

University of Minnesota

BIENNIAL REPORT

of the President and the Board of Regents

1966 - 1968

to the

Legislature of the State of Minnesota

Approved and Adopted by the Board of Regents

June 30, 1968

THE BOARD OF REGENTS

As of June 30, 1968

The Honorable Lester A. Malkerson, Minneapolis
First Vice President and Chairman

The Honorable Marjorie J. Howard (Mrs. C. Edward), Excelsior
Second Vice President

The Honorable Elmer L. Andersen, St. Paul

The Honorable Daniel C. Gainey, Owatonna

The Honorable Albert V. Hartl, Fergus Falls

The Honorable Herb L. Huffington, M.D., Waterville

The Honorable Fred J. Hughes, St. Cloud

The Honorable Charles W. Mayo, M.D., Rochester

The Honorable William K. Montague, Duluth

The Honorable George W. Rauenhorst, Olivia

The Honorable Otto A. Silha, Edina

The Honorable Herman F. Skyberg, Fisher

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To the Honorable Board of Regents
University of Minnesota

Mrs. Howard and Gentlemen:

I am enclosing the 1966-1968 *Biennial Report*, summarizing the activities of the various departments of the University of Minnesota for the two-year period ending June 30, 1968.

The *Biennial Report* series is a primary source of comprehensive information on enrollments and curriculum changes, research and instruction efforts, faculty activities and honors, and other developments within the academic and administrative units of the University, presented in a consistent format over a period of time. It is provided for by state law to supply information to the members of the State Legislature and others.

You may be interested in knowing that this edition is nearly 100 pages shorter than the previous one as a result of the University's effort to streamline the publication without losing significant substance. It is nevertheless a substantial volume, reflecting the substantial activities of the University of Minnesota.

Sincerely,

A handwritten signature in cursive script, reading "Malcolm Haas".

President

Minneapolis, Minnesota
July 1, 1968

BIENNIAL REPORT

1966-1968

SIGNIFICANT EVENTS, ACTIVITIES, AND ACTIONS

Presidential Inauguration — On May 8 and 9, 1968, the University inaugurated its tenth president, Malcolm Moos. Dr. Moos, the first native Minnesotan and University graduate to serve as president, came to the University from his position as director of the Office of Government and Law in the Ford Foundation. He has had a wide-ranging career as an educator, author, political scientist, presidential consultant, and government expert. Dr. Moos took office in September, 1967, succeeding Dr. O. Meredith Wilson, who became director of the Center for Advanced Study in Behavioral Sciences in Stanford, California.

Administrative Reorganization — A major change in administrative organization was the creation in April, 1968, of two new vice-presidential posts: the vice president for administration and the vice president for student affairs. The vice president for administration handles day-to-day problems in order to free the President for major administrative responsibilities. The vice president for student affairs devotes his time to student concerns, opening channels of communication between them and the administration.

The vice president for educational relationships and development was given administrative responsibility for coordinating and developing the University's outstate campuses in addition to his other duties.

Academic Reorganization — No new colleges or schools were created during the biennium, but several departments, centers, and councils were established and a number of existing units were renamed or restructured.

Departments created during the biennium included the Department of Ecology and Behavioral Biology in the College of Biological Sciences and the Departments of Continuing Education in Pharmacy, Dentistry, and Social Work in the General Extension Division.

Among the centers established were the Economic Development Center in the Office of International Programs, the interdisciplinary Center for Research in Technological Development and Social Change, the Management Information Systems Research Center in the School of Business Administration, the Minnesota Center for Curriculum Studies in the College of Education, and the South Asian Language and Area Studies Center and the Sociology Research Center in the College of Liberal Arts. The MacPhail Center for the Performing Arts became part of the University in 1966 as a result of the gift to the University of the MacPhail College of Music.

A Council of Health Sciences Deans and Directors was formed in 1968 to study organizational patterns related to the Health Sciences Center. Council members represent the Medical School, the School of Nursing, the School of Public Health, University Hospitals, the School of Dentistry, the College of Pharmacy, and the College of Veterinary Medicine.

Major restructuring took place in the Department of Romance Languages, which was separated into the Department of French and Italian and the Department of Spanish and Portuguese; the East and South Asian Language Department, which was separated into the East Asian Language Department and the South Asian Language Department; and the Department of Astronomy and the School of Physics, which merged to become the School of Physics and Astronomy.

The Genetics Department in the College of Biological Sciences was expanded and redesignated the Department of Genetics and Cell Biology. Other units renamed during the biennium included the Correspondence Study Department, which became the Department of Independent Study; the Museum

of Natural History, which became the James Ford Bell Museum of Natural History; and the Numerical Analysis Center, which became the University Computer Center. This Center was transferred from the Institute of Technology to the newly created office of Computer Services. Administrative responsibility for the Department of Mortuary Science was transferred from the General Extension Division to the College of Medical Sciences. The Limnological Research Center became a joint responsibility of the Institute of Technology and the College of Biological Sciences.

University of Minnesota Technical Institute, Crookston—The Technical Institute began operation in fall 1966 with 187 students and 26 staff members. Located on the campus of the Northwest School of Agriculture, which graduated its last class in 1968, the Technical Institute offers two-year college-level programs in agriculture, agribusiness, and food service management. Its establishment was authorized by the 1965 Legislature in recognition of the growing demand for highly skilled technicians in agricultural research, management, and service fields.

Marshall-University High School—In June, 1967, plans were announced for a merger of Marshall High School, a Minneapolis public school in the Dinkytown area near the University campus, and University High, a private high school administered by the College of Education. A major reason for the merger is the University's belief that a laboratory school in a public school setting would provide the best possible opportunity for finding new teaching methods and for learning ways to serve a variety of students according to their individual needs. The new Marshall-U High is scheduled to open in September, 1968.

Experimental City Project—In November, 1966, University President O. Meredith Wilson announced the University's participation in the Experimental City Project. Funds from the Departments of Commerce, Housing and Urban Development, and Health, Education, and Welfare were combined with local funds for an exploratory study of the project, which was conceived by Athelstan Spilhaus, physics professor and former dean of the Institute of Technology.

Regents' Professorships—Created by the Board of Regents in 1965, the Regents' Professorship is the highest honor the University can give to members of its faculty. Regents' Professors are chosen on the basis of the scope and quality of their scholarly or artistic contributions, the quality of their teaching, and their contributions to the public good.

Once designated a Regents' Professor, a faculty member holds the title for as long as he remains at the University and receives a \$5,000 gift annually from the University of Minnesota Foundation during his tenure. He also receives a sterling silver medallion suspended from a gold and maroon ribbon, to be worn over academic costume.

The first Regents' Professors were named at commencement exercises in June, 1966. They are Ernst R. G. Eckert, Regents' Professor of Mechanical Engineering; E. Adamson Hoebel, Regents' Professor of Anthropology; Alfred O. C. Nier, Regents' Professor of Physics; Allen Tate, Regents' Professor Emeritus of English; and Owen H. Wangensteen, Regents' Professor Emeritus of Surgery.

Five more Regents' Professors were named at the March, 1967, commencement exercises. They are Neal R. Amundson, Regents' Professor of Chemical Engineering; Herbert Feigl, Regents' Professor of Philosophy; Walter W. Heller, Regents' Professor of Economics; Wesley W. Spink, Regents' Professor of Medicine; and Maurice B. Visscher, Regents' Professor of Physiology.

Outstanding Achievement Awards—Outstanding Achievement medals and citations, authorized by the Regents on December 17, 1947, have been conferred on 457 individuals through June 30, 1968. The 38 distinguished alumni who received these awards during 1966-1968 are as follows:

Carl M. Anderson
Earle Balch
Virgil C. Boekelheide

John E. Carroll
Curtis L. Carlson
Helen J. Claytor

Harold H. Cole
 Bert S. Cross
 Charles D. East
 M. Catharine Evans
 Frank S. Farrell
 J. Harold Goldthorpe
 Peter Graves
 Harry Heltzer
 Charles L. Horn
 Frank B. Hubachek
 Walter F. Johnson
 Herbert H. Kramer
 Irene D. Kreidberg
 Edward P. Leach
 Lee Loevinger
 Myles L. Mace

Malcolm S. MacLean
 Eldon W. Mason
 Robert E. McDonald
 Kathryn T. McKinlay
 Carl S. Miller
 Clarence L. Moyle
 Helen Nahm
 William O. Nilsen
 James F. Nickerson
 Helen H. Perlman
 Cedric H. Riemann
 Albert J. Robertson
 Gale Sondergaard
 Michael Tenenbaum
 Paul R. Vanstrum
 Chester S. Wilson

Alumni Service Awards — Approved by the Regents on February 8, 1957, these awards are conferred upon alumni or former students in recognition of service to the University. Through June 30, 1968, there have been 39 awards conferred. Recipients during 1966-1968 are as follows:

Constance Malmsten
 Douglas R. Manuel
 Carroll K. Michener

Carmen N. Richards
 Charles J. Ringer
 Edwin A. Willson

Regents' Awards — On March 10, 1967, Regents' Awards were conferred in appreciation of devoted service upon resigning Regents Robert E. Hess and Bjarne E. Grottum. Regent Hess, from White Bear Lake, served on the Board of Regents from 1959 to 1967. Regent Grottum, from Jackson, served from 1961 to 1967.

UNIVERSITY PERSONNEL

CHANGES IN PERSONNEL

Board of Regents

The 1967 Legislature reelected Daniel C. Gainey, Owatonna, and Herman F. Skyberg, Fisher, for six-year terms.

Former Regent Bjarne F. Grottum, Jackson, who was elected to the Board in 1961, was not reelected. Former Regent Robert E. Hess, White Bear Lake, who was appointed in 1959 to fill a vacancy and reelected in 1961, did not seek reelection.

Elmer L. Andersen, former governor and owner of the H. B. Fuller Company of St. Paul, was elected to the Board for a six-year term, succeeding Regent Hess. Dr. Herb L. Huffington, general practitioner from Waterville, was also elected for a six-year term, succeeding Regent Grottum.

Faculties

RETIREMENTS, 1966-68

Each year there are faculty members who reach the age of compulsory retirement, bringing to a close a long period of active association with the University.

The following faculty members, with their years of service indicated in parentheses, retired during the biennium.

1966-67

Owen H. Wangenstein, Regents' professor and Distinguished Service professor emeritus, surgery (1923-67).

Harold Smith, director emeritus, University Bookstores (1927-67).

Gertrude M. Gilman, director and professor emeritus, University of Minnesota Hospitals (1921-67).

Lawrence R. Boies, professor emeritus, otolaryngology (1931-67).

Orwood J. Campbell, clinical professor emeritus, surgery (1924-67).

Immanuel C. Fischer, professor emeritus, engineering (1941-67).

Ruth E. Grout, professor emeritus, School of Public Health (1943-67).

Helen E. Hart, professor emeritus, plant pathology and physiology (1922-66).

Corrin H. Hodgson, professor emeritus, clinical medicine, Mayo Graduate School of Medicine (1937-66).

Arthur B. Hunt, professor emeritus, obstetrics and gynecology, Mayo Graduate School of Medicine (1935-67).

Otto H. Johnson, professor emeritus, inorganic chemistry (1946-67).

Richard L. Kozelka, professor emeritus, quantitative analysis (1923-67).

Robert S. Livingston, professor emeritus, physical chemistry (1927-67).

Willem J. Luyten, professor emeritus, astronomy (1931-67).

Mary E. Malcolm, professor emeritus, music (1922-67).

John L. McKelvey, professor emeritus, obstetrics and gynecology (1938-67).

C. Wilbur Rucker, professor emeritus, ophthalmology, Mayo Graduate School of Medicine (1939-67).

Edmund C. Lenzmeier, Stearns County agricultural agent and professor emeritus, Agricultural Extension Service (1937-67).

Joseph Borg, clinical associate professor emeritus, medicine (1928-67).

Ione M. Jackson, associate professor emeritus, School of Dentistry (1925-67).

Nathaniel H. Lufkin, clinical associate professor emeritus, pathology (1926-67).

Edith M. Parkhill, associate professor emeritus, pathology, Mayo Graduate School of Medicine (1923-67).

