R. Knutson, '27 LL.B.
Executive Director	Edwin L. Haislet, '31 B.S.Ed., '33 M.A., '37 Ed.D.

1973-74

President	Harry E. Atwood, '31 B.A.
First Vice President	George T. Pennock, '34 B.B.A.
Second Vice President	Wallace E. Salovich, '50 B.B.A., '56 M.H.A.
Secretary	Barbara Stuhler, '52 M.A.
Treasurer	Franklin Briese, '28 LL.B.
Past President	John E. Carroll, '33 B.Chem.E.
Executive Director	Edwin L. Haislet, '31 B.S.Ed., '33 M.A., '37 Ed.D.

Budget—The 1972-73 income of the Minnesota Alumni Association (MAA) was \$162,357, which was derived principally from membership fees and from paid magazine advertising.

Income from the University for the Department of Alumni Relations for the same period amounted to \$137,056, making a total budget of \$299,413.

In 1973-74, association income was \$183,900 and the department received \$147,897, for a total of \$331,797.

Membership—Association membership as of June 30, 1973, totaled 22,658, of which 8,790 were Regents' Members. The year 1974 showed a 14 percent increase, with a paid membership of 15,811 and 8,266 Regents' Members, for a total of 24,077.

Records and Mailings—Association membership records and alumni mailing lists are maintained on an annual contract basis by the University Data Processing Department. As of June 1974, 164,518 names of graduates were on record, compared to 158,311 in 1973. The work of tracing lost alumni is being continued on an increasingly limited basis, due to budget cuts.

In 1974, 504,725 pieces of mail were processed, compared to 609,725 pieces in 1973. These totals include over 200,000 copies of *The Alumni News* each year, but do not include special mailings of tour and insurance materials.

Presidential Selection—The Alumni Association had an active and important role in the selection of the new University President. An Alumni Presidential Selection Committee, chaired by the MAA president, helped to build a list of possible nominees and then participated in the screening process. The MAA president was also a member of the Regents' Selection Committee and participated in the decisions made.

Minnesota Alumni Club—After months of planning and innumerable construction delays, the new Minnesota Alumni Club opened on the 50th floor of the IDS Tower in March 1974. The open house attracted over 2,000 members.

The breathtaking view, stunning decor, and outstanding food and service have made the club a popular meeting place for the approximately 1,400 resident and 1,500 nonresident members who use its dining and meeting rooms and lounge.

Alumni Magazine—Ten regular issues of *The Alumni News* were published in each year of the biennium, with 1973-74 showing an increase in distribution of 574 copies per issue over the previous year. The editor is assisted by a free-lance writer, a sports columnist, an art consultant, and a professional photographer.

The news content of the magazine was divided almost equally between MAA and alumni-related features and articles about University events and personalities. The association's 70th birthday was marked by two major stories on its history and development, and there were also features on Dinkytown and on the former University vice presidents Malcolm Willey and William Middlebrook.

The staff is dedicated to making the magazine an effective printed link between the University and its alumni.

Field Services—It has been association policy to visit the 46 alumni chapters in Minnesota each year to assist them in planning their activities and to bring them news of the campus and of the association. Similarly, the executive director tries to visit half of the 37 out-of-state chapters each year, often bringing them distinguished University speakers. In 1972-73, all 46 of our in-state chapters were visited by our field representative; in 1973-74, due to staff cuts, 20 chapters had field visits and the other chapters were offered assistance by telephone and by mail.

The executive director visited 10 out-of-state chapters in each year of the biennium, and eight special chapter meetings were set up as part of our football cooperation program with the Department of Intercollegiate Athletics.

Constituent Groups—During the biennium, the Alumnae Club twice received the Annual Outstanding Constituent Group of the Year Award, and annually provided six \$600 scholarships for freshman women. The College of Business Administration constituent group held annual institutes and seminars with nationally known speakers, and the School of Dentistry held an Annual Alumni Day with workshops and seminars. The medical alumni group featured class reunions, seminars, and special awards. The Nursing Alumni Association sponsored programs on employment opportunities for senior nursing students, and the Institute of Technology group held seminars on current technical problems.

Several constituent groups presented special awards to their distinguished alumni for outstanding teaching, for unusual alumni service, and for extraordinary professional competence. In 1972-73 15 such citations were presented, and in 1973-74 17 were given.

Presidents of these constituent groups serve on the MAA Board, and members of the groups enjoy both an identification with their own college and the benefits of membership in the Minnesota Alumni Association.

Special Events—Class reunions held during the biennium included the Golden Anniversary celebrations by the classes of 1923 and 1924, and the 40th anniversary dinners of the classes of 1933 and 1934. The class of 1918 held a reunion luncheon in 1973, and members of the 1927 football team met for their 45th anniversary reunion in 1972. Reunion-by-mail activities were participated in by the classes of 1933, 1934, and 1948.

Two successful homecoming luncheons were held, and legislative dinners for members of the Ramsey and Hennepin County delegations were given in 1972.

Almost 900 association members enjoyed the cruises to the Caribbean and the Land of the Maya, and the alumni tours to Athens, the Algarve, Vienna, and Dubrovnik.

The association's 69th Annual Meeting was held on June 5, 1973, at the Radisson South. John Carroll presided, and University President Malcolm Moos spoke briefly and made the honors presentations to distinguished alumni. The 70th Anniversary Annual Meeting took place on June 4, 1974, with Harry Atwood presiding. The program included a special 70th birthday slide show and remarks by retiring President Moos, who again presented the awards.

At the annual meetings, five Alumni Service Awards and 10 Outstanding Achievement Awards were presented to outstanding University alumni. Another 33 Outstanding Achievement Awards were presented to distinguished University alumni by other University groups during the biennium.

DEPARTMENT OF INTERCOLLEGIATE ATHLETICS

Paul Giel, *Director*

Since August 1972, the Department of Intercollegiate Athletics has been located in the new Bierman Field Athletic Building.

Emphasis on the theme of "Return to Gold Country," designed to encourage Minnesota athletics fans to support University athletics, continued through the 1972-74 biennium, and has been considered very successful. An example of the support given by Minnesotans is the \$243,383 donated during the 1973-74 Williams Scholarship Fund drive, which far surpassed the \$200,000 record goal being sought.

An increasing demand was made both years of the biennium for the various highlight films produced locally for football and basketball. Reservations are now made as much as six months in advance. Staff members recorded more than 800 personal appearances throughout Minnesota, mostly at civic functions and meetings, spreading the word of "Gold Country."

Numerous regional "M" meetings and golf outings staged by and for Gopher alumni were held throughout Minnesota, as department personnel continued Giel's idea of returning to person-to-person contact.

Coaches Stoll, Musselman, Brooks, Siebert, Roethlisberger, Johnson, and others continued to hold clinics and instructional schools during the summer months. The department again staged free coaching clinics in all 10 intercollegiate sports for college, high school, and other amateur coaches and players, and also hosted a clinic for high school athletic directors.

Both Stoll and Musselman hosted summer camps in their respective sports. In 1973-74 Musselman directed a new camp in basketball instruction for high school girls. Coach Brooks again directed the summer Olympic Development Hockey League. Coach Siebert again directed the Metropolitan Summer Baseball League. An important part of this baseball program is the annual game between a league All-Star team and the Minneapolis Police team. Proceeds from this game, which is staged at Metropolitan Stadium, go toward a Williams Fund baseball scholarship.

A key loss was felt by the entire University when Dr. Max O. Schultze, professor of biochemistry on the St. Paul campus and an athletic department faculty representative, retired in June 1974 after 12 years of serving our department. His total contributions may never be fully realized. Dr. Schultze was replaced by Dr. Merle K. Loken, director of the

Division of Nuclear Medicine at University of Minnesota Hospitals.

Football—New head coach Cal Stoll gave Gopher football fans a look back in time when his first varsity football team trotted out in old-gold uniforms, the same style worn in the "Golden Gopher" glory days of coach Bernie Bierman. After a slow start, Stoll's rookie club won its first game of the 1972-73 season, a 43-14 homecoming decision against Iowa. The Gophers won the last three games to finish the year 4-7 overall, and 4-4 in the Big Ten. Fullback John King gained All-Big Ten first team honors and broke Giel's single season rushing record. King gained 1,164 yards, 980 in the Big Ten. Defensive back Tim Alderson made the All-Big Ten second team.

Football assistant coach Bob "Woody" Widenhofer left to join the Pittsburgh Steelers staff and was replaced by Bruce Vandersall, who came from Wichita State.

The 1973-74 academic year opened on a high note when Stoll's football team ran up a 6-2 record, finishing third in the Big Ten, and was 7-4 overall. It was the school's first winning year since 1968. The University won its last four games, including back-to-back TV appearances. Keith Fahnhorst and Steve Neils made the All-Big Ten first team, Rick Upchurch made the second team, and Jeff Gunderson was a Big Ten first team All-Academic selection. It was a great season for Gopher football—a preview of things to come.

Cross Country—Sensational distance runner Garry Bjorklund was unable to become the first man to ever win four consecutive Big Ten cross-country individual championships, as he missed the 1972-73 season due to injuries. Without Bjorklund, the Gophers ended fourth as a team, with freshman Dennis Fee coming in sixth.

Bjorklund tried again the next season to win his fourth individual cross-country title, but due to his injury finished 37th, as the young Gopher team ended seventh at the Big Ten meet. Fee finished 19th.

Basketball—The 1972-73 basketball season was sold out two months before the first game was played. The Gophers played excellent ball only to lose the Big Ten title in the last game. The University went on to compete in the National Invitational Tournament at New York's Madison Square Garden. Jim Brewer and Ron Behagen both made All-American. The squad set a record 21 season wins and played before 232,491 persons in Williams Arena. The Gophers also won the Far West Classic at Portland, Ore. Brewer was named most valuable player a third straight time.

Wholesale personnel losses in basketball caused coach Musselman's 1973-74 team to finish 12-12 and 6-8 in the Big Ten. Dennis Shaffer ended eighth in conference scoring, with a 17.7 average, and made the Big Ten third team. Williams Arena crowds averaged 12,245 persons, third best in the conference. For a third straight year, the University was the best defensive team in the Big Ten. Big upset wins were recorded against Bradley, Ohio State, Wisconsin, and Michigan State. The University lost to coach Michigan by only one point.

Hockey—Herb Brooks took over the hockey reins in 1972-73 and brought his first team home at 15-16-3. The University ended sixth in the Western Collegiate Hockey Association but lost in the play-offs to eventual NCAA champ Wisconsin. Jim Gambucci, now in the dental school, was most valuable player.

In the second year of the biennium, the hockey team stunned the college world by ending second in the rugged WCHA, and by capturing Minnesota's first NCAA championship. Goalie Brad Shelstad was most valuable player of the NCAA Tournament and made first team All-WCHA. Mike Polich and Les Auge joined Shelstad on the NCAA All-Tournament team. Coach Brooks directed the team to the national crown in his second year as head coach. The team tied a school record with 22 wins. Polich and Buzz Schneider later skated for the U.S. National Team, which won the World "B" Games championship. Brooks was the landslide winner of the WCHA Coach of the Year award. The squad was later feted by a record turnout of more than 1,400 persons at a Twin Cities banquet.

Swimming and Gymnastics—The swimming team finished seventh at the 1972-73 Big Ten meet. The best individual performance was a third place in the 100-yard butterfly by Howie Lee. Gymnastics did better, ending just 0.75 points behind champion Michigan. Craig Carlson was individual champion in floor exercise and Russ Fystrom in vaulting. Jeff Rock was second in the all-around.

In the second year of the biennium, gymnastics ended third in the Big Ten meet and swimming ended eighth.

Wrestling—The 1972-73 wrestling team ended fourth in Big Ten competition. John Panning was the 177-pound champion and went on to finish runner-up at the NCAA meet. Heavyweight David Simonson was second in Big Ten competition.

The next year, the wrestling team ended fifth behind 158-pound champion Larry Zilverberg. Zilverberg also won the conference fastest-falls award and later was runner-up at the NCAA championships.

Baseball—Dick Siebert's 1973 baseball team captured the school's tenth Big Ten title, with a 14-4 record, and went on to win the District IV NCAA crown at Carbondale, Ill. The squad made a brilliant try at winning the University's fourth NCAA crown, but settled for third behind the champion University of Southern California. David Winfield was named most valuable player of the NCAA tournament and, along with Tim Grice, gained All-Big Ten first team honors. Ken Herbst made the second team, and Steve Comer the third team. Winfield was also team most valuable player and batted .453. Comer was the best pitcher in the conference with a 3-0 won-lost mark and a school record 1.23 earned run average. Both Winfield and Herbst had 4-0 Big Ten pitching records.

Siebert's baseball team again came home a winner in 1974, tying Iowa for Big Ten honors, the school's eleventh crown. The University went on to host the NCAA District IV tournament, but lost in the final game to Southern Illinois before a record crowd of 3,500 persons at Bierman Field. Mike Fitzenberger won the Big Ten bat crown with a .477 average. Freshman pitcher Perry Bauer ended 3-0 in the Big Ten, while Herbst and Comer were 4-1. Fitzenberger and Herbst were All-Big Ten first team selections, and Jeff Neutzling, Comer, and Bauer made the third team. Fitzenberger received honorable mention All-American honors.

Golf and Tennis—The defending championship golf team ended sixth in 1973 with John Harris finishing as the individual runner-up. Harris was named to the All-Big Ten team. The tennis team was shut out in the first round of the conference meet after a fine dual meet season. Number one singles star Carter DeLaitre was named to the All-Big Ten team.

The 1974 tennis squad finished eighth in Big Ten play under new coach Jerry Noyce, and DeLaitre was named to the conference second team. Captain John Harris became the third University golfer in the past four years to capture individual honors at the Big Ten meet as his team finished a strong third. Harris went on to a high finish at the NCAA meet.

Track—The track team was sixth at the 1973 Big Ten indoor meet, with freshman Greg Bullick winning the pole vault at 15 feet, 6 inches, and senior Colin Anderson second in the shot-put at 58 feet. The outdoor championship meet was held at Bierman Field and the Gophers ended fifth. Dennis Fee set a new Big Ten record of 28:54.1 in the six-mile run. Anderson set a new University record of 60 feet, three-fourths inch, in winning the shot-put.