- Horatio B. Sweetser, Jr., clinical associate professor emeritus, medicine (1926-31, 1934-67).
 Theodore S. Weir, associate professor and assistant superintendent emeritus, Fruit Breeding Farm (1929-67).
 George D. Eitel, clinical assistant professor emeritus, surgery (1933-67).
 Neith E. Headley, assistant professor emeritus, elementary education (1928-67).
 John E. Holt, clinical assistant professor emeritus, medicine (1925-26, 1932-67).
 Robert F. McGandy, clinical assistant professor emeritus, surgery (1938-67).
 E. Ivan Nylander, assistant professor emeritus, Division of Humanities, Duluth (1948-67).
 Naomi Peterson, assistant professor emeritus, management, production, and transportation (1946-66).
 Ragnar T. Soderlind, clinical instructor emeritus, surgery, division of urology (1935-67).
 Irene M. Donovan, lecturer emeritus, School of Public Health (1948-67).
 Robert P. Caron, clinical assistant emeritus, surgery (1942-67).

1967-68

- James Felber, director, Food Service (1936-68).
 Leonard Kaercher, superintendent, Rosemount Research Center (1950-68).
 David R. Briggs, professor emeritus, biochemistry (1924-27, 1936-68).
 C. Donald Creevy, professor emeritus, surgery (1927-28, 1930-67).
 Ambert B. Hall, professor emeritus, School of Dentistry (1920-27, 1928-30, 1931-68).
 Isabel T. Noble, professor emeritus, School of Home Economics (1937-68).
 Allen Tate, Regents' professor emeritus, English (1951-68).
 Marjorie H. Thurston, professor emeritus, rhetoric (1929-68).
 Marvin M. D. Williams, professor emeritus, biophysics, Mayo Graduate School of Medicine (1929-31, 1938-68).
 Santiago Cuneo, associate professor emeritus, Romance languages (1940-67).
 Stephen Epstein, clinical associate professor emeritus, medicine (1946-68).
 Henry S. Jerabek, associate professor emeritus, School of Mineral and Metallurgical Engineering (1927-29, 1929-68).
 Gertrude L. Pease, associate professor emeritus, pathology, Mayo Graduate School of Medicine (1947-68).
 Ervin N. Reiersgard, associate professor and principal emeritus, Northwest School and Experiment Station, Crookston (1944-68).
 Maurice H. Stauffer, associate professor emeritus, clinical medicine, Mayo Graduate School of Medicine (1951-67).
 Jan H. Tillisch, associate professor emeritus, medicine, Mayo Graduate School of Medicine (1939-67).
 Robert L. Wilder, clinical associate professor emeritus, pediatrics (1926-68).
 William F. Hartfiel, clinical assistant professor emeritus, surgery (1956-68).
 Florence Tenney, assistant professor emeritus, physical education for women (1941-68).
 Gladys S. Barber, instructor emeritus, Library, Duluth (1941-68).
 Ruth V. White, instructor emeritus, catalog department, Library (1942-65, 1965-67).
 Hamlin Mattson, clinical assistant emeritus, surgery (1933-68).
 Herman A. Garmers, professorial lecturer emeritus, School of Dentistry (1946-55, 1955-68).
 Ainsley T. Thorson, professorial lecturer emeritus, School of Dentistry (1949-55, 1955-68).
 Karl R. Lundeberg, lecturer emeritus, School of Public Health (1954-68).
 Frank D. Svoboda, Renville County agricultural agent and professor emeritus, Agricultural Extension Service (1937-68).

TERMINATIONS, 1966-67

- George C. Christie, professor, Law School, effective January 15, 1967, to accept position at Duke University.
 A. Orville Dahl, professor of botany, effective March 15, 1967, to become professor of biology and director, Morris Arboretum, University of Pennsylvania.

- Carl N. DeSilva, professor of aeronautics and engineering mechanics, effective July 21, 1966, to accept position at Wayne State University.
- George W. England, professor and assistant director, Industrial Relations Center, effective June 15, 1967, to accept position at Colorado State University.
- Harry Furstenberg, professor, School of Mathematics, effective September 16, 1966, to accept position at Hebrew University.
- Edward Gross, professor of sociology and industrial relations, effective June 30, 1967, to accept position at the University of Washington.
- Heinrich Guggenheimer, professor, School of Mathematics, effective June 15, 1967, to accept position at the Polytechnic Institute.
- Robert S. Hancock, professor, School of Business Administration, effective December 31, 1966, to become dean, School of Business, Southern Illinois University.
- Robert W. House, professor and head of music, Division of Humanities, Du-luth, effective June 15, 1967, to become chairman, music department, Southern Illinois University.
- Elton L. Johnson, professor of animal science, effective June 30, 1967, to accept position with Ralston Purina Company.
- Gerhard K. Kalisch, professor, School of Mathematics, effective June 15, 1967, to accept position at the University of California.
- Jacob C. Levenson, professor of English, effective June 15, 1967, to accept position at the University of Virginia.
- William C. Meecham, professor of aeronautics and engineering mechanics, effective June 15, 1967.
- Marion I. Murphy, professor and director of public health nursing, School of Public Health, effective January 20, 1967, to become dean, School of Nursing, University of Maryland.
- Francis V. Raab, professor of philosophy, effective June 15, 1967, to accept position at the University of Arizona.
- John Rood, professor of studio arts, effective June 15, 1967, for research projects and creative work.
- G. Robert Stange, professor of English, effective June 15, 1967, to accept position at Tufts College.
- Harold W. Stevenson, professor, School of Business Administration, effective June 15, 1967, to accept position at Arizona State University.
- Emil T. Andersen, associate professor of horticultural science, effective June 30, 1967, to accept position with the Horticultural Research Institute of Ontario.
- Robert W. Bath, associate professor and 4-H Club associate state leader, Agricultural Extension Service, effective January 26, 1967, to become assistant director, Washington Cooperative Extension Service, Washington State University.
- Eugene R. Chennette, associate professor of electrical engineering, effective June 15, 1967, to accept position at the University of Florida.
- John C. Craddock, associate professor of geology and geophysics, effective June 15, 1967, to accept position at the University of Wisconsin.
- N L Gault, Jr., associate professor of medicine and associate dean, College of Medical Sciences, effective June 30, 1967, to become professor of medicine and associate dean, international program, University of Hawaii Medical School.
- Nathan W. Gottfried, associate professor, Minnesota School Mathematics and Science Center, effective June 15, 1967, to accept position at Louisiana State University.
- Jack Van't Hof, associate professor of botany, effective September 16, 1966, to accept position at Brookhaven National Laboratory.
- Donald W. Johnson, associate professor of veterinary medicine, effective June 30, 1967, to accept position at the University of Missouri.
- Bjorn Karlsen, associate professor of special education, effective August 31, 1966, to accept position at Sonoma State College.
- Alfred B. Laponsky, associate professor of electrical engineering, effective July 1, 1966, to accept position with Westinghouse Electric Corporation.
- Garland K. Lewis, associate professor, School of Nursing, effective June 30, 1967, to accept position at Catholic University of America.

- Istavros S. Papadopoulos, associate professor of geology and geophysics, effective June 15, 1967, to accept position with Harza Engineering Company.
- Gerald R. Prescott, associate professor of music education and music, effective June 15, 1967, to accept position at the University of Tampa.
- Herman T. Rowan, associate professor of studio arts, effective June 15, 1967, to accept position at Grossmont College.
- Britton K. Ruebush, associate professor, Institute of Child Development, effective June 30, 1967, to accept position at the University of New Mexico.
- Peter Signer, associate professor, School of Physics, effective June 15, 1967.
- John M. Slye, associate professor, School of Mathematics, effective June 15, 1967, to accept position at the University of Houston.
- Arnold K. Solstad, associate professor of agricultural engineering, effective September 23, 1966, to accept position at Chico State College.
- Elaine C. Walster, associate professor of psychology, Student Activities Bureau, effective December 31, 1966, to accept position at the University of Rochester.
- Donivan J. Watley, associate professor, Office of the Dean of Students, effective March 24, 1967, to accept position with the National Merit Scholarship Corporation.
- Earl R. Andrews, assistant professor, Division of Education and Psychology, Duluth, effective December 19, 1966, to complete graduate work.
- Phyllis W. Berman, assistant professor, Institute of Child Development and pediatrics, effective June 30, 1967.
- Karel D. Bicha, assistant professor, Division of Social Sciences, Morris, effective June 15, 1967, to accept position at Carlton University.
- Claire L. Blanchard, assistant professor, School of Public Health, effective April 3, 1967, to become executive director, Visiting Nurse Association, Fairfield, Connecticut.
- Robert M. Brooks, assistant professor, School of Mathematics, effective June 15, 1967, to accept position at the University of Utah.
- Nelson A. Cavazos, assistant professor, Division of Humanities, Morris, effective June 15, 1966, to accept position at Concordia College.
- Anil K. Chopra, assistant professor of civil engineering and hydraulics, effective June 15, 1967, to accept position at the University of California.
- Annie Clement, assistant professor, Division of Education and Psychology, Duluth, effective June 15, 1967, to accept position at Ohio State University.
- Harley Cohen, assistant professor of aeronautics and engineering mechanics, effective September 15, 1966, to accept position at the University of Manitoba.
- N. Brian Eastman, assistant professor, Division of Education and Psychology, Duluth, effective August 30, 1966, to accept position at New York State University.
- Robert H. Fenske, research associate and assistant professor, Bureau of Institutional Research and College of Education, effective June 30, 1967.
- Walter M. Gerson, assistant professor of sociology, effective June 15, 1967, to accept position at the University of Toronto.
- John B. Heald, assistant professor, Division of Humanities, Morris, effective January 31, 1967, to become income tax consultant for H & R Block, Inc.
- Yolande J. Jenny, assistant professor, Division of Humanities, Duluth, effective June 15, 1967.
- Dagny Johnson, assistant professor, School of Social Work, effective June 15, 1967, to become training specialist, Hennepin County Welfare Board.
- James R. Justin, assistant professor of agronomy and plant genetics and extension agronomist, effective May 31, 1967, to accept position at Rutgers State University.
- Ralph A. Kallman, assistant professor, Division of Science and Mathematics, Duluth, effective June 15, 1967.
- Theodore G. Larson, assistant professor of psychiatry and neurology, effective January 31, 1967, to become director, Mental Health Center, Little Falls, Minnesota.
- Charles S. Levy, assistant professor of English, effective June 15, 1967, to accept position at Cornell University.
- Peter V. Luykx, assistant professor of zoology, effective June 15, 1967, to accept position at the University of Miami.

- Franklin I. Maclean, assistant professor, Division of Science and Mathematics, Morris, effective June 15, 1967.
- Charles H. McGinnis, assistant professor of veterinary physiology and pharmacology, effective June 30, 1967, to accept position with Hess and Clark Company.
- Marie J. McIntyre, assistant professor, School of Public Health, effective April 4, 1967, to become director, Teacher Preparation Program, University of North Carolina.
- Paul P. McIntyre, assistant professor of music, effective June 15, 1967.
- Ernest J. Pavlock, assistant professor of accounting, effective June 15, 1967, to become National Director of Education, Touche, Ross, Bailey, and Smart, Chicago.
- Peter J. Reed, assistant professor of English, effective June 15, 1967, to accept position at San Diego State College.
- William A. Reiners, assistant professor of botany, effective June 15, 1967, to accept position at Dartmouth College.
- Michael Salovesh, assistant professor of anthropology and social science program, effective June 15, 1967, to accept position at Purdue University.
- Frederick I. Sauls, assistant professor of studio arts, effective June 15, 1967.
- Lee C. Schramm, assistant professor, College of Pharmacy, effective June 15, 1967, to accept position at the University of Georgia.
- Howard L. Stensrud, assistant professor, Division of Science and Mathematics, Morris, effective June 15, 1967.
- Harlan R. Stoehr, assistant professor and agricultural bulletin editor, Agricultural Extension Service, effective March 13, 1967, to accept position with Morris and Associates.
- David B. Thorud, assistant professor, School of Forestry, effective August 31, 1966, to accept position at the University of Arizona.
- Alcide Tremblay, assistant professor, Division of Humanities, Morris, effective June 15, 1967.
- Kinnard P. White, assistant professor and assistant director for research, Student Personnel Office, effective June 15, 1967, to accept position at the University of North Carolina.
- John J. Wine, assistant professor and director of counseling, Student Personnel Services, Morris, effective June 30, 1967, to accept position at Auburn University.