In 1974, the track squad was eighth at the indoor meet and seventh outdoors. Dan Humes finished a strong second in the 880-yard run indoors, while Garry Bjorklund capped a courageous comeback by winning the outdoor 3-mile run in 13:31.6.

DEPARTMENT OF UNIVERSITY RELATIONS

Russell D. Tall, *Director*

The Department of University Relations, like most units of the University during this two-year period, remained relatively stable in terms of staff size and budget. Twenty-eight full-time staff members were employed at the beginning and at the close of the biennium. The departmental budget increased from \$452,744 in 1972 to \$485,665 in 1974, due largely to price-level and salary increases.

Increased attention was given to communications with external constituencies, through printed materials and person-to-person or group contacts. This was especially true in the area of community relations within the Twin Cities and, most notably, with minority groups.

A regular quarterly meeting involving the University Relations departments on all five campuses was initiated, with the two-day meetings rotated from campus to campus. The increased communication resulted in greater cooperation in various areas, the airing of problems for fast solutions, and new ideas for participants.

The department was involved in planning and financing a campus phone system with several other offices.

Commencements and Special Events—Twin Cities campus commencement ceremonies were held in June of each year of the biennium at the State Fairgrounds. The 1974 event included farewell ceremonies for University President Malcolm Moos. As of July 1, 1972, the graduation fee was reduced from \$15 to \$10.

Colleges were encouraged to continue holding individual collegiate graduation events. The number and variety of these events increased as colleges became aware of the availability of funds and had adequate planning time. Student participation appeared to increase in the collegiate events, while attendance decreased at the all-University ceremonies. The smaller collegiate-level events were popular because they allowed more recognition to be given to individual students.

Special events during the biennium included the creation of a major State Fair exhibit, which was used for two years and featured items and displays from the Touch and See Room of the Bell Museum of Natural History; a ground-breaking ceremony for the Forest Products building in St. Paul; the dedication in April 1973 of a biological sciences building on the St. Paul campus; the June 1973 dedication of Rarig Center, a new performing arts and media resources building on the West Bank; and the dedication of the Arboretum library building in June 1974.

Community Services—The major activity of the community services coordinator was to establish herself as a resource person with the Twin Cities minority communities and other special groups, to direct people to services offered by the University, and to encourage everyone to get as much education as possible. Her stated goal was "to be a catalyst in changing attitudes about institutions of higher learning in minority communities, especially those held by young people."

The coordinator also oversaw the operations of the Visitor Information Center and tour program, which reported a steady increase in the number of visitors to the campus and the number of tours given, and of the Speakers Bureau, which issued a new *Speakers Guide* in September 1972.

One new activity was the distribution of tickets for events at Northrop Auditorium, which were purchased at reduced rates. The tickets were distributed primarily to culturally disadvantaged groups, resulting in increased good will toward the University.

Publications—One major publication began during the biennium, and important changes were made in several others. *Update*, a tabloid newspaper for a wide audience including alumni and parents of students, was published for the first time in the spring of 1973. *Report to Parents* was discontinued. Now published four times a year, *Update* has received more mail and favorable response than any earlier attempt to reach the same audience. *Report* (formerly *University Report*) changed to a tabloid format in the fall of 1973. The use of newsprint resulted in financial savings as well as a new look. Conversion of the staff section of the *Student-Staff Directory* to computer began in 1972. The first directory using the new process was published in the fall of 1973. The long-range goal of the conversion is to save money and staff time. A new poster-format *Twin Cities Campus Calendar*, using photographs, began in January 1974. In the fall of 1973 the department took over publication of the *Financial Report* from the Business Office. Circulation was reduced from 38,000 to 5,000.

The department continued to publish *Brief, Facts*, the *Faculty Information Bulletin*, the *Biennial Report*, the legislative booklet *Needs of the University of Minnesota, As Others See Us*, the Official Daily Bulletin, campus maps, commencement programs, citations, and occasional brochures.

At the end of the biennium the five staff members of the publications section were a senior editor, an editor, an assistant editor, and two editorial assistants. The position of publications manager was abolished at the end of 1973.

University News Service—The News Service carried out two new projects during the biennium, both in the radio-TV section.

The first, which was funded by a University Media Production Fund grant, was a pilot project to test the feasibility of a monthly 30-minute video-tape feature for television stations around the state. The pilot, called "Inside Out," which consisted of three segments on diverse

aspects of the University, was filmed by Media Resources and written and produced by University Relations. While the test program was well received throughout the state, too many problems—of time, personnel, and technical difficulties—arose to make a monthly project feasible. Rather than attempting to do the show less often and losing continuity, a decision was made to drop the idea for the time being.

The second project was a new venture for the department: the production of a film on the late John Berryman, a poet and humanities professor at the University. A sensitive, thoroughly researched, 28-minute documentary was put together utilizing interviews with Berryman's widow, his publisher, and other friends, again using the technical expertise of Media Resources. The film, shown twice over KTCA-TV, is being rented and sold through the University's Audio-Visual Library Service.

News releases continued to be written by four general writers and two science specialists. A survey of the general Minnesota public was conducted during the biennium, and the results showed that people wanted more "good news" and more research stories from the University. News Service writers put more effort into writing feature stories containing useful, down-to-earth information on common problems faced by Minnesotans and others.

While the News Service practiced its philosophy of covering all segments of the University community and reporting on University news events objectively, it had difficulty explaining this viewpoint to some elements in the University administration. In one widely reported Regents' committee meeting, the News Service was criticized by several Regents for ostensibly serving the news media better than it served the University, and for reporting so-called "negative" news. In the aftermath of the incident, however, editorialists around the state commended the News Service for its policy of honesty and non-puffery. A large meeting subsequently took place between Regents and representatives from Twin Cities news media in an attempt at a mutual exchange of views and increased understanding.

On March 1, 1974, Richard J. Sheehan became director of the News Service, succeeding Nancy Pirsig who then devoted full time to her position as assistant director of the department.

Divisions of Student Affairs

Paul H. Cashman, *Vice President*

During the 1972-74 biennium, the Office of the Vice President for Student Affairs and its various subdivisions continued to identify and respond to student needs and concerns. The University Opinion Poll was again used to gather students' opinions on various issues. A Campus Assistance Center staff member was assigned as a patient's representative at the Health Service. The Health Service Hospital began operating its 48-bed, acute-care facility for student patients. And, Admissions and Records completed a computerized-transcripts system, designed to provide more efficient, accurate, and economical services to students and staff. The system was initiated for all freshmen entering the University in the fall quarters of 1972 and 1973, and transcripts for other students will be computerized as funding becomes available.

Students continued to be interested in a variety of social issues—the war in Indochina, poverty, racism, individual rights and freedoms—but there was little disruptive behavior during the biennium. Students brought their concerns to the student body, faculty, administration, and Regents by peaceful means through articles in the *Daily*, posters, leaflets, and small demonstrations, working with staff as cooperators in progressive change. During the biennium 12 students, representing the five University campuses, again participated in the governance of the University by attending Regents' meetings and serving as working members of Regents' committees.

Personnel—Martin Snoke, formerly executive assistant to the vice president for student affairs, was named assistant vice president for student affairs.

Donald W. Cowan, M.D., retired from his position as director of the University Health Service on July 16, 1972. Dr. Paul Rupprecht, formerly associate director, became the new director. This is the first time the director is not a physician.

Dr. Vivian Hewer, a valued professional counselor and faculty member of the Student Counseling Bureau since 1947, retired in 1973. This was the first time the bureau had experienced the loss of a professional staff member through retirement. Harriet Haynes joined the staff to strengthen the outreach efforts of the College of Liberal Arts Martin Luther King Program.

In August 1973, David J. Anderson became acting director of the University Housing Office, replacing Dr. James P. Condie, and in January 1974, Anderson was appointed director. The office continued reporting to both the vice president for finance, planning, and operations and the vice president for student affairs.

The directorship of the Parents Association changed in July 1973, with the resignation of Paul Moore and the appointment of Georganne Tolaas.

Organization—There were two organizational changes during the biennium. In fall 1972 the Campus Assistance Center became responsible for the Social Work Internship Program, and in 1973-74 the Orientation Office was rejoined with Student Activities.

Special Programs

Martin Luther King Program—During the biennium, more than 1,000 students were admitted to the University through this program. A total of 773 students registered for courses in fall quarter 1974. Coordinators of the program during the biennium were Bettye Ward, David Ramirez, Sue Taoka, and Lois MacKenzie.

Minnesota Women's Center—The purpose of the Minnesota Women's Center (MWC) is to improve the status of women students in the academic community, to support women in attaining their goals within society, to increase public awareness of the current and changing status of women, and to encourage all women to seek out new opportunities.

Interest in the services offered by MWC continued to increase during the biennium: more than 17,000 persons visited the center, and 11,000 telephone calls were received. The resource collection was especially popular, accounting for more than 10,000 of these contacts. Several publications were issued from the center, including the *Women's Advocate*, a newsletter published in conjunction with Women's Studies; *Company Q*, or *How to Fight Your Own Battles*, a resource handbook for women at the University; and specialized

publications for women working with special interest groups. There were also three multimedia shows available through MWC.

Thirty-one graduate students did their practicum training at MWC, providing individual and group counseling to more than 3,000 women. Members of the MWC staff continued their close involvement with women's organizations in the community and the state and at a national level.

Parents Association—During the biennium, Parents Association meetings were held monthly at various campus locations. These meetings covered a variety of topics (ranging from students' views of the University to the new campus minority programs) and included special speakers and tours of some of the University facilities. Two special programs—one on the history of campus dissent and the other on communications—were offered. The *Newsletter* format was changed to a six-page quarterly publication.

The Summer Coffee Hours continued to attract an increasing number of interested parents but Parents Day was dropped, after the 1972-73 event, due to dwindling attendance. As an alternative, the Parents Association sponsored a reception for President Magrath and parents of University students in 1973-74.

Other significant events were the out-state meetings held in Rochester, Alexandria, Austin, and Lindstrom, and the annual Past President Recognition Dinners.

St. Paul Office for Student Affairs—Charles J. Maguire served as coordinator of this office during the biennium. The organization and functions of the office followed recommendations made by a task force during the previous biennium, and the results have been positive.

Two part-time financial aid counselors worked in the office until 1973, after which time one full-time counselor was appointed. The availability of a counselor has brought a significant increase in the number of students requesting information and financial aid assistance.

The number of student interviews conducted by the St. Paul Student Counseling Bureau leveled off from the all-time high of 1,392 in 1971-72 to 1,076 in 1972-73 and 1,154 in 1973-74. The OASIS Program has continued and is now funded totally by Student Affairs. The Study Skills Program and marriage counseling were again offered, and the training of graduate students in counseling continued.

Off-campus housing placement contacts significantly increased over the previous biennium. There were 1,857 housing interviews in 1972-73 and 2,828 in 1973-74.

Special Counseling Office—The Code of Conduct was studied by governing units of the respective University campuses during 1973-74 and changes were recommended for adoption to the Regents. Action on the recommendations will be taken early in the next biennium. University "due process" is hardening into an adversarial-type mold. This approach has deemphasized education to correct deficient behavior patterns and enforce minimum standards and has increased emphasis on proving guilt and applying simple sanctions.

During the biennium, 212 new disciplinary offenses involving 165 students (151 males and 14 females) were referred to the Special Counseling Office, compared to 207 students during 1970-72. Individual cases requiring office response, including new and reopened cases, consultation and counseling cases, and closed cases requiring additional services, numbered 524, compared to 634 for the previous biennium. The case load of the office consisted of .6 percent of the Twin Cities campus student population.

Approximately 4,050 students were housed in campus residences during the fall quarters of 1972 and 1973. Reported incidents of University-code or hall-regulation violations by these students totaled 985, most of which were handled by hall staffs or judiciary units. In fact, 1,079 actions—ranging from unsubstantiated charges, through admonitions, assessments of damage claims, and restrictions of privileges, to probation and removal from the hall—were taken to dispose of the incidents.

The Campus Committee on Student Behavior (CCSB), which is composed of students and faculty members, is the highest campus disciplinary agency. It was changed from an administrative to a Twin Cities Assembly Committee, on request of the assembly and acceptance by the President, for an experimental period begun in fall 1973. The effect of this change is to make the CCSB responsible to the assembly and thus to utilize the same body for hearing complaints against student organizations. During 1972-74 the CCSB heard 33 complaints against 18 individuals and three student organizations.

Student Life Studies—Student Life Studies continued as an interdisciplinary research unit with the objectives of increasing understanding of student life and increasing the University's capability of facilitating student development. Dr. Robert Ross joined the staff in the early part of the biennium, bringing to the office his experience in analyzing student protest and issues of protest.

The office took a leadership role in developing new management methods within Student Affairs by initiating a systems planning project for designing a student personnel system, by introducing program budgeting, and by facilitating the development of management by objectives.

During the biennium, studies were done on student housing needs, academic advising, needs of special groups such as women and foreign students, parental influences on college students, marijuana and alcohol use among students, student issues and protest, citizens' attitudes toward the University, social and legal definitions of studenthood, student peer cultures, organizational characteristics of Student Affairs, residence-hall alcohol policy, students' experiences in registration, students' experiences and involvement in governance, orientation needs of graduate students, and the influence of counselors on students.

The newly developed University Opinion Poll was used to gather students' opinions on many issues of importance to the University community, including satisfaction with the University, tenure, FM radio, student publications, student government, child-care facilities, bicycle use on campus, and the Minnesota Public Interest Research Group. Several polls evaluated University services such as University Relations publications and student experiences in Continuing Education and Extension.

During the biennium, staff members issued 77 publications and reports and four books. They continued to be active in the academic departments related to their professional areas by teaching courses, advising graduate students, serving on a number of committees, and taking part in departmental activities.

Office of Student Religious Activities—The functions of this office were transferred to Student Life Studies, and Donald Biggs was assigned the responsibility of working with the campus religious groups and the new Religious Advisory Board. Formation of the board, which is composed of representatives of the religious community and University staff and students, was recommended by the Task Force on Religious Affairs. Other major recommendations were that the University continue its present policy regarding student religious organizations, continue service to religious groups, continue strong support for the academic study of religion (including adequate financial support), and implement the development of a program for campus-community value concerns.