TERMINATIONS, 1967-68

- O. Meredith Wilson, President and professor of history, effective August 31, 1967, to become director, Center for Advanced Study in the Behavioral Sciences.
- Fred C. McCormick, assistant to the vice president for educational relationships and development, effective December 31, 1967, to become director of research, Minnesota Higher Education Coordinating Commission.
- Donald E. Anderson, professor of electrical engineering, effective June 15, 1968, to become head, research and development, G. T. Schjeldahl Company.
- Stanley Bruckenstein, professor and chief, School of Chemistry, effective June 15, 1968, to accept position at the State University of New York.
- Edward J. Cafruny, professor of pharmacology, effective June 30, 1968, to accept position at the University of Toledo.
- Giulio J. D'Angio, professor of radiology and director, division of radiation therapy, effective June 30, 1968, to accept position at Memorial Hospital, New York.
- Charles Edwards, professor of physiology, effective September 15, 1967, to accept position at the State University of New York.
- William J. L. Felts, professor of anatomy, effective June 15, 1968, to accept position at the University of Oklahoma Medical School.
- Z Zimmerman Hugus, Jr., professor of inorganic chemistry, effective December 16, 1967, to become professor and head, chemistry department, North Carolina State University.
- C. Walton Lillehei, professor of surgery, effective November 30, 1967, to become chairman, department of surgery, Cornell Medical College.

- Joseph C. Olson, Jr., professor of food science and industries and microbiology, effective August 28, 1967, to accept directorship of division of microbiology, Food and Drug Administration, Washington, D.C.
- Vincent R. Rogers, professor of elementary education, effective July 15, 1967, to accept position at the University of Connecticut.
- Arturo Serrano-Plaja, professor of Romance languages, effective June 15, 1968.
- Timothy L. Smith, professor of history, effective June 30, 1968, to accept position at the Johns Hopkins University.
- Athelstan F. Spilhaus, professor of geophysics, effective September 30, 1967.
- Murray A. Straus, professor of sociology, effective June 15, 1968, to accept position at the University of New Hampshire.
- Raymond D. Vlasin, professor of agricultural economics and program leader, resource development, effective December 28, 1967, to accept position at the University of Wisconsin.
- Ross O. Armstrong, associate director and associate professor, Bureau of Institutional Research, effective June 30, 1968, to become assistant to vice president, Washington State University.
- Robert Benolken, associate professor of zoology, effective June 15, 1968, to accept position at the University of Texas.
- Wesley J. Birge, associate professor, Division of Science and Mathematics, Morris, effective June 15, 1968.
- John R. Bormuth, associate professor of elementary education, effective August 31, 1967, to accept position at the University of Chicago.
- John O. Buxell, associate professor, School of Public Health, effective June 15, 1968.
- John R. Cannon, associate professor, School of Mathematics, effective June 15, 1968, to accept position at Purdue University.
- Evelyn D. Crisp, associate professor, General College, effective June 15, 1968.
- Paul C. Fife, associate professor, School of Mathematics, effective June 15, 1968, to accept position at the University of Arizona.
- Gerald R. Firth, associate professor of secondary education, effective September 15, 1967, to accept position at the University of Alabama.
- Robert J. Forsyth, associate professor, School of Home Economics, effective June 15, 1968, to teach courses at Colorado State University.
- John M. Grewe, associate professor, School of Dentistry, effective October 31, 1967, to accept position at the University of Iowa.
- Vernon L. Hendrix, associate professor of educational administration, effective September 15, 1967, to become assistant to the chancellor, Dallas County Junior College.
- Dolph Hess, associate professor, School of Social Work, effective August 31, 1967, to accept position at the University of Texas.
- Carl D. Koutsky, associate professor of psychiatry and neurology, effective July 31, 1967, to become director, Psychiatric Institute, Anchorage, Alaska.
- Jesse K. Lair, associate professor of rhetoric, effective June 15, 1968, to accept position at Montana State University.
- Erle V. Leichty, associate professor of history, effective June 15, 1968, to accept position at the University of Pennsylvania.
- Shirley A. Munger, associate professor, Division of Humanities, Duluth, effective June 15, 1968, to accept position at West Chester State College.
- Stewart Oakley, associate professor, College of Liberal Arts, effective February 15, 1968, to accept position at the University of Edinburgh.
- Oliver S. Owen, associate professor, General College, effective July 26, 1967, to accept position at Wisconsin State University.
- Arthur W. Plumstead, associate professor of English, effective June 15, 1968, to accept position at Amherst College.
- Dorothea Riemann, associate professor and district supervisor, home economics extension, effective January 1, 1968, to accept position with the New Mexico Extension Service.
- Eugene H. Sander, associate professor of food science and industries and extension processing engineer, effective June 30, 1968, to accept position with General Mills, Inc.
- James E. Smith, associate professor, Division of Humanities, Duluth, effective July 15, 1967, to accept position at West Chester State College.
- David C. Snetsinger, associate professor of animal science, effective July 20, 1967, to accept position with Ralston Purina Company.

- Theodore W. Sudia, associate professor of agronomy and plant genetics, effective December 31, 1967, to accept position at the American Institute of Biological Sciences.
- Irving Tallman, associate professor of sociology, effective June 15, 1968, to accept position at the University of California.
- John R. Thompson, associate professor, Southern School and Experiment Station, effective September 6, 1967, to become superintendent, Hawaii Experiment Station, Hilo, Hawaii.
- Ruth Von Bergen, associate professor, School of Public Health, effective June 8, 1968.
- Ronald W. Wendahl, associate professor of speech, communication, and theatre arts, effective September 16, 1967, to accept position at the University of Houston.
- John C. Wright, associate professor, Institute of Child Development, effective June 15, 1968, to accept position at the University of Kansas.
- Sarah H. Youngblood, associate professor of English, effective June 15, 1968, to accept position at Mount Holyoke College.
- Charles E. Carson, assistant professor, Division of Science and Mathematics, Duluth, effective June 15, 1968.
- William A. Compton, assistant professor of agronomy and plant genetics, effective August 31, 1967, to accept position at the University of Nebraska.
- Nancy L. Cook, assistant professor, School of Nursing, effective June 15, 1968, to begin post-masters study at the University of Minnesota.
- Shirley M. Corrigan, assistant professor of psychiatry and neurology and mental hygienist, University Health Service, effective June 15, 1968, to enter private practice.
- Robert E. DeVoe, assistant professor of radio and television, effective August 31, 1967.
- Robert S. Driska, assistant professor of secondary education, effective June 15, 1968, to accept position with McGraw-Hill Publications.
- David R. Duffell, assistant professor of pathology, effective December 31, 1967, to accept position at the University of Vermont.
- Richard S. Fischer, assistant professor of music education and music, effective June 15, 1968, to accept position at Ball State University.
- John C. Forrest, assistant professor of animal science, effective November 29, 1967, to accept position at Purdue University.
- Irving Godt, assistant professor of music, effective June 15, 1968.
- Youdhishthir P. Gupta, assistant professor, School of Mineral and Metallurgical Engineering, effective October 20, 1967.
- Karl E. Gustafson, assistant professor, School of Mathematics, effective June 15, 1968, to accept position at the University of Colorado.
- Edward G. Hill, assistant professor, Division of Education and Psychology, Duluth, effective June 15, 1968, to work toward doctorate at the University of Minnesota.
- Mary J. Hitchcock, assistant professor, School of Home Economics, effective June 30, 1968, to accept position at the University of Tennessee.
- Milton B. Howard, assistant professor of studio arts, effective June 15, 1968, to accept position at the University of New Mexico.
- Muriel I. Lehman, assistant professor, Division of Education and Psychology, Duluth, effective July 15, 1967, to become home economics supervisor, Duluth Public Schools.
- Eugene P. Milstone, assistant professor, School of Social Work, effective June 15, 1968, to pursue doctoral studies.
- Ronald J. Mogavero, assistant professor of mechanical engineering, effective June 15, 1968, to accept position at the University of Buffalo.
- Frances D. Moncure, assistant professor, School of Nursing, effective June 30, 1968, to continue studies for Ph.D. degree at Western Reserve University.
- David L. Moody, assistant professor of radiology, effective January 31, 1968, to accept position at Swedish Hospital.
- Earl Nolting, Jr., assistant professor, Student Counseling Bureau, effective June 30, 1968, to accept position at the University of Wisconsin.
- Russell S. Nyquist, assistant professor of mechanical engineering, effective June 15, 1968, to accept position with KMS Industries.

- Charles W. Peterson, assistant professor and director of student services, University of Minnesota Technical Institute, Crookston, effective June 30, 1968, to accept position at North Dakota State University.
- Douglas R. Pierce, assistant professor of educational administration, effective June 15, 1968, to accept position at the University of California.
- Vernon G. Pursel, assistant professor, West Central School and Experiment Station, effective September 30, 1967, to accept position with the U.S. Department of Agriculture.
- Grace M. Sarosi, assistant professor, School of Nursing, effective June 22, 1968.
- Wayne W. Schmaedeke, assistant professor, School of Mathematics, effective June 15, 1968, to accept position at Rice University.
- Chiao-Yao She, assistant professor of electrical engineering, effective June 15, 1968, to accept position at the University of Colorado.
- Wesley T. Shephard, assistant professor, Educational Research and Development Council of Northeast Minnesota, effective June 30, 1968, to become district superintendent of schools, Zion, Illinois.
- James R. Sherman, assistant professor, Office of the Dean of Students, and assistant director, Student Housing Bureau, effective June 23, 1968, to become assistant to the chancellor for personnel, Minnesota State Junior College System.
- Russell H. Susag, assistant professor of civil engineering and hydraulics, effective June 15, 1968, to accept position at the University of Florida.
- Marian J. Town, assistant professor, School of Nursing, effective June 8, 1968.
- Houston R. Wade, assistant professor of genetics and cell biology, effective June 15, 1968.
- Carroll O. Wilde, assistant professor, School of Mathematics, effective June 15, 1968, to accept position at the Naval Postgraduate School.

APPOINTMENTS, 1966-67

Associate Dean

- Robert A. Ulstrom as associate dean, College of Medical Sciences, and professor of pediatrics
B.S. 1943, M.D. 1946, University of Minnesota

Director and Professor

- William G. MacPhail as director and professor, MacPhail Center
B.S. 1938, University of Idaho

Professors

- Abraham S. Berman as professor of aeronautics and engineering mechanics
B.C.E. 1942, College of the City of New York; Ph.D. 1949, Ohio State University
- Chester L. Bower as professor, School of Social Work
A.B. 1927, Southwestern College; M.A. 1929, Northwestern University
- Rafael V. Chacon as professor, School of Mathematics
B.S. 1951, University of Rochester; Ph.D. 1956, Syracuse University
- Stanley Dagley as professor of biochemistry, College of Biological Sciences
B.A. 1937, B.Sc. 1938, Keble College of Oxford University; M.A. 1946, M.Sc. 1948, D.Sc. 1955, London University
- Bertram L. Ellenbogen as professor of sociology
B.A. 1948, M.A. 1950, Ph.D. 1958, University of Wisconsin
- Robert L. Fulton as professor of sociology
B.A. 1951, University of Illinois; M.A. 1953, University of Toronto; Ph.D. 1959, Wayne State University
- Edward Gross as professor of sociology and industrial relations
B.A. 1942, University of British Columbia; M.A. 1945, University of Toronto; Ph.D. 1949, University of Chicago
- Kenneth A. Jordan as professor of agricultural engineering
B.S. 1952, M.S. 1956, Ph.D. 1959, Purdue University

Walter Lehn as professor and chairman of linguistics

B.A. 1951, Tabor College; Ph.D. 1957, Cornell University

Lee R. Martin as professor of agricultural economics

B.A. 1937, University of Arkansas; A.M. 1948, Ph.D. 1950, Harvard University

Lawrence C. Merriam, Jr., as professor, School of Forestry

B.S. 1948, University of California; M.S. 1958, Ph.D. 1963, Oregon State University

Michael M. Paparella as professor of otolaryngology

B.S. 1953, M.D. 1957, University of Michigan

Finn Wold as professor of biochemistry, College of Medical Sciences

B.S. 1950, Oslo University; M.S. 1953, Oklahoma State University; Ph.D. 1956, University of California

Val W. Woodward as professor of genetics

B.S. 1950, Utah State University; M.S. 1950, Kansas State University; Ph.D. 1953, Cornell University

Associate Director and Associate Professor

Ross O. Armstrong as associate director and associate professor, Bureau of Institutional Research

B.S. 1953, Nebraska State College; M.A. 1957, Ph.D. 1962, University of Iowa

Associate Professors

Donald E. Barber as associate professor, School of Public Health

B.S. 1953, Dickinson College; M.P.H. 1959, Ph.D. 1961, University of Michigan

John R. Bormuth as associate professor of elementary education

B.S. 1953, Manchester College; M.S. 1959, Ed.D. 1962, Indiana University

William J. Boylan as associate professor of animal husbandry

B.S. 1952, Montana State University; M.S. 1959, Ph.D. 1962, University of Minnesota