OFFICE OF ADMISSIONS AND RECORDS

Ralph F. Berdie, *Coordinator*

The Office of Admissions and Records provides services to University students, collegiate units, coordinate campuses, and the central administration to facilitate the educational mission of the University. The principal responsibilities of the office are to admit new students to the University and to schedule and keep a record of student academic programs, so that as many students as possible will be able to take the courses they need and prefer at the most opportune time and to make optimum use of University resources. In order to meet these major responsibilities and several related ones, more than 135 programs and projects have been developed in this office. Annual transactions number in the millions.

This report highlights major activities, problems, and responsibilities of the Office of Admissions and Records in the 1972-74 biennium. Space limitations preclude a complete review of office functions and accomplishments; more details are available in the annual reports prepared by office units.

Systems Development—To profit from the investment in computer developments and provide more efficient, accurate, economical, and comprehensive services to students and others at the University, major emphasis has been placed on the continuing development of student record systems related to the University's administrative computer services. After several years of planning and development, the computerized transcript system was complet-

ed during 1972-73. In 1973, transcripts were computerized for all freshmen who had entered the University in fall 1972 and 1973 and for all freshmen who had entered the Institute of Technology in fall 1971. Transcripts for other students have been computerized as funding allowed.

At the beginning of 1972-73, funds were made available for a registration planning project, and a project leader was added to the staff to assume special responsibility for planning a computerized registration system. When funds are available for registration to be computerized, the new system will be ready to be installed quickly and efficiently.

Other systems designed during the biennium are subsidiary to these major systems. They include a course-load system (providing computerized cancel and add functions), a cross-index system (providing easier identification of students), and a new system of preparing student rosters. In 1973-74, microfilm and microfiche began to be used in the production of student records.

Underlying the development of the computerized-data system was the principle that the new system must be at least as effective, secure, and well controlled as the preceding system. During 1972-74, a data management division was established in the Records Office. Staff members in this division work closely with other staff members, including those in other parts of the University, in order to provide maximum accuracy and completeness of data.

Coordination—Emphasis was placed on coordinating the admissions and records functions of a number of University divisions. An annual schedule was developed to keep offices and individuals aware of their responsibilities and work schedules. The Prospective Student Advisory Committee was designed to coordinate the efforts of this office with other divisions that admit undergraduate students. The Student Data Advisory Committee has aided in coordinating all efforts related to student records, as has the Registration Development Task Force that was appointed in spring 1973.

In a series of admissions seminars held during 1973-74, collegiate representatives met with Admissions and Records staff to discuss research, needs, trends, and philosophy. Specific recommendations were made on the objectives and policies of this office, and seminar discussions provided the impetus for a number of improvements in office procedures. Office involvement in the Senate Committee on Academic Standing and Relations and in the Assembly Committee on Academic Standing has provided another means for coordination. Admissions and Records staff members are also active on a number of other University committees.

Coordination with groups outside the University has been maintained by staff members serving on the Minnesota Educational Relations Committee and the Minnesota Higher Education Coordinating Commission Task Force on Transfer Students, and in the College Entrance Examination Board Association, the American College Testing Program Association, and the American Association of Collegiate Registrars and Admissions Officers.

Reporting—The office worked on improving the reporting system during the biennium. Reports prepared by the office were analyzed in terms of purpose, content, format, and distribution. Consultation with other offices and individuals within the University will aid in revising the reporting system, eliminating or changing some reports and developing new reports, if necessary. A new system was developed for reporting current data on admissions and on estimates and predictions of prospective enrollment to the vice presidents.

Organization—The organization of the office was adjusted to better meet needs. Changes in staff assignments in the Admissions Office allowed new and prospective students more opportunity to talk with members of the professional staff. The administrative organization of the Records Office was changed so that one person no longer had to be administratively responsible for the staff of 90.

Continuing efforts were made to provide in-service training for the staff. A supervisory training program was conducted and, during 1973, staff members were provided with an opportunity to take a course to improve their written reports and correspondence. The Staff Advisory Committee, initiated in 1971, was continued, and greater emphasis was placed on having staff members communicate directly with their supervisors. A staff grievance procedure was established in 1972.

In 1972-73, the entire staff cooperated on a time and cost analysis of programs and projects within the office. Five major programs were identified, and approximately 135 projects within

those programs were studied. This analysis gave the office a basis for estimating how much of the Admissions and Records budget was spent on various functions.

Bulletins—Efforts were made to better manage the bulletin budget and to improve University bulletins. A new format was developed for the 1973-74 *General Information Bulletin*. Several new mini-bulletins were developed to reduce the demand for college bulletins, providing more effective information while reducing expenditures. Limitations were placed on the number of college bulletins printed, and colleges requiring more bulletins were expected to cover the additional costs. A 1973-75 bulletin budget was prepared to provide a better estimate of needed funds. A records editor was added to the staff in 1974 to coordinate and schedule all University bulletins.

Prospective Students—During the biennium, increasing emphasis was placed on programs and services for prospective students. A number of policies were proposed by the Office of Admissions and Records and adopted by the colleges, providing for admission of all high school graduates in the upper 10 percent of their classes and for the acceptance of all transfer applicants who were community college graduates. Special efforts were made to identify the needs of veterans, and new avenues of communication were established with veterans who were prospective students. The 1973-74 Veterans' Outreach Program was successful in raising veteran enrollment on the Twin Cities campus by more than 10 percent, qualifying the University for a Veterans' Cost-of-Instruction Program grant of \$156,000 for 1974-75. Continuing attention was given to students in the Martin Luther King Program and to other disadvantaged groups. Two curriculum coordination conferences were conducted for instructors in mathematics and English, and other conferences were held for high school and community college counselors. A "hot line" was established so that high school counselors could talk with representatives in the Admissions Office easily and quickly.

In light of the increasing importance of transfer students to the University, staff members visited all Minnesota community colleges, the coordinator of Admissions and Records served as chairman of the Higher Education Coordinating Commission Task Force on Transfer Students, and the system for evaluating records of advanced-standing students was revised.

Continuing efforts were directed toward high school students and their counselors. Office representatives attended college nights scheduled by the State Counselors' Association. A new statewide application form was developed by a committee chaired by the coordinator of Admissions and Records. Changes in the Statewide Testing Program involved much time and effort on the part of the admissions staff in working with the colleges to develop, test, and publicize new admissions criteria.

Other Activities—Efforts to upgrade University classrooms continued. Several rooms were air-conditioned, and much new instructional apparatus was provided. A room-use inventory was developed to provide accurate and up-to-date information concerning the utilization of classroom space.

Research included efforts to evaluate the effectiveness of existing programs and services, and to aid in the development of new ones. The current system for classifying students in freshman English was evaluated, and the success of students transferring from community colleges was studied. Descriptive information derived from American College Testing Program reports was analyzed and interpreted. An extensive project provided information regarding the academic progress and success of students in the Martin Luther King Program. Another study provided information regarding the employment status of University graduates several months after graduation. A student information card system was developed so that University departments needing information regarding student attitudes, characteristics, preferences, and problems could gather this information systematically and economically.

In order to process applications for admission promptly, a rapid response system was developed, and the average time-lag between receipt of the application and mailing of the decision was cut from weeks to days. The Minnesota-Wisconsin tuition reciprocity agreement resulted in some procedural changes. The preparation of graduation balance sheets was reviewed with colleges and it is hoped that the colleges will assume responsibility for this activity.

Problems and Needs—One continuing need of the office is for a systematic procedure to predict University enrollment beyond a four-year period. The Office of Admissions and

Records has assumed the responsibility for predicting enrollments for the current year and for the coming biennium, but a decision must be made on the responsibility of formulating long-term enrollment projections.

The inadequate working space continues to handicap the office, contributing to poor morale and excessive staff turnover. In the Records Office, only 35-40 square feet of space are available per worker, although the established standard is 75 square feet. The Records Office is poorly arranged for both staff and students. Staff members working with reports and research are located in several different buildings on campus, and adequate coordination and supervision are difficult. The Scheduling Office has insufficient space, and what space it has is poorly heated and ventilated. No part of the office has adequate amenities for staff, and adequate space is not available for conferences and meetings. A plan to construct new space received attention from a special Student Affairs committee, and planning will continue in the next biennium.

Another need is for the development of an interactive admissions computer system. The present admissions system does not quickly provide information regarding the status of admission actions, nor does it automatically call needed action to the attention of the staff.

Although some progress has been made in improving budget control within the Office of Admissions and Records, it still presents a problem. Monthly budget reports should be available no later than 10 days after the end of each month, and administrative and supervisory personnel throughout the office should be given far more information and responsibility regarding budgets related to their activities.

Projected Goals for 1974-76—Goals for the next biennium include a number that relate to the new systems development. The office will develop and seek approval for a schedule for completion of the computerization of the University's transcript system and a proposal for revision of the registration system, including fee assessment. IBM 360-50 computer programs for the student record system will be developed, replacing 1410-system programs. A budget-control and budget-reporting system will begin operation, providing monthly reports on fiscal status. A proposal will be completed for a security system for computer data, and an Admissions and Records reporting system will be implemented.

Efforts will be made to increase the enrollment of veterans, making the University eligible for federal funds available for veterans.

Plans will be completed for the acquisition of additional space for the Office of Admissions and Records and for the rearrangement of presently available space. In addition, the Records Office will be reorganized.

TABLE I. COLLEGIATE ENROLLMENT BY COLLEGES AND SCHOOLS, 1972-74

College or School	1972-73			1973-74			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Agriculture, Forestry, and Home Economics								
Senior	490	463	953	529	489	1,018	65	..
Junior	526	453	979	489	416	905	..	74
Sophomore	376	413	789	390	439	829	40	..
Freshman	284	276	560	238	271	509	..	51
Adult Special	133	107	240	117	136	253	13	..
Total	1,809	1,712	3,521	1,763	1,751	3,514	..	7
Business Administration								
Senior	700	43	743	706	75	781	38	..
Junior	604	65	669	735	117	852	183	..
Adult Special	101	21	122	109	29	138	16	..
Total	1,405	129	1,534	1,550	221	1,771	237	..
Veterinary Medicine								
Senior	53	8	61	51	9	60	..	1
Junior	51	8	59	55	8	63	4	..
Sophomore	54	10	64	63	12	75	11	..
Freshman	63	11	74	53	19	72	..	2
Adult Special	3	3	6	3	1	4	..	2
Total	224	40	264	225	49	274	10	..
Dentistry								
Senior	103	..	103	104	3	107	4	..
Junior	114	3	117	122	3	125	8	..
Sophomore	121	3	124	124	4	128	4	..
Freshman	127	4	131	133	10	143	12	..
Adult Special	11	..	11	4	3	7	..	4
Total	476	10	486	487	23	510	24	..
Dental Hygiene								
Second Year .....	..	61	61	1	60	61	..	..
First Year	1	56	57	2	99	101	44	..
Adult Special .....	..	12	12	..	6	6	..	6
Total	1	129	130	3	165	168	38	..
Education								
Senior	599	895	1,494	649	1,006	1,655	161	..
Junior	226	497	723	194	412	606	..	117
Sophomore	51	86	137	44	67	111	..	26
Freshman	10	23	33	..	1	1	..	32
Adult Special	246	523	769	245	541	786	17	..
Total	1,132	2,024	3,156	1,132	2,027	3,159	3	..
Technology								
Senior	1,172	43	1,215	1,192	55	1,247	32	..
Junior	920	35	955	862	74	936	..	19
Sophomore	688	51	739	692	62	754	15	..
Freshman	548	47	595	633	55	688	93	..
Adult Special	292	25	317	349	38	387	70	..
Total	3,620	201	3,821	3,728	284	4,012	191	..
Graduate School								
Twin Cities, Duluth	5,744	2,372	8,116	5,718	2,608	8,326	210	..
Mayo	500	12	512	458	11	469	..	43
Total	6,244	2,384	8,628	6,176	2,619	8,795	187	..
Law								
Third Year	455	42	497	400	61	461	..	36
Second Year	212	43	255	205	51	256	1	..
Adult Special	3	..	3	..	2	2	..	1
Total	670	85	755	605	114	719	..	36

DIVISIONS OF STUDENT AFFAIRS

TABLE I. (CONTINUED)

College or School	1972-73			1973-74			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Biological Sciences								
Senior	182	69	251	211	86	297	46	..
Junior	159	51	210	171	71	242	32	..
Adult Special	49	46	95	72	45	117	22	..
Total	390	166	556	454	202	656	100	..
Medical School								
Senior	130	15	145	236	29	265	120	..
Junior	225	23	248	160	25	185	..	63
Sophomore	200	25	225	204	33	237	12	..
Freshman	209	34	243	201	43	244	1	..
Adult Special	1	1	2	213	20	233	231	..
Total	765	98	863	1,014	150	1,164	301	..
Medical Technology								
Senior	5	63	68	4	53	57	..	11
Junior	4	46	50	6	52	58	8	..
Adult Special	3	31	34	1	26	27	..	7
Total	12	140	152	11	131	142	..	10
Mortuary Science								
.....	110	3	113	94	3	97	..	16
Nursing								
Third year .....	..	100	100	5	100	105	5	..
Second Year	16	219	235	14	249	263	28	..
Adult Special .....	..	13	13	..	10	10	..	3
Total	16	332	348	19	359	378	30	..
Pharmacy								
Senior	70	24	94	88	26	114	20	..
Junior	91	23	114	82	40	122	8	..
Sophomore	66	44	110	82	39	121	11	..
Freshman	3	..	3	..	..	..	..	3
Adult Special	15	4	19	20	3	23	4	..
Total	245	95	340	272	108	380	40	..
Liberal Arts								
Senior	2,254	1,733	3,987	2,193	1,825	4,018	31	..
Junior	1,967	1,573	3,540	1,859	1,523	3,382	..	158
Sophomore	2,903	2,775	5,678	3,023	2,634	5,657	..	21
Freshman	1,890	2,058	3,948	1,888	1,902	3,790	..	158
Adult Special	361	496	857	409	594	1,003	146	..
Total	9,375	8,635	18,010	9,372	8,478	17,850	..	160
University College								
Senior	140	96	236	131	115	246	10	..
Junior	62	47	109	61	56	117	8	..
Sophomore	17	23	40	16	17	33	..	7
Adult Special	17	18	35	27	23	50	15	..
Total	236	184	420	235	211	446	26	..
General College								
Fourth Year* .....	..	..	..	56	52	108	108	..
Third Year* .....	..	..	..	84	91	175	175	..
Second Year	701	433	1,134	568	377	945	..	189
First Year	897	638	1,535	924	624	1,548	13	..
Adult Special	206	123	329	61	54	115	..	214
Total	1,804	1,194	2,998	1,693	1,198	2,891	..	107
Public Health								
Senior	85	37	122	110	55	165	43	..
Adult Special	86	51	137	68	52	120	..	17
Total	171	88	259	178	107	285	26	..

BIENNIAL REPORT

TABLE I. (CONTINUED)

College or School	1972-73			1973-74			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Physical Therapy								
Senior	12	41	53	8	22	30	..	23
Junior	7	22	29	6	23	29	..	..
Adult Special .....	..	2	2	..	..	..	..	2
Total	19	65	84	14	45	59	..	25
Occupational Therapy								
Senior .....	..	27	27	1	30	31	4	..
Junior	1	30	31	2	28	30	..	1
Adult Special .....	..	1	1	..	1	1	..	..
Total	1	58	59	3	59	62	3	..
Duluth								
Senior	770	477	1,247	765	515	1,280	33	..
Junior	637	510	1,147	651	458	1,109	..	38
Sophomore	800	593	1,393	857	591	1,448	55	..
Freshman	920	788	1,708	922	797	1,719	11	..
Adult Special	178	145	323	203	342	545	222	..
Total	3,305	2,513	5,818	3,396	2,703	6,101	283	..
Morris								
Senior	153	110	263	192	153	345	82	..
Junior	245	170	415	195	122	317	..	98
Sophomore	279	214	493	274	202	476	..	17
Freshman	332	293	625	368	209	577	..	48
Adult Special	41	35	76	26	33	59	..	17
Total	1,050	822	1,872	1,055	719	1,774	..	98
Crookston								
Second Year	235	62	297	285	63	348	51	..
First Year	351	79	430	341	121	462	32	..
Adult Special	16	17	33	33	24	57	24	..
Total	602	158	760	659	208	867	107	..
Waseca	267	144	411	327	203	530	119	..
Net Academic Year	33,949	21,409	55,358	34,467	22,137	56,604	1,246	..
Summer Session								
First Term	8,408	6,716	15,124	7,713	6,527	14,240	..	884
Second Term	6,326	4,222	10,548	5,918	4,211	10,129	..	419
Subtotal Summer	14,734	10,938	25,672	13,631	10,738	24,369	..	1,303
Less Duplicates	4,913	2,894	7,807	4,478	2,701	7,179	..	628
Total Summer	9,821	8,044	17,865	9,153	8,037	17,190	..	675
Plus Mayo	423	10	433	457	10	467	34	..
Net Summer Session	10,244	8,054	18,298	9,610	8,047	17,657	..	641
Academic Plus Summer	44,193	29,463	73,656	44,077	30,184	74,261	605	..
Less Duplicates	6,931	4,349	11,280	6,509	4,484	10,993	..	287
NET COLLEGIATE TOTAL	37,262	25,114	62,376	37,568	25,700	63,268	892	..

*1973-74 was the first year data was available on these students.

TABLE II-A. COLLEGIATE ENROLLMENT BY QUARTERS, 1972-73

College or School	First Summer Session 1972			Second Summer Session 1972			Fall 1972			Winter 1973			Spring 1973			Individual Registration		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Ag., For., and Home Ec.	249	398	647	221	207	428	1,502	1,460	2,962	1,527	1,431	2,958	1,403	1,388	2,791	1,888	1,844	3,732
Biological Sciences	115	68	183	94	41	135	345	139	484	336	132	468	317	126	443	437	201	638
Business Administration	561	56	617	437	41	478	1,218	111	1,329	1,144	101	1,245	1,028	107	1,135	1,605	154	1,759
Dental Hygiene		23	23		12	12	1	116	117	1	124	125	1	124	125	1	130	131
Dentistry	127	3	130	117	3	120	451	10	461	439	10	449	418	10	428	478	11	489
Education	667	1,370	2,037	394	701	1,095	855	1,604	2,459	829	1,454	2,283	828	1,514	2,342	1,636	3,141	4,777
General College	272	226	498	213	195	408	1,299	890	2,189	1,263	851	2,114	1,155	850	2,005	1,917	1,266	3,183
Graduate:																		
Twin Cities, Duluth	1,988	1,046	3,034	1,588	681	2,269	4,938	1,962	6,900	4,565	1,814	6,379	4,363	1,793	6,156	6,380	2,963	9,343
Mayo	410	10	420	413	10	423	431	10	441	433	9	442	462	11	473	541	13	554
Law	25	4	29	27	2	29	568	65	633	625	80	705	605	81	686	680	87	767
Liberal Arts	2,201	2,281	4,482	1,541	1,568	3,109	7,791	7,266	15,057	7,494	6,734	14,228	7,054	6,534	13,588	10,514	9,883	20,397
Medical Technology	5	56	61	6	55	61	12	117	129	9	108	117	7	111	118	14	156	170
Medicine	481	59	540	477	53	530	700	89	789	712	92	804	548	72	620	785	100	885
Mortuary Science																110	3	113
Nursing	6	149	155	4	67	71	14	324	338	14	310	324	15	318	333	16	350	366
Occupational Therapy		34	34		26	26	1	58	59	1	55	56	1	56	57	1	58	59
Pharmacy	40	17	57	31	12	43	235	94	329	233	90	323	225	91	316	252	97	349
Physical Therapy	6	21	27	5	21	26	18	62	80	19	63	82	13	46	59	19	65	84
Public Health	64	45	109	89	30	119	152	77	229	144	66	210	149	66	215	185	121	306
Technology	700	63	763	536	43	579	3,140	168	3,308	3,042	166	3,208	2,837	168	3,005	3,785	229	4,014
University College	74	53	127	62	37	99	160	125	285	183	127	310	169	135	304	266	199	465
Veterinary Medicine	41	3	44	26	8	34	217	36	253	217	39	256	215	39	254	224	40	264
Duluth	556	561	1,117	419	375	794	2,835	2,253	5,088	2,728	2,095	4,823	2,447	1,924	4,371	3,570	2,821	6,391
Morris	45	80	125	22	39	61	973	781	1,754	956	720	1,676	871	693	1,564	1,067	850	1,917
Crookston	123	63	186	17	5	22	491	136	627	497	132	629	396	109	505	624	188	812
Waseca																267	144	411
TOTAL	8,756	6,689	15,445	6,739	4,232	10,971	28,347	17,953	46,300	27,411	16,803	44,214	25,527	16,366	41,893	37,262	25,114	62,376

DIVISIONS OF STUDENT AFFAIRS

TABLE II-B. COLLEGIATE ENROLLMENT BY QUARTERS, 1973-74

College or School	First Summer Session 1973			Second Summer Session 1973			Fall 1973			Winter 1974			Spring 1974			Individual Registration		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Ag. For., and Home Ec.	208	351	559	125	200	325	1,430	1,520	2,950	1,455	1,391	2,846	1,377	1,407	2,784	1,859	1,872	3,731
Biological Sciences	139	83	222	112	74	186	384	151	535	376	151	527	365	159	524	515	246	761
Business Administration	537	77	614	419	59	478	1,336	184	1,520	1,221	175	1,396	1,208	174	1,382	1,738	250	1,988
Dental Hygiene	1	27	28		19	19	3	151	154	2	156	158	2	161	163	3	166	169
Dentistry	167	7	174	144	5	149	461	21	482	450	19	469	433	20	453	500	23	523
Education	647	1,428	2,075	439	838	1,277	820	1,572	2,392	779	1,360	2,139	839	1,476	2,315	1,673	3,240	4,913
General College	212	177	309	158	134	292	1,106	856	1,962	1,114	838	1,952	1,215	898	2,113	1,773	1,299	3,072
Graduate:																		
Twin Cities, Duluth	1,589	1,036	2,625	1,297	668	1,965	4,175	1,979	6,154	3,815	1,711	5,526	4,883	2,165	7,048	6,237	3,147	9,384
Mayo	434	10	444	449	10	459	458	11	469	423	10	433	393	10	403	498	12	510
Law	22	2	24	12	3	15	564	103	667	548	106	654	569	105	674	606	114	720
Liberal Arts	1,867	1,975	3,842	1,391	1,405	2,796	7,495	6,897	14,392	7,105	6,330	13,435	7,237	6,538	13,775	10,286	9,470	19,756
Medical Technology	8	53	61	5	63	68	11	116	127	10	112	122	9	94	103	13	155	168
Medicine	536	84	620	555	77	632	714	117	831	843	124	967	897	134	1,031	1,046	153	1,199
Mortuary Science																94	3	97
Nursing	10	187	197	6	100	106	18	340	358	18	338	356	15	310	325	21	405	426
Occupational Therapy	2	3	5	2	5	7	3	57	60	3	56	59	3	57	60	3	59	62
Pharmacy	46	19	65	47	19	66	261	103	364	261	103	364	261	101	362	277	109	386
Physical Therapy	8	8	16	4	14	18	13	43	56	13	44	57	13	45	58	15	45	60
Public Health	77	34	111	86	34	120	134	86	220	126	74	200	149	83	232	205	125	330
Technology	654	94	748	561	62	623	3,129	238	3,367	2,982	222	3,204	2,986	228	3,214	3,897	329	4,226
University College	98	71	169	75	54	129	167	155	322	149	137	286	177	151	328	267	235	502
Veterinary Medicine	28	8	36	28	3	31	214	48	262	217	46	263	221	47	268	225	49	274
Duluth	635	574	1,209	394	312	706	2,974	2,439	5,413	2,754	2,271	5,025	2,664	1,972	4,636	3,689	3,006	6,695
Morris	33	58	91	55	62	117	969	665	1,634	928	636	1,564	869	615	1,484	1,111	763	1,874
Crookston	125	57	183	2		2	527	174	701	558	161	719	430	144	574	690	222	912
Waseca																327	203	530
TOTAL	8,084	6,423	14,507	6,366	4,220	10,586	27,366	18,026	45,392	26,150	16,571	42,721	27,215	17,094	44,309	37,568	25,700	63,268

DIVISIONS OF STUDENT AFFAIRS

TABLE III. SUBCOLLEGIATE-ENROLLMENT, 1972-74

	1972-73			1973-74			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Southern School and Station, Waseca ¹	7	9	16	..	..	..	..	16
Marshall-University High School, Minneapolis ¹	37	32	69	..	..	..	..	69
Nursery School, Minneapolis	101	78	179	69	69	138	..	41
Forensics ²	18	14	32	30	21	51	19	..
High School Theatre Workshop ³	14	18	32	27	35	62	30	..
Subtotal	177	151	328	126	125	251	..	77
Agricultural Short Courses St. Paul	14,174	3,431	17,605	16,704	4,098	20,802	3,197	..
North Central School and Experiment Station, Grand Rapids .....	..	..	..	..³	.. ³	1,862	1,862	..
Northwest Experiment Station, Crookston .....	..	..	..	..³	.. ³	3,265	3,265	..
Southern Experiment Station, Waseca	3,094	551	3,645	3,508	435	3,943	298	..
Southwest Experiment Station, Lamberton	6,168	474	6,642	4,112	584	4,696	..	1,946
West Central School and Station, Morris	3,024	592	3,616	3,006	721	3,727	111	..
Subtotal	26,460	5,048	31,508	27,330	5,838	38,295	6,787	..
TOTAL	26,637	5,199	31,836	27,456	5,963	38,546	6,710	..

¹Phased out at end of 1972-73.

²Previously included in Marshall-University High School totals.

³Figures not available.

TABLE IV. CONTINUING EDUCATION AND EXTENSION ENROLLMENT, 1972-74

	1972-73			1973-74			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Extension Classes	15,539	16,286	31,825	18,313	17,074	35,387	3,562	..
Short Courses	725	2,110	2,835	1,292	3,215	4,507	1,672	..
Independent Study	4,281	3,080	7,361	3,789	3,063	6,852	..	509
Conferences	16,965	8,799	25,764	14,056	9,029	23,085	..	2,679
TOTAL	37,510	30,275	67,785	37,450	32,381	69,831	2,046	..

TABLE V. ENROLLMENT SUMMARY, 1972-74

	1972-73			1973-74			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Collegiate Students	37,262	25,114	62,376	37,568	25,700	63,268	892	..
Subcollegiate Students	26,637	5,199	31,836	27,456	5,963	38,546	6,710	..
Conference Students	16,965	8,799	25,764	14,056	9,029	23,085	..	2,679
Extension Students	20,545	21,476	42,021	23,394	23,352	46,746	4,725	..
TOTAL	101,409	60,588	161,997	102,474	64,044	171,645	9,648	..