Donald R. Browne as associate professor of speech, communication, and theatre arts

A.B. 1955, A.M. 1958, Ph.D. 1961, University of Michigan

John R. Cannon as associate professor, School of Mathematics

B.A. 1958, Lamar State College of Technology; M.A. 1960, Ph.D. 1962, Rice University

Roger D. Clemence as associate professor, School of Architecture

A.B. 1957, Amherst College; B.Arch. 1960, M.L.A. 1962, University of Pennsylvania

Harold Finestone as associate professor of sociology

B.A. 1942, M.A. 1943, McGill University; Ph.D. 1964, University of Chicago

Irving I. Gottesman as associate professor of psychology

B.S. 1953, Illinois Institute of Technology; Ph.D. 1960, University of Minnesota

Theodore Herstand as associate professor of speech, communication, and theatre arts

B.A. 1953, M.A. 1957, State University of Iowa; Ph.D. 1963, University of Illinois

Richard Y. Kain as associate professor of electrical engineering

B.S. 1953, M.S. 1959, Sc.D. 1962, Massachusetts Institute of Technology

Marcus O. Kjelsberg as associate professor, School of Public Health

B.A. 1952, Concordia College; M.A. 1955, University of California; Ph.D. 1962, University of Minnesota

Herbert M. Kulman as associate professor of entomology, fisheries, and wild-life

B.S. 1952, Penn State University; M.F. 1955, Duke University; Ph.D. 1960, University of Minnesota

Adrian R. M. Lauritzen as associate professor of music

B.M. 1934, M.M. 1941, MacPhail College of Music; D.M.E. 1954, Chicago Musical College

Russell V. Lucas as associate professor of pediatrics

B.A. 1950, Macalester College; M.D. 1954, Washington University

- Erwin Marquit as associate professor, School of Physics
B.E.E. 1948, College of the City of New York; M.Sc. 1957, Ph.D. 1963, University of Warsaw
- Roger B. Martin as associate professor of landscape architecture
B.S. 1958, University of Minnesota; M.S. 1961, Harvard University
- Norman Miller as associate professor of psychology
B.A. 1956, Antioch College; M.S. 1957, Ph.D. 1959, Northwestern University
- Stewart Oakley as associate professor of Scandinavian
B.A. 1952, Dipl.Ed. 1953, Oxford University; Ph.D. 1961, London School of Economics
- Istavros S. Papadopoulos as associate professor of geology and geophysics
B.S. 1959, Robert College (Turkey); M.S., New Mexico Institute of Mining and Technology; M.A. 1963, Ph.D. 1964, Princeton University
- Arshi Pipa as associate professor of Romance languages
Ph.D. 1942, University of Florence
- Douglas C. Pratt as associate professor of botany
B.S. 1952, M.A. 1959, Ph.D. 1960, University of Minnesota
- Peter G. Roll as associate professor, School of Physics
B.S. 1954, M.S. 1958, Ph.D. 1960, Yale University
- Arthur A. Sagle as associate professor, School of Mathematics
B.S. 1956, M.S. 1957, University of Washington; Ph.D. 1960, University of California
- Lyle D. Schmidt as associate professor of educational psychology
B.A. 1955, St. Cloud State College; M.A. 1957, Ph.D. 1959, University of Missouri
- Ferdinand P. Schoettle, Jr., as associate professor, Law School
A.B. 1955, Princeton University; LL.B. 1960, Harvard Law School
- R. Joseph Schork, Jr., as associate professor of classics
B.A. 1955, College of the Holy Cross; Ph.D. 1957, Exeter College of Oxford University
- Arthur E. Smith as associate professor of educational psychology and director, Student Counseling Bureau
B.S. 1948, M.S. 1949, Illinois State University; Ed.D. 1957, University of Illinois

Assistant Professors

- Paul B. Addis as assistant professor of food science and industries
B.S. 1962, Washington State University
- Charles E. Allen as assistant professor of animal husbandry
B.S. 1961, University of Idaho; M.S. 1963, Ph.D. 1966, University of Wisconsin
- Eberhard Alsen as assistant professor of English
B.A. 1962, University of Bonn; M.A. 1964, Ph.D. 1966, Indiana University
- Alan R. Anderson as assistant professor of educational psychology
B.S. 1952, B.Ed. 1953, University of Alberta; M.S. 1960, Ph.D. 1965, Brigham Young University
- Naomi Arond as assistant professor, Office of the Foreign Student Adviser
B.A. 1953, Hunter College; M.A. 1955, City College of New York; Ph.D. 1966, University of Minnesota
- Roger W. Benjamin as assistant professor of political science
B.A. 1963, Michigan State University
- Robert L. Bergherr as assistant professor, School of Social Work and pediatrics
B.A. 1954, College of St. Thomas; M.S.W. 1962, University of Minnesota
- Karel D. Bicha as assistant professor, Division of Social Science, Morris
B.S. 1958, University of Wisconsin; Ph.D. 1963, University of Minnesota
- Donald A. Biggs as assistant professor, Student Counseling Bureau
B.S. 1957, Arizona State University; M.A. 1958, Ball State Teachers College; Ed.D. 1963, University of California
- James W. Bodley as assistant professor of biochemistry, College of Medical Sciences
B.S. 1960, Walla Walla College; Ph.D. 1964, University of Hawaii

- Richard F. Borch as assistant professor, School of Chemistry
B.S. 1962, Stanford University; M.A. 1963, Ph.D. 1965, Columbia University
- David Braslau as assistant professor of geology and geophysics
B.S. 1956, Massachusetts Institute of Technology; M.S. 1960, Ph.D. 1966, University of California
- David P. Bryden as assistant professor, Law School
B.A. 1957, LL.B. 1966, Harvard University
- Ronald J. Burke as assistant professor, School of Business Administration
B.A. 1960, University of Manitoba; M.A. 1962, Ph.D. 1966, University of Michigan
- John P. Campbell as assistant professor of psychology
B.S. 1959, M.S. 1960, Iowa State University; Ph.D. 1964, University of Minnesota
- Robert M. Carlson as assistant professor, Division of Science and Mathematics, Duluth
B.Chem. 1962, University of Minnesota; Ph.D. 1965, Princeton University
- Isaac Chavel as assistant professor, School of Mathematics
B.A. 1961, Brooklyn College; M.S. 1964, New York University; Ph.D. 1966, Yeshiva University
- Annie Clement as assistant professor, Division of Education and Psychology, Duluth
B.S. 1959, M.A. 1964, University of Minnesota; Ph.D. 1966, University of Iowa
- John F. Detlaf as assistant professor, Division of Science and Mathematics, Morris
B.A. 1948, Baldwin Wallace College; M.A. 1954, Columbia University
- Paul Didisheim as assistant professor of experimental pathology, Mayo Graduate School of Medicine
B.A. 1950, Princeton University; M.D. 1954, Johns Hopkins University
- Stanley L. Diesch as assistant professor of veterinary bacteriology and public health
B.S. 1951, D.V.M. 1956, M.P.H. 1963, University of Minnesota
- Margret Dietz as assistant professor of physical education for women and intramurals for women
Teacher Diploma 1942, Mary Wigman School; Master Diploma 1944, Staatliche Akademie fuer Musik
- W. Bruce Erickson as assistant professor, School of Business Administration
B.A. 1959, M.A. 1960, Ph.D. 1965, Michigan State University
- Robert E. Evenson as assistant professor of agricultural economics
B.A. 1961, M.S. 1964, University of Minnesota; Ph.D. 1966, University of Chicago
- William E. Fenster as assistant professor and extension specialist in soils
B.S. 1958, M.S. 1965, University of Wisconsin
- Russell D. Frazier as assistant professor, Southern School and Experiment Station
B.S. 1951, Michigan State University; M.S. 1959, Ph.D. 1966, Purdue University
- Erhard M. Friedrichsmeyer as assistant professor of German
B.A. 1958, Lakeland College; M.A. 1959, University of Wisconsin; Ph.D. 1964, University of Minnesota
- William C. Gemeinhardt as assistant professor, Division of Education and Psychology, Duluth
B.S. 1950, M.A. 1952, Ph.D. 1955, University of Minnesota
- Anthony Gilombardo as assistant professor of music
- Alice I. Goacher as assistant professor, General Extension Division
B.F.A. 1957, School of the Chicago Art Institute
- Irving Godt as assistant professor of music
B.A. 1960, Brooklyn College; M.A. 1963, New York University
- Richard J. Goodkind as assistant professor, School of Dentistry
D.M.D. 1962, Tufts Dental School; M.S. 1964, University of Michigan

- Grace W. Gray as assistant professor of veterinary physiology and pharmacology
 B.A. 1945, Mount Holyoke College; Ph.D. 1951, University of Michigan
- John M. Grewe as assistant professor, School of Dentistry
 B.S. 1960, D.D.S. 1962, M.S.D. 1964, Ph.D. 1966, University of Minnesota
- Edward M. Griffin as assistant professor of English
 B.S. 1959, University of San Francisco; M.A., Ph.D. 1966, Stanford University
- Henry T. Hall as assistant professor of geology and geophysics
 B.S. 1959, M.S. 1961, University of Idaho; Ph.D. 1966, Brown University
- William H. Hanson as assistant professor of philosophy
 B.A. 1958, Hamline University; M.A. 1960, Ph.D. 1965, Yale University
- Roger D. Harrold as assistant professor of education, Office of the Dean of Students
 B.C.E. 1958, M.B.A. 1959, Ph.D. 1966, Ohio State University
- Harland B. Hasslen as assistant professor and coordinator of student affairs, University of Minnesota Technical Institute, Crookston
 B.S. 1941, University of Minnesota
- Arnold E. Henjum as assistant professor, Division of Education, Morris
 B.A. 1949, Augsburg College; M.A. 1956, University of Minnesota
- Henry F. Henneke, Jr., as assistant professor, School of Chemistry
 B.S. 1963, Ph.D. 1966, University of Illinois
- Robert K. Herman as assistant professor of genetics
 B.S. 1953, Stanford University; Ph.D. 1963, Yale University
- William S. Herman as assistant professor of zoology
 B.S. 1959, Portland State College; M.S. 1960, Ph.D. 1964, Northwestern University
- Richard L. Hill as assistant professor and principal, University High School
 B.S. 1954, North Dakota State University; A.M. 1955, Stanford University; Ed.D. 1964, University of North Dakota
- David Holland as assistant professor, Student Counseling Bureau and Family Study Center
 B.A. 1958, State University of Iowa
- Hosni N. Iskander as assistant professor, School of Architecture
 B.A. 1952, Cairo University; M.C.P. 1961, Ph.D. 1966, Harvard University
- David W. Johnson as assistant professor of educational psychology
 B.S. 1962, Ball State University; M.A. 1964, Ed.D. 1966, Columbia University
- Gerhard J. Joseph as assistant professor of English
 B.A. 1953, M.A. 1955, University of Connecticut; Ph.D. 1966, University of Minnesota
- Richard S. Juralewicz as assistant professor, School of Business Administration
 B.M.E. 1958, General Motors Institute of Technology; M.S. 1962, Ph.D. 1966, Rensselaer Polytechnic Institute
- Bernard Z. Karmel as assistant professor, Institute of Child Development
 B.A. 1961, M.S. 1964, Ph.D. 1966, George Washington University
- Iftikhar A. Khan as assistant professor, Division of Humanities, Morris
 LL.B., M.A. 1948, University of Lucknow (India); M.A. 1960, Ph.D. 1966, University of Minnesota
- Richard D. Kimpston as assistant professor of secondary education
 B.S. 1953, Upper Iowa University; M.A. 1956, Colorado State College; Ed.D. 1963, University of Nebraska
- George J. Koury as assistant professor of Middle Eastern languages
 B.A. 1961, Wayne State University; M.A. 1962, University of Michigan
- Harold J. Kurtz as assistant professor of veterinary pathology and parasitology
 B.S., M.S. 1954, South Dakota State College; D.V.M. 1958, Ph.D. 1966, University of Minnesota
- Darrell R. Lewis as assistant professor and director of economic education
 B.A. 1960, Luther College; Ph.D. 1963, Louisiana State University

- Walther M. Liebenow as assistant professor and chief circulation librarian
B.S. 1950, Concordia Teachers College; Mus.M. 1951, Chicago Musical College; M.A. 1959, Immaculate Heart College
- Peter J. Lingane as assistant professor, School of Chemistry
B.A. 1962, Harvard University; Ph.D. 1966, California Institute of Technology
- Owen R. Loveless as assistant professor of East and South Asian languages
B.A. 1935, University of Kansas; M.I.A. 1949, Columbia University; Ph.D. 1963, University of Michigan
- Richard J. Mackie as assistant professor of entomology, fisheries, and wildlife
B.S. 1958, Michigan State University; M.S. 1960, Washington State University; Ph.D. 1965, Montana State College
- Walter J. Maier as assistant professor of civil engineering and hydraulics
B.S. 1951, Rensselaer Polytechnic Institute; M.S. 1964, Ph.D. 1966, Cornell University
- David J. Mayo as assistant professor, Division of Humanities, Duluth
B.A. 1962, Reed College
- Andrew R. McFarland as assistant professor of mechanical engineering
B.S. 1957, M.S. 1960, Ph.D. 1967, University of Minnesota
- Ronald J. McKee as assistant professor, Division of Education and Psychology, Duluth
B.S. 1951, Valley City State College; M.E. 1958, Ed.D. 1966, University of North Dakota; M.A. 1959, State College of Iowa
- Austin J. McLean as assistant professor and chief, special collections, Library
B.A. 1952, Michigan State University; M.A.L.S. 1959, University of Michigan
- Martin B. McMillion as assistant professor of agricultural education
A.A. 1952, Potomac State College; B.S. 1954, West Virginia University; M.Ed. 1959, Penn State University; Ed.D. 1966, University of Illinois
- Edmund M. Miller as assistant professor and assistant to director of Bureau of Recommendations
B.A. 1959, Gettysburg College; B.D. 1963, Harvard University; M.Ed. 1964, Shippensburg State College
- Thomas J. Muench as assistant professor of economics
A.B. 1960, Xavier University; Ph.D. 1965, Purdue University
- Clifford L. Nelson as assistant professor of agricultural education
B.S. 1957, M.S. 1962, Washington State University; Ph.D. 1966, University of Minnesota
- Thomas S. Noonan as assistant professor of history
B.A. 1959, Dartmouth College; M.A. 1962, Ph.D. 1965, Indiana University
- Ned E. Olson as assistant professor of veterinary medicine
B.S. 1958, D.V.M. 1960, Ph.D. 1964, University of Minnesota
- Harold J. Opgrand as assistant professor and supervisor of instructional resources, University of Minnesota Technical Institute, Crookston
B.S. 1956, State College; M.A. 1961, University of Minnesota
- Willard L. Oplinger as assistant professor, Division of Humanities, Duluth
B.A., B.M.E. 1958, Oberlin College and Conservatory of Music; M.M. 1963, University of Arkansas
- Harold M. Pellett as assistant professor of horticultural science
B.S. 1960, M.S. 1961, Ph.D. 1964, Iowa State University
- Allen L. Pennington as assistant professor, School of Business Administration
B.B.A. 1962, M.A. 1964, State University of Iowa; D.B.A. 1967, Indiana University
- Robert E. Phillips as assistant professor of psychology
B.S. 1961, M.S. 1964, Ph.D. 1965, University of Washington
- Ellen B. Pirro as assistant professor of political science
B.A. 1958, University of New Hampshire; Ph.D. 1966, Yale University
- David J. Pucel as assistant professor of trade and industrial education
A.A. 1960, Ely Junior College; B.S. 1962, Stout State College; M.Ed. 1963, University of Illinois

- Kai Rehder as assistant professor of anesthesiology, Mayo Graduate School of Medicine
M.D. 1953, University of Freiburg (Germany)
- John G. Rice as assistant professor of geography
B.A. 1956, Oberlin College; M.A. 1959, University of Washington; Fil.Lic. 1965, University of Uppsala (Sweden)
- Nestor M. Riviere as assistant professor, School of Mathematics
Licenciado 1961, Universidad de Buenos Aires; Ph.D. 1966, University of Chicago
- Bimal C. Roquitte as assistant professor, Division of Science and Mathematics, Morris
B.S. 1952, M.S. 1955, University of Calcutta
- David F. Routon as assistant professor of studio arts
B.F.A. 1959, Mexico City College; M.F.A. 1963, University of Iowa
- Richard L. Rudolph as assistant professor of history
B.A. 1962, University of Colorado
- Richard A. Salome as assistant professor of art education
A.B. 1952, M.A. 1955, State University of Iowa; M.A. 1958, Iowa State University; Ed.D. 1964, Stanford University
- Wiley M. Sams, Jr., as assistant professor of dermatology, Mayo Graduate School of Medicine
B.S. 1955, University of Michigan; M.D. 1959, Emory University
- Lee P. Sapetta as assistant professor of mechanical engineering
B.S. 1962, Ph.D. 1965, University of Wisconsin
- Harvey B. Sarles as assistant professor of anthropology
B.A. 1954, M.A. 1959, University of Buffalo; Ph.D. 1966, University of Chicago
- Frederick I. Sauls as assistant professor of studio arts
B.A. 1958, Stanford University; M.A. 1963, University of California
- Charles C. Savage, III, as assistant professor of art history and director, University Gallery
B.A. 1964, Princeton University; M.A. 1967, New York University
- William D. Schmid as assistant professor of zoology
B.S. 1959, Ph.D. 1962, University of Minnesota
- Heddie O. Sedano as assistant professor, School of Dentistry
D.D.S. 1954, University of Litonal (Argentina)
- Jean M. Sharp as assistant professor, Division of Humanities, Morris
B.A. 1947, Marylhurst College; M.A. 1952, University of Washington
- L. Earl Shaw, Jr., as assistant professor of political science
B.A. 1959, Wake Forest College; B.D. 1962, Yale University; Ph.D. 1966, University of North Carolina
- Deon D. Stuthman as assistant professor of agronomy and plant genetics
B.Sc. 1962, University of Nebraska; M.Sc. 1964, Ph.D. 1966, Purdue University
- Ronald G. Taylor as assistant professor, Student Counseling Bureau
B.S. 1957, Western Michigan University; M.A. 1960, Ph.D. 1962, Michigan State University
- Morris F. D. Teubal as assistant professor of economics
B.A. 1963, University of Buenos Aires; Ph.D. 1967, University of Chicago
- Henry Toledano as assistant professor of Middle Eastern languages
B.A. 1959, Wayne State University; Ph.D. 1966, Columbia University
- James E. Torpey as assistant professor of physical education for men
B.S. 1952, M.S. 1953, Springfield College; Ed.D. 1965, University of Oregon
- Thomas F. Trail as assistant professor of animal husbandry
B.S. 1958, University of Idaho; M.A. 1960, University of Maryland; Ed.D. 1966, Montana State University
- Alcide L. Tremblay as assistant professor, Division of Humanities, Morris
Licenciatura 1960, Maestria 1961, Universidad Nacional Autonoma de Mexico

- Cesar R. Umana as assistant professor, School of Dentistry
M.D. 1959, University of San Carlos; Ph.D. 1963, University of Rochester
- David A. Vose as assistant professor, Division of Social Sciences, Duluth
B.S. 1954, University of Illinois; Ph.D. 1966, University of Wisconsin
- Houston R. Wade as assistant professor of genetics
B.A. 1959, M.A. 1962, Ph.D. 1966, University of Texas
- Wilbur L. Wakefield as assistant professor and program director, conferences and institutes
B.S. 1957, M.A. 1961, Ed.D. 1966, University of Nebraska
- William F. Weitzel, Jr., as assistant professor, Industrial Relations Center
B.A. 1961, Wheaton College; M.A. 1963, University of Illinois; Ph.D. 1966, Wayne State University
- Kinnard P. White as assistant professor and assistant director for research, Student Personnel Office
B.S. 1960, Florida State University; M.S. 1961, Ph.D. 1964, Indiana University
- Andrew F. Whitman as assistant professor, School of Business Administration
B.S. 1960, M.B.A. 1962, Pennsylvania State University
- Harold F. Wilkins as assistant professor of horticultural science
B.S. 1956, M.S. 1957, Ph.D. 1965, University of Illinois
- Robert E. Williams as assistant professor, Division of Humanities, Duluth
B.M. 1956, M.M.Ed. 1957, University of Arizona
- Donna M. Wolean as assistant professor, Division of Education and Psychology, Duluth
B.S. 1944, M.A. 1963, University of Minnesota
- Edmund A. Zottola as assistant professor of food science and industries and extension food microbiologist
B.S. 1954, M.S. 1958, Oregon State University; Ph.D. 1964, University of Minnesota

APPOINTMENTS, 1967-68

Assistant Dean and Assistant Professor

- Harold A. Miller as assistant dean, Summer Session, and assistant professor of speech, communication, and theatre arts
B.A. 1955, Northwestern College; M.A. 1957, Ph.D. 1962, University of Minnesota

Director

- Raymond D. Pruitt as director, Mayo Graduate School of Medicine
B.S. 1933, Baker University; B.A. 1936, Oxford University (England); M.D. 1939, University of Kansas; M.S. 1944, University of Minnesota

Assistant Director

- Lee D. Stauffer as assistant director, Continuation Medical Education, and assistant professor, School of Public Health
B.S. 1951, University of Nebraska

Professors

- Howard L. Bissonette as professor of plant pathology and extension plant pathologist
B.S. 1952, St. Thomas College; M.S. 1956, Ph.D. 1963, University of Minnesota
- Evelyn D. Deno as professor and director, Psycho-Educational Clinic
B.S. 1948, M.A. 1950, Ph.D. 1958, University of Minnesota
- Bright M. Dornblaser as professor and director, division of hospital administration, School of Public Health
B.B.A. 1949, M.H.A. 1952, University of Minnesota

- Robert Ellis as professor, School of Mathematics
B.S. 1948, M.A. 1950, Ph.D. 1953, University of Pennsylvania
- Daniel L. Gerlough as professor of civil engineering and hydraulics
B.S. 1937, California Institute of Technology; M.S. 1948, Ph.D. 1955, University of California
- Joan Gordon as professor, School of Home Economics
B.S. 1945, M.S. 1947, Ph.D. 1953, University of Minnesota
- John F. Hart as professor of geography
A.B. 1943, Emory University; M.A. 1949, Ph.D. 1950, Northwestern University
- Ralph W. Marsden as professor and head of geology, Duluth
Ph.B. 1932, Ph.M. 1933, Ph.D. 1939, University of Wisconsin
- Charles F. McKhann as professor of surgery
B.A. 1951, Harvard University; M.D. 1955, University of Pennsylvania
- Dale N. Moss as professor of agronomy and plant genetics
B.S. 1955, Ricks College; M.S. 1955, Ph.D. 1959, Cornell University
- John S. Najarian as professor and head of surgery
M.D. 1952, University of California
- Hannis L. Stoddard as professor, administration, College of Veterinary Medicine
B.S. 1943, D.V.M. 1947, Texas A & M College; D.T.V.M. 1961, University of Edinburgh (Scotland)
- Rudolph J. Vecoli as professor and director, Center for Immigrant Studies
B.A. 1950, University of Connecticut; M.A. 1951, University of Pennsylvania; Ph.D. 1963, University of Wisconsin
- Daniel E. Waite as professor, School of Dentistry
D.D.S. 1953, M.S. 1955, State University of Iowa
- Emma May Whiteford as professor and chairman of home economics education
B.S. 1938, North Dakota State University; M.S. 1951, Ed.D. 1955, University of Illinois
- Leonard G. Wilson as professor, medical administration, College of Medical Sciences
B.S. 1949, University of Toronto; M.Sc. 1955, University College (London); Ph.D. 1958, University of Wisconsin
- Neville J. Woolf as professor of astrophysics and director, Minnesota Observatories, School of Physics
B.Sc. 1956, Ph.D. 1959, Manchester University (England)