TABLE VI. DEGREES CONFERRED, 1972-74

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
Agriculture						
B. L. A. with distinction	..	..	..	1	..	1
B. L. A.	3	..	3	5	..	5
B. S. with high distinction	12	2	14	10	4	14
B. S. with distinction	40	4	44	36	7	43
B. S.	130	5	135	126	12	138
M. Ag.	..	..	..	3	..	3
Agriculture and Business						
B. A. B. A. with high distinction	1	..	1	..	..	..
B. A. B. A. with distinction	4	..	4	4	..	4
B. A. B. A.	24	..	24	14	..	14
Agriculture and Education						
B. S. with distinction	3	..	3	2	..	2
B. S.	19	..	19	8	..	8
Biological Sciences						
B. S. summa cum laude	13	6	19	11	7	18
B. S. magna cum laude	8	2	10	5	1	6
B. S. cum laude	11	4	15	5	2	7
B. S.	82	34	116	120	42	162
Business Administration						
B. S. B. with high distinction	26	4	30	25	4	29
B. S. B. with distinction	69	4	73	70	11	81
B. S. B.	450	17	467	480	30	510
Education						
B. S. with high distinction	34	83	117	31	106	137
B. S. with distinction	128	282	410	93	238	331
B. S.	192	248	440	147	203	350
M. Ed.	37	12	49	46	16	62
Education and Agriculture						
B. S. with high distinction	..	..	..	1	..	1
B. S. with distinction	..	..	..	14	..	14
B. S.	..	..	..	23	..	23
Education and Home Economics Education						
B. S. with high distinction	..	..	..	..	8	8
B. S. with distinction	..	..	..	..	15	15
B. S.	..	..	..	..	21	21
Forestry						
B. S. with high distinction	9	..	9	6	2	8
B. S. with distinction	22	..	22	17	..	17
B. S.	80	1	81	101	1	102
General College						
A. A.	208	105	313	139	89	228
B. A. S.	27	12	39	37	15	52
B. G. S.	4	..	4	9	2	11
Health Sciences						
B. S. with high distinction (Dent.)	4	..	4	12	..	12
B. S. with distinction (Dent.)	10	2	12	13	..	13
B. S. (Dent.)	47	1	48	35	1	36
D. D. S.	97	1	98	118	3	121
G. D. H.	..	58	58	1	58	59
B. S. with high distinction (Med. Tech.)	..	2	2	1	3	4
B. S. with distinction (Med. Tech.)	1	8	9	1	16	17
B. S. (Med. Tech.)	2	25	27	2	42	44
B. S. (Medicine)	24	1	25	9	..	9
M. D.	164	14	178	232	30	262
B. S. with high distinction (Mort. Sci.)	7	..	7	..	..	..
B. S. with distinction (Mort. Sci.)	8	..	8	2	..	2
B. S. (Mort. Sci.)	28	1	29	37	..	37
B. S. in Nurs. with high distinction	..	16	16	..	20	20

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TABLE VI. (CONTINUED)

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
B.S. in Nurs. with distinction	1	47	48	..	45	45
B.S. in Nurs	..	37	37	4	35	39
B.S. with high distinction (Occup. Therapy)	..	5	5	..	3	3
B.S. with distinction (Occup. Therapy)	..	7	7	..	8	8
B.S. (Occup. Therapy)	..	4	4	..	1	1
B.S. in Pharm. with high distinction	1	5	6	5	5	10
B.S. in Pharm. with distinction	11	6	17	10	1	11
B.S. in Pharm.	51	8	59	60	13	73
Pharm.D.	..	..	..	14	2	16
B.S. with high distinction (Phys. Therapy)	2	17	19	2	7	9
B.S. with distinction (Phys. Therapy)	5	12	17	3	6	9
B.S. (Phys. Therapy)	3	11	14	3	7	10
M.H.A.	41	..	41	25	3	28
M.P.H.	33	31	64	36	23	59
Home Economics						
B.S. with high distinction	..	24	24	..	28	28
B.S. with distinction	..	41	41	1	54	55
B.S.	2	111	113	4	163	167
Home Economics and Education						
B.S. with high distinction	..	7	7	..	..	..
B.S. with distinction	..	19	19	..	4	4
B.S.	..	27	27	..	5	5
Law						
J.D. summa cum laude	2	..	2	..	1	1
J.D. magna cum laude	18	2	20	10	1	11
J.D. cum laude	49	5	54	47	11	58
J.D.	173	8	181	132	16	148
Liberal Arts						
A.L.A.	41	53	94	47	59	106
B.A. summa cum laude	55	55	110	56	63	119
B.A. magna cum laude	64	55	119	57	63	120
B.A. cum laude	27	22	49	33	23	56
B.A.	1,045	945	1,990	1,046	942	1,988
B.E.S. summa cum laude	1	..	1	4	2	6
B.E.S. magna cum laude	..	..	..	2	..	2
B.E.S.	41	17	58	62	54	116
B.F.A. summa cum laude	2	2	4	2	7	9
B.F.A. magna cum laude	..	3	3	2	..	2
B.F.A. cum laude	3	..	3	2	1	3
B.F.A.	28	14	42	28	21	49
B.S. summa cum laude	1	..	1	..	1	1
B.S. magna cum laude	1	..	1	2	1	3
B.S.	6	..	6	10	3	13
Technology						
B.A.E. with distinction	1	..	1	..	..	..
B.A.E.	1	..	1	..	..	..
B.A.E.M. with high distinction	4	..	4	9	..	9
B.A.E.M. with distinction	2	..	2	6	..	6
B.A.E.M.	17	..	17	16	..	16
B.Ag.E. with high distinction	2	..	2	1	..	1
B.Ag.E. with distinction	4	..	4	9	..	9
B.Ag.E.	6	..	6	8	..	8
B.Arch with high distinction	5	..	5	3	..	3
B.Arch with distinction	6	1	7	18	3	21
B.Arch.	50	..	50	54	1	55
B.Ch.E. with high distinction	8	..	8	6	..	6
B.Ch.E. with distinction	13	..	13	10	1	11
B.Ch.E.	29	3	32	30	2	32
B.Chem. with high distinction	3	1	4	6	..	6
B.Chem. with distinction	4	3	7	9	2	11
B.Chem.	9	1	10	14	1	15
B.C.E. with high distinction	18	..	18	9	..	9
B.C.E. with distinction	24	..	24	18	..	18

TABLE VI. (CONTINUED)

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
B.C.E.	93	..	93	67	..	67
B. Comp. Sci. with high distinction	5	..	5	2	..	2
B. Comp. Sci. with distinction	7	..	7	4	..	4
B. Comp. Sci.	9	1	10	12	1	13
B.E.E. with high distinction	37	..	37	11	..	11
B.E.E. with distinction	29	1	30	45	..	45
B.E.E.	75	1	76	83	..	83
B.E.D. with distinction	5	..	5	10	..	10
B.E.D.	25	1	26	19	..	19
B. Geo.-E. with distinction	2	..	2	2	..	2
B. Geo.-E.	1	..	1	6	..	6
B.L.A. with distinction .....	..	..	..	1	..	1
B.L.A.	6	..	6	8	..	8
B. Math. with high distinction	10	..	10	10	2	12
B. Math. with distinction	15	..	15	17	1	18
B. Math.	19	1	20	12	..	12
B.M.E. with high distinction	16	..	16	17	..	17
B.M.E. with distinction	37	..	37	39	..	39
B.M.E.	88	1	89	97	..	97
B. Met. E. with high distinction	2	..	2	..	..	..
B. Met. E. with distinction	3	..	3	1	..	1
B. Met. E.	2	..	2	2	..	2
B. Min. E. with high distinction .....	..	..	..	2	..	2
B. Min. E. with distinction	1	..	1	2	..	2
B. Min. E.	5	..	5	6	..	6
B. Phys. with high distinction	9	..	9	4	..	4
B. Phys. with distinction	9	..	9	9	1	10
B. Phys.	14	1	15	12	..	12
B.S. with distinction	1	..	1	..	..	..
B.S.	1	..	1	2	..	2
B.S. Geol. with high distinction .....	..	..	..	1	..	1
B.S. Geol. with distinction	2	..	2	2	..	2
B.S. Geol.	5	..	5	8	1	9
B.S. Geophys. with high distinction .....	..	..	..	3	..	3
B.S. Geophys. with distinction .....	..	..	..	1	..	1
B.S. Geophys. ....	..	..	..	2	..	2
Mechanical Engineer .....	..	..	..	1	..	1
University College						
B.A. with high distinction	1	1	2	..	2	2
B.A. with distinction .....	..	2	2	1	2	3
B.A.	10	4	14	4	10	14
B.S. with high distinction .....	..	3	3	2	2	4
B.S. with distinction	7	11	18	7	3	10
B.S.	73	40	113	49	38	87
Veterinary Medicine						
B.S. with distinction	3	1	4	..	..	..
B.S.	3	1	4	..	..	..
B.S.V.S. with high distinction	2	3	5	8	1	9
B.S.V.S. with distinction	11	3	14	13	5	18
B.S.V.S.	12	2	14	18	3	21
D.V.M.	53	8	61	51	8	59
Graduate School						
M. Aero. E.	2	..	2	1	..	1
M. Arch.	10	..	10	10	1	11
M.A.	291	360	651	211	312	523
M.A.P.A.	12	..	12	1	..	1
M.B.A.	83	1	84	97	7	104
M.C.E.	3	..	3	3	..	3
M.F.A.	15	13	28	20	16	36
M.M.E. ....	..	..	..	1	..	1
M.S.W.	12	32	44	21	52	73
M.S.	181	88	269	193	77	270
M.S.A.E.	4	..	4
M.S. Aero. E.	4	..	4	1	..	1
M.S. Ag. E.	3	..	3	4	..	4
M.S. Anes.	3	1	4

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TABLE VI. (CONTINUED)

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
M.S.Ch.E.	8	..	8	4	..	4
M.S.C.E.	13	1	14	18	1	19
M.S.Dent.	14	..	14	11	..	11
M.S.E.E.	24	..	24	23	..	23
M.S.Exp.Surg.	2	..	2	2	..	2
M.S.Geo.E.	7	..	7	2	..	2
M.S.Ind.E.	13	..	13	9	..	9
M.S.M.E.	18	..	18	16	..	16
M.S.Med.	1	..	1	..	..	..
M.S.Met. & Mat.Sci.	2	..	2	8	..	8
M.S.Min.E.	3	..	3	5	..	5
M.S.Min.Res.E.	1	..	1	..	..	..
M.S.Otol.	..	..	..	2	..	2
M.S.P.Med. & Rehab.	1	..	1	..	..	..
M.S.Psychiat.	2	..	2	2	..	2
M.S.Rad.	..	..	..	1	..	1
M.S.Surg.	1	..	1	..	..	..
Ed.D.	13	1	14	16	3	19
Ph.D.	452	87	539	419	114	533
Ph.D.Neuro.	1	..	1	1	..	1
Ph.D.Surg.	2	..	2	3	..	3
Crookston						
A.A.S. with high distinction	18	10	28	23	12	35
A.A.S. with distinction	30	14	44	47	11	58
A.A.S.	64	15	79	54	18	72
Duluth						
A.A.	10	22	32	8	15	23
A.Voc.Tchr.Ed.	3	..	3	3	..	3
A.S. in D.H.	..	..	..	..	15	15
B.Accctg. magna cum laude	..	..	..	3	1	4
B.Accctg. cum laude	..	..	..	1	..	1
B.Accctg.	1	..	1	5	1	6
B.A. summa cum laude	7	4	11	11	7	18
B.A. magna cum laude	17	7	24	16	19	35
B.A. cum laude	43	40	83	48	39	87
B.A.	230	76	306	257	116	373
B.B.A. summa cum laude	..	..	..	1	..	1
B.B.A. magna cum laude	..	..	..	3	..	3
B.B.A. cum laude	2	..	2	2	1	3
B.B.A.	9	..	9	17	1	18
B.S. summa cum laude	..	2	2	4	6	10
B.S. magna cum laude	6	10	16	8	24	32
B.S. cum laude	26	76	102	9	35	44
B.S.	118	192	310	97	112	209
M.A.	29	23	52	13	13	26
M.S.	7	3	10	8	3	11
M.S.W.	..	..	..	25	15	40
Mayo Graduate School of Medicine						
M.S.	..	2	2	1	1	2
M.S.Dent.	2	..	2	1	..	1
M.S.Derm.	..	..	..	4	1	5
M.S.Med.	1	..	1	2	..	2
M.S.Neuro.	1	..	1	..	..	..
M.S.Obst. and Gyn.	1	..	1	..	..	..
M.S.Orth.Surg.	1	..	1	3	..	3
M.S.Ophthal.	..	..	..	2	..	2
M.S.Otol.	..	..	..	2	..	2
M.S.Path.	..	..	..	..	1	1
M.S.P.Med. and Rehab.	..	..	..	1	..	1
M.S.Rad.	..	..	..	1	..	1
M.S.Surg.	1	..	1	2	..	2
M.S.Urol.	1	..	1	1	..	1
Ph.D.	1	..	1	1	1	2
Ph.D.Rad.	..	..	..	1	..	1

BIENNIAL REPORT

TABLE VI. (CONTINUED)

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
Morris						
B.A. with high distinction	1	1	2			
B.A. with distinction	30	31	61	30	44	74
B.A.	106	82	188	129	88	217
B.S.		5	5		1	1
Waseca						
A.A.S. with high distinction	3	2	5	5	5	10
A.A.S. with distinction	14	6	20	12	9	21
A.A.S.	18	3	21	31	26	57
Total	6,644	3,858	10,502	6,664	4,006	10,670
Honorary Degrees	1		1	1		1
GRAND TOTAL	6,645	3,858	10,503	6,665	4,006	10,671

TABLE VII. CERTIFICATES CONFERRED, 1972-74

School, Division, or Course	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
Business Administration						
Accounting Certificate						
Senior	7		7	2		2
Junior with distinction				1		1
Junior	7	1	8	1	1	2
Associate in Management of Administrative Services Certificate (Jr.)	2		2	1		1
Business Administration Certificate						
Senior with high distinction				1		1
Senior with distinction				8		8
Senior	5		5	9		9
Junior with high distinction				3		3
Junior	22	1	23	22	1	23
Credit and Financial Management Certificate (Jr.)				3		3
Fellow in Management of Administrative Services Certificate (Sr.)				2		2
Industrial Relations Certificate with distinction (Jr.)				1		1
Industrial Relations Certificate (Jr.)	13		13	7	1	8
Information Systems Analysis and Design Certificate with distinction (Jr.)				2		2
Information Systems Analysis and Design Certificate (Jr.)				3		3
Continuing Education and Extension						
Police Administration Certificate with distinction (Jr.)					1	1
Police Administration Certificate (Jr.)	3		3	3		3
Social Work Certificate with high distinction (Sr.)				2	3	5
Social Work Certificate with distinction (Sr.)				2	1	3
Social Work Certificate (Sr.)	2	8	10	2		2
General College						
Certificate of Dental Assistant		30	30		20	20
Early Childhood Studies Certificate						
Senior with high distinction					1	1
Senior with distinction					3	3
Senior				1	3	4
Junior with high distinction					4	4
Junior with distinction					5	5
Junior				1	4	5
General Studies Certificate with high distinction (Jr.)				1		1

TABLE VII. (CONTINUED)