Associate Professors

- John H. Broadhurst as associate professor, School of Physics
B.Sc. 1956, Ph.D. 1959, University of Birmingham
- Francis F. Busta as associate professor of food science and industries
B.A. 1957, M.Sc. 1961, University of Minnesota; Ph.D. 1963, University of Illinois
- Harold A. Cloud as associate professor of agricultural engineering and extension agricultural engineer
B. Agric. Eng. M.S. 1950, Ph.D. 1966, University of Minnesota
- Edward H. Cooper as associate professor, Law School
A.B. 1961, Dartmouth College; LL.B. 1964, Harvard Law School
- Somesh Das Gupta as associate professor of statistics
I.Sc. 1951, B.Sc. 1953, St. Xavier's College; M.Sc. 1956, University of Calcutta; Ph.D. 1963, University of North Carolina
- John A. Eagon as associate professor, School of Mathematics
B.A. 1954, Princeton University; M.S. 1958, Ph.D. 1961, University of Chicago
- Lyndell W. Fitzgerald as associate professor of agricultural economics and extension economist in farm management
B.S. 1951, B.S. 1959, M.S. 1963, Kansas State University; M.S. 1967, Ph.D. 1968, Purdue University

- Basil Furgala as associate professor of entomology, fisheries, and wildlife
B.S.A. 1953, M.Sc. 1954, University of Manitoba; Ph.D. 1959, University of Minnesota
- Tillie D. Ginsburg as associate professor, School of Dentistry
B.A. 1955, University of Minnesota; M.Ed. 1963, Marquette University
- Keith R. Gunderson as associate professor of philosophy and Minnesota Center for Philosophy of Science
B.A. 1957, Macalester College; B.A. 1959, Oxford University; Ph.D. 1963, Princeton University
- Richard H. Hall as associate professor of sociology
A.B. 1956, Denison University; M.A. 1958, Ph.D. 1961, Ohio State University
- Duncan E. Haynes as associate professor, Law School
A.B. 1955, LL.B. 1961, University of California
- Leonard B. Hertz as associate professor of horticultural science and extension horticulturist
B.S. 1949, M.S. 1950, Ph.D. 1956, University of Wisconsin
- Thomas E. Hutchinson as associate professor, School of Mineral and Metallurgical Engineering
B.S. 1958, M.S. 1959, Clemson University; Ph.D. 1963, University of Virginia
- Fred A. Johnson as associate professor, General College
B.A. 1952, B.S. 1954, M.A. 1958, Ph.D. 1961, University of Minnesota
- Roger S. Jones as associate professor, School of Physics
B.S. 1955, City College of New York; M.S. 1957, Ph.D. 1961, University of Illinois
- Peter K. Lange as associate professor of electrical engineering
Dipl.Ing. 1955, Technische Hochschule (Munich); Dr.Ing. 1958, Technische Hochschule (Munich)
- Howard W. Law as associate professor of linguistics
Th.B. 1943, Bible Institute of Los Angeles; A.B. 1951, Seattle Pacific College; M.A. 1960, Ph.D. 1962, University of Texas
- Donald G. Marshall as associate professor, Law School
B.A. 1953, Williams College; LL.B. 1960, Yale University
- Peter W. Martin as associate professor, Law School
A.B. 1961, Cornell University; LL.B. 1964, Harvard Law School
- John J. McNally as associate professor of English
B.A. 1947, Loyola University; M.A. 1950, Ph.D. 1961, University of Chicago
- Wilmer G. Miller as associate professor of physical chemistry
B.S. 1954, Capital University; Ph.D. 1958, University of Wisconsin
- Dallis K. Perry as associate professor of psychology and assistant director, Student Counseling Bureau
B.S. 1950, University of Washington; M.A. 1951, Ph.D. 1953, University of Minnesota
- Evelyn P. Quesberry as associate professor and state leader, home economics extension
B.S. 1943, Central Missouri State College; M.S., Ph.D. 1960, University of Wisconsin
- Hans Risken as associate professor of electrical engineering
M.S. 1959, Ph.D. 1962, Technische Hochschule Aachen (Germany)
- Glen O. Robinson as associate professor, Law School
B.A. 1958, Harvard College; LL.B. 1961, Stanford University
- Eugene H. Sander as associate professor of food science and industries and extension processing engineer
B.S. 1956, Delaware Valley College; M.S. 1959, Ph.D. 1962, Iowa State University
- Cletus E. Schertz as associate professor of agricultural engineering
B.S. 1954, University of Illinois; Ph.D. 1962, Iowa State University
- Dennis E. Speliotis as associate professor of electrical engineering
B.S. 1955, University of Rhode Island; S.M. 1957, E.E. 1955, Massachusetts Institute of Technology; Ph.D. 1961, University of Minnesota
- Dale F. Stein as associate professor, School of Mineral and Metallurgical Engineering
B.S. 1958, University of Minnesota; Ph.D. 1963, Rensselaer Polytechnic Institute

- John A. True as associate professor and extension agricultural engineer
B.S. 1951, M.S. 1962, Michigan State University
- Edgar M. Turrentine as associate professor of music education
B.M.E. 1948, University of Wichita; M.M.E. 1952, Oberlin College; Ph.D. 1962, University of Iowa
- Roger B. Upson as associate professor, School of Business Administration
B.Sc. 1960, University of London; M.B.A. 1961, Ph.D. 1965, University of Michigan
- Rachel R. Van Meter as associate professor, Center for South Asian Languages and Area Studies
B.A. 1960, Central Bible Institute; M.A. 1962, Ph.D. 1964, University of Pennsylvania
- E. Theodor Voss as associate professor of German
Ph.D. 1958, University of Bonn (Germany)
- William R. Ware as associate professor, School of Chemistry
B.A. 1953, Reed College; Ph.D. 1958, University of Rochester
- Richard F. Weatherman as associate professor of special education
B.A. 1950, B.S. 1953, M.A. 1956, University of Minnesota; Ed.D. 1964, Michigan State University
- Howard Y. Williams as associate professor of secondary education
B.A. 1948, M.A. 1951, Ph.D. 1965, University of Minnesota; M.Ed. 1954, Macalester College

Assistant Professors

- Stephen B. Agard as assistant professor, School of Mathematics
B.A. 1959, Swarthmore College; Ph.D. 1965, University of Michigan
- Wilbert H. Ahern as assistant professor, Division of Social Sciences, Morris
B.A. 1963, Oberlin College; M.A. 1966, Northwestern University
- John S. Anderson as assistant professor of biochemistry
A.B. 1958, Nebraska State Teachers College; M.Sc. 1960, Ph.D. 1963, University of Nebraska
- Usharbudh Arya as assistant professor of East and South Asian languages
B.A. 1965, M.A. 1966, University of London; Ph.D. 1968, University of Utrecht
- Peter D. Ascher as assistant professor of horticultural science
B.S. 1963, M.S. 1965, Ph.D. 1967, University of Wisconsin
- Bernard S. Bachrach as assistant professor of history
B.A. 1961, Queens College; M.A. 1962, Ph.D. 1966, University of California
- Kent R. Bales as assistant professor of English
B.A. 1958, Yale University; M.A. 1963, San Jose State College; Ph.D. 1967, University of California
- Donald A. Bender as assistant professor, Division of Education and Psychology, Duluth
B.S. 1961, Ed.M. 1964, University of Illinois
- Elmo H. Brekhus as assistant professor, Library School
B.A. 1957, M.A. 1966, University of Minnesota
- William M. Breene as assistant professor of food science and industries
B.S. 1957, M.S. 1961, Ph.D. 1964, University of Wisconsin
- James H. Butler as assistant professor, School of Dentistry
B.A. 1958, Denison University; D.D.S. 1962, Ohio State University; M.S. 1967, University of Rochester
- Vernon B. Cardwell as assistant professor of agronomy and plant genetics
B.Sc. 1958, M.Sc. 1961, Colorado State University; Ph.D. 1967, Iowa State University
- Paul P. Christiano as assistant professor of civil engineering and hydraulics
B.S. 1964, M.S. 1965, Carnegie Institute of Technology
- Robert E. Crew, Jr., as assistant professor of political science
B.A. 1962, M.A. 1964, University of Wichita

- W. Ray Cross as assistant professor of educational administration
B.S. 1957, Texas Christian University; M.Ed. 1959, North Texas State University;
Ph.D. 1967, University of Texas
- Jack L. Dais as assistant professor of aeronautics and engineering mechanics
B.S. 1962, M.S. 1963, Michigan State University; Ph.D. 1967, Brown University
- Frederick De Jonge as assistant professor, Division of Humanities, Duluth
Final Diploma, Conservatorium of Utrecht (Holland); M.A. 1967, University of Iowa
- Robert S. Driska as assistant professor of secondary education
B.B.A. 1958, M.Ed. 1960, University of Texas; Ed.D. 1967, Arizona State University
- Russell E. DuBois as assistant professor and head librarian, Morris
B.A. 1947, M.A. 1954, M.S. 1966, University of Illinois
- Gary E. Duke as assistant professor of veterinary physiology and pharmacology
B.A. 1959, Knox College; M.S. 1964, Ph.D. 1967, Michigan State University
- Thomas Egerman as assistant professor of studio arts
B.A. 1959, St. John's University; M.F.A. 1962, State University of Iowa
- Ann Marie Erickson as assistant professor, School of Home Economics
B.S. 1955, University of Minnesota; M.S. 1958, Iowa State University
- Gerald M. Erickson as assistant professor of classics
B.S. 1954, M.A. 1956, Ph.D. 1968, University of Minnesota
- Robert B. Eyestone as assistant professor of political science
B.S. 1964, Massachusetts Institute of Technology; M.S. 1965, Ph.D. 1968, Stanford University
- Eugene B. Fabes as assistant professor, School of Mathematics
A.B. 1959, Harvard University; M.S. 1962, Ph.D. 1965, University of Chicago
- Peter E. Firchow as assistant professor of English
B.A. 1959, M.A. 1961, Harvard University; Ph.D. 1965, University of Wisconsin
- Richard S. Fischer as assistant professor of music education and music
B.M. 1945, M.M. 1951, Eastman School of Music; D.M.A. 1961, Indiana University;
A.M.D. 1964, University of Arizona
- William L. Garrard, Jr., as assistant professor of aeronautics and engineering mechanics
B.S. 1962, Ph.D. 1967, University of Texas
- Siegfried K. Grosser as assistant professor, School of Mathematics
Ph.D. 1965, University of California
- Karl E. Gustafson as assistant professor, School of Mathematics
B.S. 1953, University of Colorado; Ph.D. 1965, University of Maryland
- Evelyn U. Hansen as assistant professor, General College
B.S. 1946, M.A. 1948, University of Minnesota
- James O. Hanson as assistant professor and project leader, veterinary extension
D.V.M. 1953, University of Minnesota
- Phillip A. Harris as assistant professor, College of Pharmacy
A.A. 1960, Modesto Junior College; Pharm.D. 1964, Ph.D. 1967, University of California
- William F. Hartman as assistant professor of aeronautics and engineering mechanics
B.S. 1962, Loyola College; Ph.D. 1967, Johns Hopkins University
- John T. Hatten as assistant professor, Division of Humanities, Duluth
B.S. 1959, University of Minnesota; M.S. 1961, Purdue University; Ph.D. 1965, University of Wisconsin
- Edward W. Haurek as assistant professor of sociology
B.S. 1958, Northern Illinois University; M.A. 1966, University of Illinois
- Howard J. Hickman as assistant professor of chemical engineering
B.S. 1956, University of Maryland; M.E.S. 1960, Johns Hopkins University; Ph.D. 1968, Carnegie-Mellon University

- William Hoffman as assistant professor, School of Social Work
B.A. 1935, M.S.W. 1953, University of Minnesota
- Jack Shih-ta Huang as assistant professor of electrical engineering
B.S. 1955, University of Pennsylvania; M.S. 1958, Ph.D. 1963, Harvard University
- Rolf E. Huff as assistant professor, Division of Science and Mathematics, Du-
luth
B.S. 1955, Ohio University; Ph.D. 1961, Indiana University
- Larry G. Hutchinson as assistant professor of linguistics
B.A. 1964, University of Kansas; M.A. 1966, Ph.D. 1967, Indiana University
- Wallace J. Jasper as assistant professor and assistant to director of intercolle-
giate athletics
B.A. 1959, Brandon College
- Joseph R. Jesseph as assistant professor and director, Student Counseling
Service, Morris
B.S. 1957, University of Idaho; M.A. 1962, Ph.D. 1963, University of Wyoming
- Paul F. Jessup as assistant professor, School of Business Administration
B.S. 1960, Northwestern University; B.A. 1963, University of Oxford; A.M. 1964, Har-
vard University; Ph.D. 1967, Northwestern University
- Albert R. Johnson as assistant professor, Division of Humanities, Morris
B.M. 1955, St. Olaf College; M.S. 1957, University of Illinois
- Ruth E. Jones as assistant professor of Romance languages
B.A. 1945, M.A. 1962, Ph.D. 1965, University of Minnesota
- Alan L. Kagan as assistant professor of music
B.A. 1954, Queens College; M.A. 1959, University of California
- Charles S. Kahane as assistant professor, School of Mathematics
A.B. 1955, Ph.D. 1962, New York University
- Calvin B. Kendall as assistant professor of English
B.A. 1956, Bowdoin College; M.A. 1961, Ph.D. 1966, University of California
- Robert E. Kennedy, Jr., as assistant professor of sociology
B.A. 1959, University of Missouri; M.A. 1961, Columbia University; Ph.D. 1967, Uni-
versity of California
- Dolph Klein as assistant professor of biochemistry, College of Biological Sci-
ences
B.S. 1950, City College of New York; Ph.D. 1961, Rutgers University
- Eugene M. Kleiner as assistant professor of Slavic languages
B.A. 1956, Amherst College; M.A. 1959, M.A. 1964, Columbia University
- David Kopf as assistant professor of history
B.A. 1951, M.A. 1956, New York University; Ph.D. 1964, University of Chicago
- Alf T. Kraebel as assistant professor of classics
B.A. 1956, Luther College; M.A. 1958, University of Iowa; B.D., Luther Seminary
- Catherine Kulesov as assistant professor of Slavic languages
Diploma 1950, Technical School (Seraing, Belgium); M.A. 1964, Indiana University
- James J. Kuska as assistant professor of horticultural science
B.S. 1963, Michigan State University; M.L.A. 1966, M.S. 1966, University of Illinois
- Arthur R. Landever as assistant professor, Division of Social Sciences, Morris
A.B. 1957, LL.B. 1960, New York University
- Joseph J. Latterell as assistant professor, Division of Science and Mathematics,
Morris
B.A. 1959, St. John's University; M.S. 1962, Purdue University; Ph.D. 1964, University
of Colorado
- Norman G. Laws as assistant professor and head of industrial education, Du-
luth
B.S. 1956, M.Ed. 1958, D.Ed. 1966, Wayne State University
- Meri K. T. Lehtinen as assistant professor, Center for Northwest European
Language and Area Studies and Scandinavian
B.A. 1956, Vassar College; M.A. 1958, Radcliffe College; Ph.D. 1966, Indiana University

- Prabodh T. Lele as assistant professor of mechanical engineering
B.E. 1958, Maharaja Sayajirao University of Baroda; M.S. 1962, Ph.D. 1967, University of Minnesota
- James R. Lofgren as assistant professor, Northwest Experiment Station and agronomy and plant genetics
B.S. 1960, University of Nebraska; M.S. 1962, North Dakota State University
- Arnett C. Mace, Jr., as assistant professor, School of Forestry
B.S.F., West Virginia University; M.S. 1962, Ph.D. 1968, University of Arizona
- V. Joseph McAuliffe as assistant professor and associate state leader, 4-H and youth development, Agricultural Extension Service
B.S. 1949, Cornell University; M.A. 1955, University of Maryland
- Donald G. McTavish as assistant professor of sociology
B.Sc. 1956, M.A. 1960, Ph.D. 1964, University of Iowa
- Donald F. Moores as assistant professor of special education
B.A. 1958, Amherst College; M.S. 1959, Gallaudet College; M.A. 1963, San Fernando College; Ph.D. 1967, University of Illinois
- Mohamed A. Najmi as assistant professor, Division of Social Sciences, Morris
B.Sc. 1952, Osmania University; M.S. 1958, State University of New York; Ed.D. 1962, Colorado State College
- Kenneth G. Nelson as assistant professor of pharmaceuticals
B.S. 1963, University of Wisconsin; M.S. 1964, Ph.D. 1967, University of Michigan
- Eugene Ogan as assistant professor of anthropology
B.A. 1951, University of California
- Joseph C. Ordos as assistant professor, School of Home Economics
B.S. 1962, M.A. 1967, University of Minnesota
- Julia M. Penn as assistant professor of German
M.A. 1965, George Peabody College; B.A. 1958, Ph.D. 1966, University of Texas
- Charles W. Peterson as assistant professor and director of student services, University of Minnesota Technical Institute, Crookston
B.S. 1950, Mayville State College; M.Ed. 1956, University of North Dakota
- David E. Polson as assistant professor of agronomy and plant genetics
B.S. 1963, M.S. 1964, Utah State University; Ph.D. 1968, Michigan State University
- Thomas R. Post as assistant professor of elementary education
B.S. 1962, M.S. 1965, State University College of New York; Ed.D. 1967, Indiana University
- Paul E. Read as assistant professor, Northeast Experiment Station
B.S. 1959, M.S. 1964, Cornell University; Ph.D. 1967, University of Delaware
- Robert I. Rence as assistant professor, Division of Humanities, Duluth
B.S. 1940, New Jersey State Teachers College; B.T.A. 1948, Pasadena Playhouse College of Theatre Arts; M.A. 1960, Occidental College; Ph.D. 1967, University of Minnesota
- Roy E. Rickson as assistant professor of sociology
B.A. 1962, M.A. 1965, University of Washington
- Franz L. Roehmann as assistant professor of music education
B.S. 1958, Fredonia State College; M.M. 1959, University of Illinois
- Maria R. Rohr as assistant professor of Romance languages
Doctorate 1961, University of Ca'Foscari (Venice, Italy)
- Joseph G. Rosenstein as assistant professor, School of Mathematics
A.B. 1961, Columbia University; Ph.D. 1966, Cornell University
- John E. Rynders as assistant professor of special education
B.S. 1955, M.S. 1961, Stout State University; Ph.D. 1967, University of Wisconsin
- Stuart B. Schwartz as assistant professor of history
B.A. 1962, Middlebury College; M.A. 1963, Ph.D. 1967, Columbia University
- Robert E. Shaw as assistant professor of psychology
B.A. 1960, Birmingham Southern College; Ph.D. 1965, Vanderbilt University

- Harrie T. Shearer as assistant professor, School of Dentistry
D.D.S. 1962, M.S. 1965, University of Iowa
- Bruce D. Sillers as assistant professor, Student Personnel Office
B.S. 1959, University of North Dakota; Ph.D. 1967, University of Wisconsin
- Ludwig J. Spolyar as assistant professor of educational psychology and director, Student Activities Bureau
M.A. 1955, Ph.D. 1959, Michigan State University
- Heinz G. Stefan as assistant professor of civil engineering and hydraulics
Vordiplom 1956, Technischen Hochschule Stuttgart; Diploma of Civil Engineer 1959, Technischen Hochschule Munchen; Doctor of Ingenieur Hydraulicien 1963, University of Toulouse
- Wayne A. Stein as assistant professor, School of Physics
B.Physics 1959, Ph.D. 1964, University of Minnesota
- David A. Stetler as assistant professor of botany
B.S. 1959, University of Southern California; Ph.D. 1967, University of California
- Roger H. Stuewer as assistant professor, Center for Philosophy of Science and physics
B.S. 1958, M.S. 1964, Ph.D. 1968, University of Wisconsin
- Cecil Stushnoff as assistant professor of horticultural science
B.S.A. 1963, M.S. 1964, University of Saskatchewan; Ph.D. 1967, State University of Rutgers
- Clifford H. Tornstrom as assistant professor, School of Dentistry
D.D.S. 1937, University of Minnesota
- Robert E. Turner as assistant professor of information and agricultural journalism
B.A. 1938, M.A. 1951, University of Minnesota
- Ted L. Underwood as assistant professor, Division of Social Sciences, Morris
B.A. 1959, University of California; B.D. 1962, Berkeley Baptist Divinity School; Ph.D. 1965, University of London
- W. Ronald Osborne as assistant professor of animal science
B.S. 1959, Cornell University; M.S. 1961, University of Illinois; Ph.D. 1967, University of Kentucky
- Robert Vince as assistant professor of medicinal chemistry, College of Pharmacy
B.S. 1962, University of Buffalo; Ph.D. 1966, State University of New York
- Theodore M. Zorn as assistant professor of English
A.B. 1957, Valparaiso University; M.A. 1963, Ph.D. 1967, Washington University

PROMOTIONS AND TRANSFERS, 1966-67

- Assistant Vice President and Professor to Associate Vice President and Professor*
Donald K. Smith (Office of the Vice President for Academic Administration)
- Director, Agricultural Experiment Station, and Professor to Associate Dean, Institute of Agriculture, and Professor*
Hubert J. Sloan (poultry science)
- Professor and Associate Chairman, History, to Professor, History, and Recorder, Office of Admissions and Records*
W. Donald Beatty
- Professor, Physics, to Professor, Geophysics*
Athelstan F. Spilhaus (geophysics)
- Associate Professor and Superintendent to Professor and Superintendent*
Edward C. Frederick (Southern Experiment Station—Waseca)

Associate Professor and Chairman to Associate Dean for Social Sciences and Professor

Fred E. Lukermann, Jr. (geography)

Associate Professor and Director to Professor and Director

Gordon B. Davis (School of Business Administration—SBA Computer Center)

Associate Professor to Professor and Director

Clyde A. Parker (counselor education)

Associate Professor and Director, Rehabilitation Center, to Professor and Director

Glenn Gullickson (physical medicine and rehabilitation)

Associate Professor and Assistant Director, Dight Institute, to Professor and Assistant Director

V. Elving Anderson (genetics)

Associate Professor and Chairman to Professor and Chairman

Daniel Bryan (communication program)

Anwar Chejne (Middle Eastern languages)

Associate Professor and Associate Chairman to Professor and Associate Chairman

David A. Storvick (School of Mathematics)

Associate Professor and Director to Professor

Bruce E. Balow (special education)

Associate Professor to Professor

Alfred Aeppli (School of Mathematics)

Harold F. Arneman (soil science)

Dominick J. Argento (music)

James F. Berry (psychiatry and neurology)

Donald H. Blocher (educational psychology)

Peter F. Briggs (physical medicine and rehabilitation)

John B. Carlson (biology—Duluth)

Charles W. Carr (biochemistry)

Arnold F. Caswell (music education)

Keith S. Champlin (electrical engineering)

Arnold N. Enker (Law School)

William J. L. Felts (anatomy)

Rodolfo O. Floripe (Romance languages)

Richard J. Foster (English)

Arnold G. Fredrickson (chemical engineering—School of Chemistry)

John G. Haygreen (food science and industries)

Frank D. Hirschbach (German)

Leverett P. Hoag (geography—Duluth)

Chih-Chun Hsiao (aeronautics and engineering mechanics)

Frank D. Irving (food science and industries)

Robert J. Isaacson (School of Dentistry)

Iwao Iwasaki (Mines Experiment Station—School of Mineral and Metallurgical Engineering)

William A. Kavanaugh (trade and industrial education)

Theodore E. Kellogg (education)

Samuel Krislov (political science)

Anne O. Krueger (economics)

Florian I. Lauer (horticultural science)

E. Bruce Lee (electrical engineering)

Richard Lillehei (surgery)

Walter Littman (School of Mathematics)

Chun Jo Liu (East and South Asian languages)
 Paul H. Lober (pathology)
 Thomas S. Lundgren (aeronautics and engineering mechanics)
 David T. Lykken (psychiatry and neurology)
 Warren MacKenzie (studio arts)
 James H. Matthews (anesthesiology)
 Robert E. McAdam (physical education for men)
 William M. McConahey (medicine—Mayo)
 C. Alden Mead (School of Chemistry)
 Manfred J. Meier (psychiatry and neurology)
 Warren G. Meyer (secondary education)
 Jerome Moss, Jr. (trade and industrial education)
 Robert Moulton (speech, communication, and theatre arts)
 Harold J. Paulus (School of Public Health)
 Philip W. Porter (geography)
 Donald C. Rasmusson (agronomy and plant genetics)
 Edward G. Rippie (College of Pharmacy)
 Mordecai Roshwald (social science program)
 Richard H. Rust (soil science)
 Robert M. Salassa (medicine—Mayo)
 L. Edward Scriven, II (School of Chemistry)
 Arturo Serrano-Plaja (Romance languages)
 Gerald M. Siegel (speech)
 James E. Stageberg (School of Architecture)
 Richard E. Stallard (School of Dentistry)
 Hendrik J. Svien (clinical neurologic surgery—Mayo)
 Wolfgang F. Taraba (German)
 R. Stuart Tobias (inorganic division—School of Chemistry)
 Alfred Uihlein (clinical neurologic surgery—Mayo)
 Frank Unger (biochemistry)
 Lee W. Wattenberg (pathology)
 Conrad J. Weiser (horticultural science)
 Gerhard H. Weiss (German)
 Kenneth T. Whitby (mechanical engineering)
 Roy D. Wilcoxson (plant pathology and physiology)