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
General Studies Certificate with distinction (Jr.)	..	..	..	..	1	1
General Studies Certificate (Jr.)	..	..	..	1	..	1
Human Services Certificate with high distinction (Jr.)	1	..	1	..	..	..
Human Services Certificate (Jr.)	..	..	..	..	2	2
Secretarial Certificate (Jr.)	..	1	1	..	..	..
Graduate School						
Certificate of Specialist in Education						
Counseling	1	6	7	3	2	5
Distributive Education	4	2	6	2	..	2
Elementary School Administration	..	..	..	6	2	8
General Educational Administration	1	1	2	1	..	1
Library Science	..	..	..	..	1	1
School Business Administration	1	..	1	1	..	1
School Psychological Services	..	6	6	1	3	4
Secondary School Administration	6	..	6	7	..	7
Special Education	3	3	6	2	2	4
Home Economics						
Interior Design Certificate with high distinction (Jr.)						
..	..	..	..	..	3	3
Interior Design Certificate with distinction (Jr.)	..	..	..	1	7	8
Interior Design Certificate (Jr.)	..	9	9	2	8	10
Liberal Arts						
Liberal Arts Certificate with high distinction (Jr.)						
..	..	..	..	1	..	1
Liberal Arts Certificate with distinction (Jr.)	..	..	..	1	1	2
Liberal Arts Certificate (Jr.)	11	6	17	3	3	6
Public Administration Certificate (Jr.)	1	..	1	..	..	..
World Affairs Certificate (Jr.)	..	..	..	1	..	1
Public Health						
Alcoholism and Other Drug Abuse						
Counselor Certificate (Jr.)						
..	8	4	12	..	..	..
Chemical Dependency Counseling Certificate with high distinction (Jr.)						
..	..	..	..	3	1	4
Chemical Dependency Counseling Certificate with distinction (Jr.)						
..	..	..	..	5	6	11
Chemical Dependency Counseling Certificate (Jr.)						
..	..	..	..	32	23	55
Technology						
Basic Engineering Science Certificate (Jr.)						
..	5	..	5	1	..	1
Certificate in Science						
..	4	1	5	..	..	..
Engineering Mathematics and Science Certificate (Jr.)						
..	1	..	1	..	..	..
Engineering Science Certificate (Sr.)						
..	1	..	1	1	..	1
Mathematics and Science Certificate with high distinction (Jr.)						
..	..	..	..	2	..	2
Mathematics and Science Certificate with distinction (Jr.)						
..	..	..	..	1	..	1
Mathematics and Science Certificate (Jr.)						
..	2	..	2	..	..	..
Undergraduate Development Certificate in Civil Engineering with high distinction—90 Credits						
..	..	..	..	1	..	1
Undergraduate Development Certificate in Civil Engineering—90 Credits						
..	1	..	1	..	..	..
Undergraduate Development Certificate in Electrical Engineering—135 Credits						
..	3	..	3	2	..	2
Undergraduate Development Certificate in Electrical Engineering with distinction—90 Credits						
..	..	..	..	1	..	1
Undergraduate Development Certificate in Electrical Engineering—90 Credits						
..	6	..	6	4	..	4
Undergraduate Development Certificate in Engineering and Science—135 Credits						
..	1	..	1	..	..	..

TABLE VII. (CONTINUED)

	1972-73			1973-74		
	Men	Women	Total	Men	Women	Total
Undergraduate Development Certificate in Engineering and Science with high distinction—90 Credits .....	..	..	..	2	..	2
Undergraduate Development Certificate in Engineering and Science—90 Credits	2	..	2	5	..	5
Undergraduate Development Certificate in Engineering and Science with high distinction—45 Credits .....	..	..	..	1	..	1
Undergraduate Development Certificate in Engineering and Science with distinction—45 Credits .....	..	..	..	2	..	2
Undergraduate Development Certificate in Engineering and Science—45 Credits	13	..	13	14	..	14
Duluth (Graduate School) Certificate of Specialist in Education Educational Administration	2	..	2	..	..	..
North Central School of Agriculture, Grand Rapids Forestry Technician	19	..	19	21	..	21
Southern School of Agriculture, Waseca Diplomas*	7	9	16	..	..	..
University High School, Minneapolis Diplomas*	8	2	10	..	..	..
TOTAL	173	90	263	209	113	322

*Phased out at end of 1972-73.

TABLE VIII-A. STUDENTS ENTERED FROM HIGH SCHOOLS, 1972-73

College or School	Minneapolis Public	St. Paul Public	Other Minn. Public	Minnesota Private	Other States & Terr.	Foreign Countries	Special Students	Missing Information	Total
Agriculture	17	11	136	19	7	2	..	3	195
Dental Hygiene .....	..	..	2	..	..	..	..	..	2
Education	7	..	21	2	2	..	..	..	32
Forestry	18	15	54	7	4	..	1	1	100
General College	138	132	363	103	72	8	105	5	926
Home Economics	15	22	128	11	7	4	..	3	190
Liberal Arts	468	327	2,043	408	213	38	54	14	3,565
Technology	54	27	308	28	36	37	8	3	501
University College	1	1	4	1	1	..	3	2	13
Duluth	34	17	1,242	93	49	15	7	19	1,476
Morris	5	34	461	12	22	..	1	7	542
Crookston	2	..	263	8	17	1	1	39	331
Waseca	1	2	160	10	6	2	2	5	188
TOTAL	760	588	5,185	702	436	107	182	101	8,061

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TABLE VIII-B. STUDENTS ENTERED FROM HIGH SCHOOLS, 1973-74

College or School	Minneapolis Public	St. Paul Public	Other Minn. Public	Minnesota Private	Other States & Terr.	Foreign Countries	Special Students	Missing Information	Total
Agriculture	22	9	161	15	39	2	1	..	249
Dental Hygiene	..	..	4	..	..	..	1	..	5
Education	..	..	..	..	..	..	..	..	..
Forestry	6	6	35	8	4	..	..	..	59
General College	128	94	386	112	87	4	101	7	919
Home Economics	16	8	115	6	6	4	1	..	156
Liberal Arts	413	278	2,036	357	249	41	44	8	3,426
Technology	54	46	361	53	58	22	1	2	597
University College	3	..	7	2	1	..	7	..	20
Duluth	22	25	1,276	95	68	15	14	3	1,518
Morris	10	6	451	13	11	9	1	1	502
Crookston	1	7	320	10	36	..	9	4	387
Waseca	4	1	122	8	6	..	2	1	144
TOTAL	679	480	5,274	679	565	97	182	26	7,982

TABLE IX-A. STUDENTS ENTERED WITH ADVANCED STANDING, 1972-73

College or School	Minnesota Institutions	Institutions in Other States & Terr.	Institutions in Foreign Countries	Special Students	Missing Information	Total
Agriculture	108	37	5	44	7	201
Biological Sciences	34	10	..	23	7	74
Business Administration	93	26	1	49	7	176
Dental Hygiene	18	3	..	..	..	21
Dentistry	39	15	..	3	..	57
Education	110	37	1	239	20	407
Forestry	43	9	1	2	3	58
General College	72	26	1	36	31	166
Graduate and Mayo	165	601	200	50	40	1,056
Home Economics	83	39	3	30	15	170
Law	55	48	..	1	1	105
Liberal Arts	1,102	485	24	299	79	1,989
Medical Technology	6	4	..	14	..	24
Medicine	59	50	..	..	5	114
Mortuary Science	23	16	..	..	1	40
Nursing	22	4	..	1	3	30
Occupational Therapy	2	..	..	..	1	3
Pharmacy	24	7	1	7	2	41
Physical Therapy	8	..	..	1	..	9
Public Health	5	33	..	39	2	79
Technology	194	92	13	126	29	454
University College	12	14	..	4	9	39
Veterinary Medicine	13	11	..	4	1	29
Duluth	288	74	1	84	58	505
Morris	70	25	..	18	33	146
Crookston	20	6	..	3	66	95
Waseca	21	1	..	5	6	33
TOTAL	2,689	1,679	251	1,082	426	6,127

TABLE IX-B. STUDENTS ENTERED WITH ADVANCED STANDING, 1973-74

College or School	Minnesota Institutions	Institutions in Other States & Terr.	Institutions in Foreign Countries	Special Students	Missing Information	Total
Agriculture	123	43	2	61	10	239
Biological Sciences	40	24		33	5	102
Business Administration	133	27	3	56	10	229
Dental Hygiene	13	3			1	17
Dentistry	43	17		2		62
Education	142	41	2	254	19	458
Forestry	34	14				48
General College	87	18		21	16	142
Graduate and Mayo	228	820	209	62	39	1,358
Home Economics	97	51	1	52	6	207
Law	50	59		2	7	118
Liberal Arts	1,143	561	20	383	97	2,204
Medical Technology	12	1		10	1	24
Medicine	57	50		5	4	116
Mortuary Science	12	25			3	40
Nursing	19	14			1	34
Occupational Therapy	2					2
Pharmacy	36	8		6	4	54
Physical Therapy	7	1				8
Public Health	3	33	1	44	3	84
Technology	209	97	11	174	18	509
University College	12	4		1	4	21
Veterinary Medicine	16	22		2	1	41
Duluth	273	79		159	11	522
Morris	68	20	1	29	19	137
Crookston	14	11		11	13	49
Waseca	5	3		14	6	28
TOTAL	2,878	2,056	250	1,381	298	6,863

TABLE X-A. GEOGRAPHIC DISTRIBUTION OF STUDENTS OF COLLEGIATE GRADE (OTHER THAN SUMMER SESSION), 1972-73

College or School	Hennepin County	Ramsay County	Other Minnesota	Other States & Terr.	Foreign Countries	Missing Information	Total
Agriculture	317	167	798	59	29	70	1,440
Biological Sciences	177	108	181	35	29	26	556
Business Administration	670	282	489	41	26	26	1,534
Dental Hygiene	39	21	65	4		1	130
Dentistry	140	46	237	48	4	10	485
Education	1,433	632	860	117	12	102	3,156
Forestry	197	126	227	31	3	17	601
General College	1,718	745	373	74	7	78	2,998
Graduate and Mayo	1,713	861	1,623	2,750	1,234	447	8,628
Home Economics	532	258	566	44	16	64	1,480
Law	238	105	240	151	1	20	755
Liberal Arts	8,346	3,659	4,829	707	161	308	18,010
Medical Technology	53	19	68	5	3	4	152
Medicine	234	114	331	144	6	34	863
Mortuary Science	15	7	39	38		1	100
Nursing	115	49	158	14	3	9	348
Occupational Therapy	20	4	34			1	59
Pharmacy	79	35	190	21	11	4	340
Physical Therapy	19	9	52	3		1	84
Public Health	58	26	43	102	16	14	259
Technology	1,248	670	1,392	244	198	69	3,821
University College	201	82	84	25	2	26	420
Veterinary Medicine	39	22	133	53	3	14	264
Duluth	617	260	4,583	157	43	158	5,818
Morris	144	129	1,494	50	7	48	1,872
Crookston	19	5	608	30	2	96	760
Waseca	18	5	250	6	1	112	392
TOTAL	18,399	8,449	19,947	4,953	1,817	1,760	55,325

DIVISIONS OF STUDENT AFFAIRS

TABLE X-B. GEOGRAPHIC DISTRIBUTION OF STUDENTS OF COLLEGIATE GRADE
(OTHER THAN SUMMER SESSION), 1973-74

College or School	Hennepin County	Ramsey County	Other Minnesota	Other States & Terr.	Foreign Countries	Missing Information	Total
Agriculture	383	202	768	90	29	43	1,515
Biological Sciences	232	122	212	41	25	24	656
Business Administration	772	337	539	52	31	40	1,771
Dental Hygiene	54	24	84	5	..	1	166
Dentistry	137	50	254	50	4	15	510
Education	1,307	652	942	130	19	109	3,159
Forestry	179	96	250	32	1	17	575
General College	1,604	714	392	84	8	89	2,891
Graduate and Mayo	1,727	938	1,693	2,847	1,141	448	8,794
Home Economics	535	251	519	49	20	50	1,424
Law	215	114	252	113	2	23	719
Liberal Arts	8,309	3,554	4,602	845	160	380	17,850
Medical Technology	53	19	55	6	3	6	142
Medicine	345	156	396	207	26	34	1,164
Mortuary Science	13	7	33	41	..	..	94
Nursing	136	45	160	27	3	7	378
Occupational Therapy	25	10	24	1	..	2	62
Pharmacy	92	49	192	25	13	9	380
Physical Therapy	18	7	33	1	..	..	59
Public Health	63	35	43	105	..	19	285
Technology	1,294	721	1,444	267	190	96	4,012
University College	230	71	97	20	3	25	446
Veterinary Medicine	36	23	136	60	1	18	274
Duluth	663	295	4,716	217	58	151	6,100
Morris	141	86	1,440	46	18	43	1,774
Crookston	27	12	719	53	1	55	867
Waseca	31	10	384	18	1	30	474
TOTAL	18,621	8,600	20,379	5,432	1,777	1,734	56,543

CAMPUS ASSISTANCE CENTER

Ludwig J. Spolyar, *Director*

The Campus Assistance Center (CAC) continued to serve individual students and University community personnel by providing immediate and responsive information to the many inquiries it received.

The major functions of the CAC were emergency counseling and, when appropriate, referring for long-term therapy; maintaining liaison and coordination with other University student services offices; continually gathering University information for later referral, and disseminating specific information to those who needed it; reviewing current University policies that came to the attention of CAC as a result of student problems or concerns and recommending changes, when warranted; and continually making students aware that CAC would aid them in finding answers or solutions to their problems.

One of the continuing goals of CAC is to seek out and establish close working relationships with other offices. Included in these various offices are the Parents Association, the Orientation Office, the Housing Office, the University Police Department, the School of Social Work, the Minnesota Women's Center, and, to a special degree, the Health Service.

In fall 1972, a CAC staff member was assigned to the Health Service to help students who had questions or problems and to serve as a consultant to the Health Service director on improving policies and procedures as they are viewed from the student's perspective. This new "patient's representative" has been very beneficial and productive, resolving conflicts, providing answers and information, and developing positive changes in Health Service policies and procedures.

Also in fall 1972, CAC assumed the responsibility of supervising the social work graduate students in their internships with a number of Student Affairs offices including the International Student Advisers Office, the Student Activities Center, the Minnesota Women's Center, the Parents Association, and CAC.

As expected, CAC received numerous contacts from students who had various grievances related to the University bureaucracy. These grievances included issues of academic freedom and responsibility, student employment, discrimination, housing, and the administration of certain University and departmental policies or procedures. Most grievances were readily solved through informal and informational channels. In cases where a formal grievance was necessary, CAC directed or advised the student on the proper procedure to be followed.

Other projects in which CAC participated included coordinating a more effective lost-and-found system on campus; printing an informative and inexpensive campus map for general distribution to new students or visitors; compiling and disseminating a list of study spaces on campus; developing a brochure that gives demographic and other information about the student body and distributing it to all new faculty; and coordinating a study on late registration fees, which indicated that over 8 percent of the student body pay late fees totaling \$91,000 annually. Efforts are being made to reduce this number of late fee payments and thereby reduce the cost of education for many students.

Total Campus Assistance Center contacts during the biennium numbered 35,447. The scope of contacts increased quantitatively, and an increase was noted in contacts from nonstudents, such as faculty, staff, and non-University personnel. In addition, the variety and seriousness of problems brought to the Campus Assistance Center increased. The center's knowledgeable and professionally based staff were able to respond effectively and efficiently in almost every case.

HEALTH SERVICE

Paul Rupprecht, *Director*

In general, the Health Service continued to be very busy during both years of the biennium. Although there were no serious epidemics among students, there were a large number of influenza cases during the winter quarters each year.

During the period under review, eight student deaths occurred: one from lymphosarcoma, one from leukemia, one from Hodgkin's disease, two from cardiovascular disease, and three from suicide.

Organization and Administration—A major reorganization of the Health Service administrative structure took place when Donald W. Cowan, M.D., retired from the directorship on July 16, 1972. Under his leadership, the Health Service responded to constantly changing and accelerating health care needs, contributing to the ongoing development of the Health Service and to the entire college health movement. In the new organizational scheme, the former associate director for administration became the director, the first time in Health Service history this position was not filled by a physician. To direct and safeguard the professional services and relationships of the Health Service, three physicians were assigned administrative responsibilities, which they carried out on a shared-time basis while continuing their clinical activities. These three positions are associate director for medical services and chief of staff of the University Health Service Hospital, assistant director for professional relations, and assistant director for patient relations.

Another organizational change took place at the end of the biennium when Professor George S. Michaelsen resigned his administrative position as director of the Division of Environmental Health and Safety. To enhance the integration of services between that division and the other Health Service departments, the post was reclassified as Health Service associate director for environmental health and safety, and its new responsibilities include liaison with the Health Sciences, exclusive of the Medical School.

An added dimension of the administrative restructuring was the implementation of a management by objectives system, first by the Health Service administration and then by departmental supervisors.

During the biennium, the Health Service expenses were higher than its income. The quarterly Health Service fee of \$23.50 was not raised to cover the loss of income caused by a

decreasing number of fee-paying students, inflation, and higher utilization of costlier services. These factors combined to cause the current deficit position that led to the total exhaustion of all balances accumulated in previous years.

Of the total Health Service fee, \$15.25 has been designated to cover the cost of direct, personal, outpatient medical services. This amount became refundable to students who already had guaranteed, comprehensive, direct-delivery medical care provided by health maintenance organizations.

The Health Service took advantage of every opportunity to develop closer relationships with students. The Campus Committee on the Health Service, comprised of a willing and cooperative group of students, staff, and faculty, has been involved in major Health Service decisions. Another effort to improve patient relations was the establishment in fall 1972 of an ombudsman service, jointly operated with the Campus Assistance Center, in the Health Service building.

Outpatient Medical Care—During the biennium, the number of visits to physicians for medical attention exclusive of mental health in the outpatient department again reached a new high of 257,443 (Table I). This compares with 253,985 reported two years ago. The data for the related services rendered in the Health Service dental department, clinical laboratory, X-ray department, and pharmacy are shown in Table II. There it will be seen that the professional dental services totaled 55,894; laboratory procedures, 241,608; X rays, excluding dental X rays, 32,081; and prescriptions filled by Health Service pharmacists, 144,190.

Health Service Hospital—On September 13, 1972, the University Health Service Hospital began operating its 48-bed, independently licensed, general, acute-care facility by accepting student patients. During the biennium this hospital admitted 2,819 patients who stayed for 10,283 days. The primary purpose of this new hospital unit is to provide care at a low cost to Health Service patients and also to serve as an overflow station for University Hospitals. In this latter context, University Hospitals rented 1,346 patient days for its diagnostic care unit in 1973-74.

The University Health Service Hospital's medical staff has organized itself by adopting bylaws, which satisfies one of the requirements for accreditation of this hospital. The Hospital Governing Board's draft of the bylaws, drawn up with the cooperation and contributions of the Campus Committee on the Health Service and the Health Service staff, have been submitted, after a review by the University Attorney's Office, to the central administration for its review and transmission to the Board of Regents.

TABLE I. VISITS TO THE HEALTH SERVICE (MINNEAPOLIS AND ST. PAUL)
FOR MEDICAL ATTENTION BY PHYSICIANS

Year	Outpatient Visits*			Visits to Mental Health Dept. **	Total Visits to Physicians	Average Visits per Student
	Mpls.	St. Paul	Total			
1970-71	122,991	3,555	126,546	14,618	133,895	3.29
1971-72	130,994	4,074	135,068	10,380	141,419	3.25
1972-73	124,146	4,871	129,017	10,730	135,089	3.39
1973-74	123,294	5,122	128,426	10,593	128,031	3.25

*These totals include general medical outpatient visits, specialty appointments exclusive of mental health, and Emergency Receiving visits.

**Includes visits to psychiatrists, psychiatric social workers, and clinical psychologists.

TABLE II. SELECTED SERVICES RENDERED (MINNEAPOLIS)

Year	Professional Dental Services	Lab. Procedures Including B. M. R., E. C. G.	X Rays, Excluding Dental	Prescriptions Filled
1970-71	32,650	104,190	16,773	60,614
1971-72	30,370	109,716	16,740	62,531
1972-73	26,242	120,938	16,062	64,657
1973-74	29,652	120,670	16,019	79,533

Hospital Care—Effective this biennium, the St. Paul campus Health Service was no longer used for inpatient services. The statistics related to student hospital care rendered on the Minneapolis campus for general medical and surgical conditions show some increase in the total number of patients hospitalized, the rate of hospitalization per 1,000 students, and the total number of hospital days (Table III). During the same period, 177 patients required psychiatric hospitalization, under Health Service auspices, for a total of 2,726 hospital days; this compares with 219 such cases during the previous biennium.

TABLE III. STUDENT HOSPITAL CARE (MINNEAPOLIS AND ST. PAUL)

Year	Number of Patients			Rate per 1,000 Students	Number of Hospital Days			Average Stay in Days
	Mpls.	St. Paul	Total		Mpls.	St. Paul	Total	
1970-71	1,429	37	1,466	36.1	5,336	212	5,548	3.8
1971-72	1,225	53	1,278	29.4	4,567	158	4,725	3.7
1972-73	1,439	0	1,439	36.1	4,848	0	4,848	3.4
1973-74	1,479	0	1,479	37.5	5,758	0	5,758	3.9

Mental Health Outpatient Department—During the biennium, 2,033 new patients were seen in the mental health clinic of the Health Service. In addition, 1,194 were carried over from previous years, bringing the total to 3,227 patients. There were 14,409 individual interview hours and 10,052 therapy hours during the same period. These figures did not vary appreciably from those of the previous biennium. Psychological tests (Minnesota Multiphasic Personality Inventory and Shipley-Hartford) were given and analyzed for 1,195 patients, some 300 fewer than in the previous biennium. As in previous periods, most of the mental health patients were self-referred (44.3 percent); the remainder were referred by members of the Health Service staff (21 percent), counselors, friends, faculty members, advisers, relatives, and private physicians.

Medical Records Department—The international classification of diseases, adapted for use in the United States, was adopted by the medical records department in 1972. In 1973 the Health Service subscribed to a medical record information system called the Professional Activities Study and Medical Audit Program, sponsored by the Commission of Professional and Hospital Activities.

Public Health Care—During the biennium, the public health nurse who had served the Health Service for many years retired. She was replaced on a part-time basis in January 1973 and full-time in September of that year.

The public health nurse held a joint faculty appointment with the School of Public Health. Her academic duties included teaching classes in the School of Public Health and supervising students such as adult health nurse practitioners and students of nurse midwifery and health education, who were gaining clinical experience within the Health Service. She also served as a guest lecturer in the School of Social Work, the Department of Family Sciences, the School of Nursing, and the Women's Studies Program and at some residence hall programs.

Her duties at the Health Service included direct health counseling of approximately 2,000 students in a total of over 3,000 conferences. These conferences involved 508 visits for pregnancy counseling, 101 for contraceptive and gynecological counseling, 202 for venereal disease interviews and contact follow-up, 101 for tuberculosis interviews and contacts, 17 for diabetic teaching, and a number for health-related social, psychological, and family matters.

The public health nurse also supervised the Tuberculosis Chest Clinic at which 362 students and employees were seen. Of these, 85 were new Mantoux converters and were placed on preventive medication. There were six active cases of tuberculosis on campus known to the Health Service during the biennium, four in foreign students.

In cooperation with the gynecologist, she taught contraceptive instruction classes that were attended by 567 women and 10 men. Because a knowledge of all methods of contraception is essential to make a wise choice, students requesting contraceptives at the Health Service were asked to attend these sessions before methods were prescribed.

Dietary Service and Special Diets Department—Both a full-time and a part-time dietician provided services to patients for this biennium. Nutritional and dietetic services were

initiated for the new Health Service Hospital in September 1972. Hospital inpatients were served 24,343 meals and, together with outpatients, were given 2,780 nutritional instructions on dietary modifications.

The special diets department, which serves meals to patients on modified diets, has been continued, but the number of meals it served dropped drastically to 772 for the biennium. An employee cafeteria began in March 1973 and, by the end of the biennium, provided 16,997 services or 8,806 meal equivalents.

Health Education—The Health Service has many opportunities for health education and the assistant director for information and education services assisted in making the most of these educational opportunities. In addition to working with the staff on educational activities, the assistant director worked with student groups, residence hall counselors, and orientation leaders to make students aware of available health services and how to use them wisely. He assisted individual students and groups in locating sources of health information, and served in a consultant capacity in attacking campus health problems.

Faculty-Staff Routine Examinations—Medical examinations were given to 478 newly appointed members of the academic staff and those promoted to positions implying tenure. This is some 60 fewer examinations than were performed during the previous biennium.

Complete preemployment physical examinations were given to 855 civil service applicants, compared to 886 for the previous reporting period. An additional 2,501 medical clearance civil service examinations were performed, compared to 2,069 during the last biennium. Comprehensive, executive-type examinations were given to 72 persons.

Environmental Health and Safety—Considerable staff time was spent responding to the regulations of outside agencies such as the Minnesota State Department of Health. Employee safety activities were increased because of the passage of the Minnesota Occupational Safety and Health Act.

The Minnesota Building Code was enacted during the biennium, and working relationships were developed with the Occupational Safety and Health Division of the State Department of Labor and the Building Code Division of the Department of Administration. All Twin Cities campus buildings were studied to ascertain major physical deficiencies associated with requirements of these new laws. New construction and major building-remodeling plans and specifications were reviewed to insure compliance with the employee safety and fire life-safety provisions of these acts. Since the safety and health regulations of the two acts are not identical, the specific requirements of each must be considered.

In conjunction with the University safety and health plan developed by the Division of Environmental Health and Safety and approved by the University administration, a continuing training program was initiated to acquaint newly appointed departmental safety and health coordinators with employee safety and health standards and requirements. Over 50 advisory surveys were conducted to determine safety-standard deficiencies and over 500 persons received instruction in the use of fire extinguishers and information on fire-control procedures.

During the biennium approximately 9,500 student on-campus and off-campus injury reports and 2,500 employee injury reports were screened and summarized.

As a result of the National Environmental Policy Act, there is now a requirement that proposals for federally funded building projects be accompanied by an environmental impact analysis. During the early months of 1974 the division prepared an environmental impact analysis for the proposed Health Sciences Unit B-C building.

In response to an increased national emphasis on control of biologic hazards in research laboratories, a biohazards surveillance program was initiated to meet the needs for assistance required by laboratory personnel working with infectious agents.

During the biennium, the radiation protection program provided services to the University's 318 approved radioisotope users, including 32 located at the coordinate campuses and out-state stations. The 147 ionizing radiation-producing machines at the University were registered with the Minnesota State Health Department in 1973, in compliance with regulations. Approximately 600 University personnel who work with ionizing radiation were provided radiation exposure monitors in the form of film badges and/or TLD dosimeters.

Because of the increase in the number of radioisotope users on the Duluth campus, the provost appointed a Radiation Hazard Advisory Committee. The committee, with assistance

and direction from this division, supervised the users of ionizing radiation and the radioactive waste management program on that campus.

The program for collection and transportation of radioactive wastes generated at the University was transferred to the Physical Plant Department, although the responsibility for shipment of the collected waste to an approved burial site remains with the Health Service. The health physicists provided appropriate written waste-handling procedures and training for Physical Plant personnel in safe waste-handling techniques.

The inspection programs for University-owned housing (off-campus houses, residence halls, and married student housing) were continued. With the recently renewed interest in the viability of sororities and fraternities by students and alumni, it is anticipated that further improvements will be made in providing a safe and healthful environment within these facilities.

The hospital environmental specialist paid particular attention to control of hepatitis among hospital staff, prevention of contamination of water and solutions used for kidney dialysis, and prevention of hospital-acquired infections among University Hospitals patients.

Teaching, Research, and Community Involvement—The Health Service has continued its mutually beneficial educational and research relationships with other University departments, particularly the School of Public Health. The teaching and research opportunities presented by the School of Public Health offer an intellectually and professionally stimulating experience for the practitioner staff of the Health Service, and the Health Service provides a fertile educational environment for students wishing to learn about and participate in the operations of a large prepaid, comprehensive health care system.

During the last two years, students in hospital and health care administration, public health nursing, health education, nutrition, environmental health and safety, and biometry received part of their professional preparation at the Health Service. Students in social work, pharmacy, clinical and counseling psychology, and Medical School also received some of their professional preparation in Health Service programs.

The environmental health and safety staff participated in a short course on laboratory biological safety sponsored by the National Cancer Institute, and in the graduate training program for institutional environmental health students.

Joint research projects with the School of Public Health included a study on radiation protection practices in nuclear medicine in Minnesota, supported by the State Department of Health; an extension of the study on critical quality requirements for high-purity water in biomedical research and medical care facilities, supported by the National Institutes of Health; a project on the effects of landfill disposal of chemical wastes on ground-water quality, in cooperation with the Physical Plant and the Minnesota Pollution Control Agency; and a study on the economics of hospital solid-waste systems, supported by the U. S. Environmental Protection Agency. Another joint project has been the production of a textbook on *Environmental Health and Safety in Health Care Facilities*. All 13 authors of the book were staff members of the School of Public Health, and 10 had been on the staff of the Division of Environmental Health and Safety.

INTERNATIONAL STUDENT ADVISERS OFFICE

Forrest G. Moore, *Director*

The 1972-74 biennium was dominated by some major developments affecting foreign students. There was a continuing increase in the cost of nonresident tuition and the cost of living, and an unprecedented tightening of the federal rules regarding off-campus work permission. At the same time, there was an increased activity on behalf of international education, supported by faculty, students, and the community.

Foreign Student Bill—The efforts to overcome the financial squeeze on international students culminated in the state Legislature passing the Foreign Student Bill, which provided (1) grants of authority to public post-secondary institutions to waive the nonresident portion of tuition fees to foreign students, not exceeding .5 percent of the total student enrollment; (2) a grant of \$80,000 for emergency scholarship aid to foreign students in public and private post-secondary institutions; (3) grants of authority to waive nonresident tuition fees to foreign

students who are recipients of scholarships donated by individuals or corporations within the state of Minnesota, thus encouraging private donations on behalf of foreign students; and (4) that these benefits should be given to foreign students as loans that would be forgiven if the grantees returned to their home countries for five years. As the terms of the bill are implemented, an alleviation of some of the financial problems of foreign students will result.

Enrollment—Although the total enrollment of foreign students did not appear to change, there were some significant changes in the composition of the foreign student population, resulting from the financial pressures and tightening of regulations in the United States and abroad. While admissions of students from developing countries increased, their enrollment decreased by 11 percent. When a further breakdown of statistics is made, it appears that students coming directly from abroad to the University decreased by some 10 percent. Transfer students from within the U.S. made up 40 percent of the new group. The group coming directly from abroad came primarily from developed and industrialized societies; the students coming directly from developing countries in this group decreased by 21 percent.

In 1970-71 there were approximately 2,125 foreign nationals on campus from 92 different countries; in 1973-74 the number was approximately the same, but there were changes in the country representation. From 1970 to 1974, the number of students from India has decreased from 234 to 145. Students from Taiwan numbered 214 in 1970-71, but only 176 in 1973-74. Between 1970 and 1974, the number of students from Nigeria increased from 27 to 78, students from Iran from 28 to 56, students from Mexico from 18 to 30, and students from Hong Kong from 158 to 251, the largest number of students from any country.

Special Programs—English language and orientation programs for international students continued to be supported by the Department of State and were coordinated by the International Student Advisers Office. The number of students in the academic-year program of English language increased from 73 in 1970-71 to 157 in 1973-74.

Video tapes and films illustrating some of the problems and opportunities of foreign student/U.S. student interactions were produced with the assistance of the Department of Radio and Television. Workshops involving foreign and U.S. students, as well as informal learning opportunities for both groups, continued to be planned and executed with increased emphasis.

The Minnesota International Student Association and its component members composed of some 20 nationality clubs continued to be the main international student governing body, providing forums for social, cultural, and welfare activities. The Minnesota International Center, a nonprofit community organization, served the needs of international students by planning programs and home stays, providing furniture, and arranging temporary housing with community volunteers, among other activities.

DEPARTMENT OF THE MINNESOTA UNION

Edwin O. Siggelkow, *Director*

Coordinating Board—The Board engaged in extensive efforts during the biennium to firm-up planning bases and to project the future of union operations on the Twin Cities campus. Professor Paul V. Grambsch of the College of Business Administration was engaged to make a management study.

Bids for a West Bank Union building came in \$1.3 million over budget and, partially on the basis of Grambsch's report, these bids were rejected and the building project was shelved. Although bids for the renovation and remodeling of Coffman Memorial Union later came in more than \$2.5 million over its authorized budget, the Coordinating Board recommended awarding bids rather than shelving that project also. As Coffman Union is the major union facility, serves 18,000-20,000 persons per day, and is now 34 years old, it was felt that scaled-back plans and new bids would result in only improvements in systems updating (electrical, plumbing, ventilation) and meeting code requirements (such as fire-rated staircases and sprinkler systems), rather than a general remodeling.

The Board sought to clarify traditional and future goals and roles for campus unions, to note deficiencies in union services and facilities (especially on the West Bank and St. Paul areas), to anticipate and respond to decreasing enrollments and rising prices, and to insure

needed funds for future repairs, renovations, and major capital improvements. Three depreciation reserves were established as charges against the \$5-per-quarter Student Services Fee for capital expenses: 1 percent of building valuations for building replacement and capital improvement, 1.5 percent of building valuations for building repair and renovation, and 7.5 percent of inventory for furniture and equipment repair and replacement.

Coffman Memorial Union—The contractors for the major remodeling/renovation of this union began work in late spring 1974. The project was divided into phases to keep the building operational throughout the expected two-year period. The basement and ground floor areas were the first targets, with completion scheduled for January 1975.

Both the number of program events and attendance at Coffman Union increased during the biennium. The Union Program Council, as a program planning organization distinct from the membership of the Union Board of Governors, has strengthened event planning and production. Whole Foods, an organic foods program developed experimentally in cooperation with University Food Services in 1971-72, was discontinued at Coffman. The Market Place, a sales outlet for items hand-crafted by students, was closed for the period of remodeling as was the Night Place, a drop-in center.

Detailed information about traffic, building use, finances, and programs for each year of the biennium is published in an annual report available in the director's office.

St. Paul Student Center—The Student Center Building Expansion Committee revised earlier building program plans to accommodate the new lower enrollment projections. The revised expansion plans were reported to the Coordinating Board and an authorization to request the appointment of an architect to complete drawings through schematic design was given.

The informal educational programs sponsored or fostered by the Student Center continued to be characterized by variety and balance. A special effort was made in 1972-73 to increase student and faculty participation in the committee work that produces programs. There were just under 100 such participants in 1970-71, 350 in 1972-73, and 257 in 1973-74.

The Annual Report and Program Summary published annually by the St. Paul Student Center furnishes detailed information about traffic, building use, finances, and programs. Copies are available in the director's office.

West Bank Union—The cancellation of building plans for the West Bank Union building, which had been designed to span the west bridgehead connecting north and south areas of the campus, prompted substantial self-study and review. By spring 1974, a proposal was made to build 20,000, rather than 68,000, square feet of union facilities, reflecting the radically changed projections for West Bank student enrollment. The Coordinating Board authorized planning through schematic design by the Physical Planning Office and an architect.

The Video Access Center continued to be a unique area of West Bank Union programming effort and expense, closely joined to the interests of student government. Other, more traditional, programming efforts were undertaken by the West Bank Union Board in this biennium, with films being especially popular.

STUDENT ACTIVITIES

Edwin O. Siggelkow, *Coordinator*

Student Activities Center—Formerly known as the Student Activities Bureau, the center was moved in February 1972 to a leased facility on the north edge of the Minneapolis campus. Through landscaped-office structures, one area was subdivided to accommodate five staff members and six student organizations and another area to accommodate two staff members and a conference room.

The number of student organizations registered during the biennium grew closer to the over 400 carried on the books when groups were recognized at the time of formation and annual registration was not required. Total organizations registered in 1972-73 were 327 (48 of which were new), and in 1973-74 were 378 (65 of which were new).

A quarterly newsletter, the *MAIL SAC*, was instituted to organize the flow of information to registered student organizations. *Connect*, a handbook on student organizations for new

students, was instituted in cooperation with the Orientation Office. A directory of registered student organizations is now computer-produced and periodically updated with current officer information.

Organization and leadership development was adopted as a major staff effort. More than 700 students in leadership positions were reached through workshops, retreats, and seminars. A retreat-workshop, conducted in cooperation with the Regents' Committee on Student Concerns, sought to identify the principal issues and concerns of representative student leaders from all campuses of the University.

Two research projects were completed: a student organization needs survey and a survey of student interest in community volunteer services.

Student Organization Finance Division—The Finance Division moved to Coffman Memorial Union in 1971-72. Cash flow in checking accounts increased 61 percent, and the investment balance increased 200 percent, after this relocation. The volume of transactions prompted efforts to computerize operations in 1973-74.

The institution of room-use charges for student organization events that had admission charges has required the Finance Division to function as the channel for scheduling University facilities through the Room Scheduling Office.

Orientation Office—Prior to 1969, this office was a part of the Student Activities Bureau, but was separated administratively on the basis of the McFarland Committee Report. In 1973-74, it was rejoined to Student Activities.

During the biennium, 18,325 students participated in two-day orientation-registration programs, during which they were invited to attend 21 different programs. A training retreat and a week-long training program with 45 staff and faculty members was held for 23 student orientation leaders in each of the two years.

The orientation programs are designed to familiarize new students with the physical arrangement of the campus, with student organizations, and with the various forms of special assistance, including financial aid, counseling, academic advising, health services, recreation, housing, study skills, and student employment. They provide new students with the opportunities to meet and interact with faculty, administrators, and other students. At the meetings, new students are given the opportunity to express their expectations of the University and to learn what the University expects of them. The students share problems and apprehensions about the University and try to analyze and solve the personal problems they may encounter as they begin college. In a comprehensive evaluation of the orientation programs conducted through questionnaires and interviews with new students, 95 percent of the students responded favorably about the program.

In addition to the regular orientation programs, an overnight stay and dinner in Comstock Dormitory were again offered to new students. About 1,500 students took part each year of the biennium.

The University Community Program was presented six evenings during spring quarters to approximately 1,500 students and their parents. This program involved the President, vice presidents, deans, Student Affairs representatives, college representatives, and student leaders. An evaluation of this program indicated that personal contact with University representatives reinforced positive attitudes about the ability of a large University to serve individual student needs.

Freshman Camp was attended by 500 students during the biennium. Although attendance was lower than in the previous biennium, the program continued to provide an atmosphere for learning experiences and friendships that no other program offered.

During the biennium, 21,328 students attended one or more events during Welcome Week. Over 100 academic, cultural, and social programs were planned and presented by 86 students and 453 faculty and staff members. Separate programs were offered on the St. Paul and Minneapolis campuses. Departmental Day emphasized information, requirements, and opportunities available in each of the 65 participating collegiate departments.

More than 356 students participated in the Williamson Weekend Program, an ongoing orientation program with a variety of educational themes. The 20 weekend programs conducted during the biennium were planned by 100 students, and 80 faculty members participated.

An orientation program for new graduate students, initiated in summer 1973, attracted 5,600 students for the biennium. In a survey conducted by Student Life Studies, graduate students indicated such a program is needed and that the 1973 program had been effective.

The Orientation Office was greatly aided by the policy, program, and financial guidelines of the Orientation Fee Committee. An orientation fee was instituted in 1973-74, and the advisory committee was formed to review and recommend appropriate uses. The fee was intended to remove much of the stress on orientation activities to be self-supporting in many programmatic aspects. The fee has also served to support colleges and other units in strengthening orientation activities for new freshman and transfer students.

STUDENT COUNSELING BUREAU

Theda Hagenah, Director

During this biennium, the Student Counseling Bureau staff consolidated their efforts to maximize their effects through consultation services to college offices, academic departments, and faculty members and by the individual and group services provided to the students on the Twin Cities campus. Life and career planning groups and curricular and counseling programs for women were notable contributions made by the bureau staff.

The bureau experienced the first loss of a professional staff member with the retirement of Dr. Vivian Hewer. Dr. Hewer, a professor of psychology, had been a valued member of the bureau since 1947. Harriett Haynes joined the staff to strengthen the outreach efforts of the College of Liberal Arts Martin Luther King Program.

Gains were made in more firmly establishing the special services office and increasing its efforts in assisting handicapped students. Activities of this program have included participation on the University's Architectural Barriers Committee, development of accurate information on the physical facilities of the campus, and publication of a brochure, "Opportunities for Disabled Students."

The publication of the Strong-Campbell Interest Inventory, a single-sex revision of the Strong Vocational Interest Blank, culminated the work of several years. The inventory is one of a series of notable research projects and publications.

As in previous years, the primary frustration of the counseling staff was its inability to meet the student and faculty demand for psychological assistance. A program and function review has led to a reordering of priorities, and new maximizing approaches are being developed so that the mission of the bureau can be carried out as effectively and fully as possible. New resources, however, both in staff and space, will be needed in the future if students and faculty are to be adequately served.

OFFICE OF STUDENT FINANCIAL AID

Samuel Lewis, Director

Three new programs were started during the 1972-74 biennium. The first, and probably most far-reaching, program was the Basic Grant Program. This program, which was limited to freshman students in its first year, is a federal grant program and will eventually cover all four undergraduate years and provide funding to millions of students nationally. Students apply directly to the Office of Education for these grants, and eligibility is determined by federal guidelines. Eligible students may go to whatever school they wish, and that school calculates the amount of grant the student can get. This program funded 225 students in 1973-74 and we anticipate it will fund about 1,000 in 1974-75 and considerably more in future years.

The second new program was the State of Minnesota Loan Program, through which the state serves as a lender in a federally insured student loan program. Under this program, the state makes loans similar to those offered by banks and savings-and-loan offices. Since students were encountering difficulties in obtaining loans from banks, many began using the state as the lending agency. There was some confusion and delay within the federal office that approves such loans, resulting in delay of loan approval for as much as 3-4 months.

The regulations for the federally insured student loan program changed for the fourth time in three years during 1973-74. The newly implemented need-analysis provision allows students from families with adjusted family incomes of less than \$1,500 to apply without a needs test.

The third new program was the Foreign Student Work Opportunity Program. This program, which provided job opportunities on campus for international students, funded approximately 42 students during 1973-74. The Office of Student Financial Aid provided 50 percent of the student's salary and the student's department provided the other 50 percent.

STUDENT FINANCIAL AID

	1972-73		1973-74		Total Amount
	Recipients	Amount	Recipients	Amount	
Work-Study Program	1,956	\$ 1,472,265	2,113	\$ 2,817,447	\$ 3,489,712
Loans	7,368	5,060,910	7,967	5,211,629	10,272,539
Grants and Scholarships	9,751	5,320,627	11,939	7,036,455	12,357,082
Total	19,075	\$11,859,802	22,019	\$14,265,531	\$26,119,333
Less Duplicates	7,548		10,000		
NET TOTAL	11,527		12,019		

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