Visiting Professor to Associate Professor

Donald M. Gillmor (School of Journalism and Mass Communication)

Research Associate to Associate Professor

D. Francis McKinney (Museum of Natural History)
 John D. Helmberger (agricultural economics)

Assistant Professor to Associate Professor and Head

Solomon Shapiro (psychology, philosophy, and family studies)

Assistant Professor to Associate Professor

Som Agarwal (science and mathematics—Duluth)
 Vernon D. Albertson (electrical engineering)
 Dwight L. Anderson (School of Dentistry)
 Eleanor M. Anderson (School of Public Health)
 Donald G. Baker (soil science)
 Titus P. Bellville (psychiatry and neurology)
 Philip E. Bernatz (clinical surgery—Mayo)
 James R. Bolton (physical division—School of Chemistry)
 William E. Bradley (psychiatry and neurology)
 John P. Brantner (psychiatry and neurology)
 George U. Brauer (School of Mathematics)
 W. Keith Bryant (agricultural economics)
 Thomas J. Bydalek (chemistry—Duluth)
 Lucas Calpouzos (plant pathology and physiology)
 Norman W. Canedy (art history)
 Earl T. Carter (clinical medicine—Mayo)

William R. Charlesworth (child development research—Institute of Child Development)
 Howard T. Davis (chemical engineering—School of Chemistry)
 Padmakar K. Dikshit (anatomy)
 John F. Fairbairn, II (clinical medicine—Mayo)
 William H. Flanigan (political science)
 Ramon Fusaro (dermatology)
 Floyd K. Garetz (psychiatry and neurology)
 Jerome E. Gates (general arts)
 Eugene Gedgaudas (radiology)
 Clifton Gray (Division of Social Sciences—Morris)
 William L. Hathaway (social studies)
 John W. Hayden (civil engineering and hydraulics)
 Wells Hively, II (educational psychology)
 John R. Howe (history)
 Alan H. Humphreys (elementary education)
 James C. Hunt (clinical medicine—Mayo)
 Alan G. Hunter (dairy husbandry)
 Robert L. Jackson (elementary education)
 Hugo H. John (School of Forestry)
 Bill W. Kennedy (plant pathology and physiology)
 Frederick W. L. Kerr (clinical surgery—Mayo)
 James M. Kingsley (Library)
 Roger A. Kleese (agronomy and plant genetics)
 Alex Kurak (literature, writing, and speech)
 Jesse K. Lair (rhetoric)
 Clifford F. Lake (clinical otolaryngology and rhinology—Mayo)
 Erle V. Leichty (history)
 Robert G. Lindsay (School of Journalism and Mass Communication)
 Hugh B. Lynn (clinical surgery—Mayo)
 Edgar L. Makowski (obstetrics and gynecology)
 Albert Marden (School of Mathematics)
 Richard R. Martin (speech)
 Dwight C. McGoan (surgery—Mayo)
 Warren F. McGuckin (biochemistry—Mayo)
 Lawrence Merl (School of Social Work)
 Chester J. Mirocha (plant pathology and physiology)
 George D. Molnar (medicine—Mayo)
 Arthur R. Page (pediatrics)
 Thomas W. Parkin (clinical medicine—Mayo)
 Richard E. Phillips (poultry science)
 Jesse H. Pomroy (agricultural engineering)
 Carl H. Poppe (School of Physics)
 Peter A. Rejto (School of Mathematics)
 John W. Reynolds (pediatrics)
 James L. Scoggins (English)
 Belle A. Sheno (electrical engineering)
 Arnold K. Solstad (agricultural engineering)
 Eduard J. Stadelmann (plant pathology and physiology)
 Robert A. Stein (Law School)
 Gunner B. Stickler (pediatrics—Mayo)
 Paul E. Strandjord (laboratory medicine)
 Joo Ho Sung (neurology)
 Harold S. Swofford, Jr. (School of Chemistry)
 Yau-Chien Tang (School of Physics)
 Auke Tellegen (psychology)
 Louis E. Toth (School of Mineral and Metallurgical Engineering)
 Jack Van't Hof (botany)
 Warren J. Warwick (pediatrics)
 Donovan J. Watley (Student Counseling Bureau)
 Hugh D. Westgate (anesthesiology)
 Frank B. Wilderson (special education)

Assistant Professor and Extension Economist, Public Affairs, to Associate Professor and Extension Economist, Public Affairs

Arley D. Waldo (agricultural economics)

Assistant Professor and Extension Agronomist to Associate Professor and Extension Agronomist

Gerald R. Miller (agronomy and plant genetics)

Assistant Professor and Extension Training Specialist to Associate Professor and Extension Training Specialist

Ronald M. Brown (rhetoric)

Assistant Professor and Chief Catalog Librarian to Associate Professor and Chief Catalog Librarian

Paul D. Berrisford (catalog department)

Instructor to Associate Professor

Lawrence H. Meskin (School of Dentistry)

Burton L. Shapiro (School of Dentistry)

Lecturer to Associate Professor

Dolph Hess (School of Social Work)

John S. Hoyt, Jr. (extension economist)

Visiting Assistant Professor to Assistant Professor

Naresh C. Jain (School of Mathematics)

Research Associate to Assistant Professor

Wayne W. Schmaedeke (School of Mathematics)

Instructor to Assistant Professor

Leon A. Adcock (obstetrics and gynecology)

Martin A. Adson (surgery—Mayo)

George E. Ahlgren (biology—Duluth)

Richard D. Ashmun (secondary education)

Anthony J. Bianco, Jr. (orthopedic surgery—Mayo)

Thomas G. Boman (education and psychology—Duluth)

Paul Bransford (psychiatry and neurology)

Eran O. Burgert, Jr. (pediatrics—Mayo)

Douglas T. Cody (otolaryngology and rhinology—Mayo)

Malcolm Y. Colby, Jr. (radiology—Mayo)

Bernard J. Conlin (dairy husbandry)

Francis E. Donohue (medicine—Mayo)

Anna L. Ellington (neurology)

John E. Faber (obstetrics and gynecology—Mayo)

LaRue Johnson (veterinary medicine)

Sun Myoung Kahng (Division of Social Sciences—Morris)

George H. Knightly (School of Mathematics)

Robert A. Kyle (medicine—Mayo)

Sander M. Latts (psychology, philosophy, and family studies)

Archibald I. Leyasmeyer (English)

Roger E. Machmeier (agricultural engineering)

William M. Marchand (rhetoric)

James B. McBean (otolaryngology and rhinology—Mayo)

Donald C. McIlrath (surgery—Mayo)

Michael V. Molitor (classics)

Richard A. Morris (history—Duluth)

George K. Olson (art education)

Kenneth A. Osterberg (pathology)

Janis J. Penikis (political science)

Zigmund Priede (studio arts)

Janis Priedkalns (veterinary anatomy)

Donald E. Ralston (medicine—Mayo)
 Grace M. Sarosi (School of Nursing)
 Richard H. Schultz (veterinary obstetrics and gynecology)
 Sheldon G. Sheps (medicine—Mayo)
 Marilyn J. Sjoberg (Slavic and East European languages)
 Reginald A. Smith (obstetrics and gynecology—Mayo)

Instructor and Librarian to Assistant Professor and Librarian

Virginia Doneghy (catalog department)
 Katharine M. Holum (music library)
 Esther Peterson (catalog department)
 Henry C. Scholberg (Ames Library of South Asia)

Instructor and Assistant Librarian to Assistant Professor and Assistant Librarian

Jessie Richardson (Bio-Medical Library)

Instructor and Archivist to Assistant Professor and Archivist

Maxine Clapp (special collections)

Mental Hygienist and Instructor to Mental Hygienist and Assistant Professor

Shirley M. Corrigan (University Health Service)

Lecturer to Assistant Professor

Charles E. Carson (geology)
 Lonnie J. Durham (English)
 Darrell A. Frohrib (mechanical engineering)
 Charles M. Nolte (speech, communication, and theatre arts)
 Hertha J. Schulze (speech, communication, and theatre arts)
 Thomas H. Walz (School of Social Work)

Research Fellow to Assistant Professor

Edgar A. Persons (agricultural education)

Resident Fellow to Assistant Professor

John D. Allison (physical medicine and rehabilitation)
 Delmar R. Finco (veterinary medicine)
 James F. Pochtilla (physical medicine and rehabilitation)

PROMOTIONS AND TRANSFERS, 1967-68

Associate Dean for Social Sciences, College of Liberal Arts, and Professor, Geography, to Assistant Vice President and Professor, Office of the Vice President for Academic Administration

Fred E. Lukermann

Professor and Director, Space Science Center, School of Physics and Astronomy, to Dean, Institute of Technology, and Professor and Acting Director, Space Science Center

Warren B. Cheston

Professor and Acting Dean, Institute of Technology, to Director, University Computer Services, and Professor of Physics

Frank Verbrugge

Associate Dean, General College, and Professor, Physical Sciences, and Director to Dean and Professor, General College, and Director

Alfred L. Vaughan (University College)

Professor to Associate Dean for Social Sciences, College of Liberal Arts, and Professor

Lloyd H. Lofquist (psychology)

Professor to Associate Dean, College of Liberal Arts, and Professor

Gerhard H. Weiss (German)

Professor to Associate Dean and Professor, Institute of Technology

Robert F. Lambert (electrical engineering)

Director and Assistant Professor to Assistant Dean, Administration, General Extension Division, and Associate Professor

Austin G. Anderson (continuing legal education)

Assistant Professor to Assistant Dean and Assistant Professor, College of Medical Sciences

Robert Mulhausen (medicine)

Associate Professor and Associate Dean to Professor and Associate Dean

H. Mead Cavert (College of Medical Sciences)

Assistant Dean and Associate Professor to Assistant Dean and Professor

Norman W. Moen (social studies)

Associate Professor and Head to Professor and Head

LaVern A. Freeh (agricultural short courses)

Forrest J. Harris (social studies—General College)

James R. Murphy (music—Duluth)

John E. Verrill (secondary education—Duluth)

Associate Professor and Chairman to Professor and Chairman

John W. Webb (geography)

Associate Professor and Associate Chairman to Professor and Associate Chairman

O. Elden Johnson (anthropology)

Associate Professor and Assistant Chairman to Professor and Assistant Chairman

Josef L. Altholz (history)

Mary Turpie (English and American studies)

Associate Professor to Professor and Acting Program Director

John V. Jensen (communication program)

Associate Professor and Extension Entomologist to Professor and Extension Entomologist

Phillip K. Harein (entomology, fisheries, and wildlife)

Professor to Clinical Professor

William D. Kelly (surgery)

Associate Professor to Professor

Donald E. Anderson (electrical engineering)

Donald H. Blocher (educational psychology)

A. Mark Bolsterli (School of Physics and Astronomy)

Peter Busa (studio arts)

James B. Carey, Jr. (medicine)

Frederick M. Chapman (recreation and park administration)

Mary E. Corcoran (foundations of education)

Erwin Engeler (School of Mathematics)

William E. Gardner (secondary education)

Jesus Gil de Lamadrid (School of Mathematics)

Donald M. Gillmor (School of Journalism and Mass Communication)

Moy Fook Gum (psychology—Duluth)

- Anna T. Hampel (School of Dentistry)
 Wendall Josal (speech, communication, and theatre arts)
 Byrl J. Kennedy (internal medicine)
 Lewis D. Levang (English—Duluth)
 Sanford Lipsky (School of Chemistry)
 John A. Logothetis (neurology)
 R. Paul Marvin (agricultural education)
 C. A. McCarthy (School of Mathematics)
 Jack W. Miller (pharmacology)
 Herbert D. Mohring (economics)
 John Overend (School of Chemistry)
 Robert R. Owens (English—Duluth)
 Emil Pfender (mechanical engineering)
 Herbert L. Pick, Jr. (Institute of Child Development)
 Samuel H. Popper (educational administration)
 Warren L. Reynolds (School of Chemistry)
 Lawrence H. Smith (agronomy and plant genetics)
 Fredric R. Steinhauser (General College)
 William A. Stockdale (General College)
 Willard W. Tennyson (educational psychology)
 Melvin Waldfogel (art history)
 Donald B. Wetlaufer (biochemistry)
- Director and Assistant Professor to Director and Associate Professor*
 Peter Rosko (management studies)
- Assistant Professor and Head to Associate Professor and Head*
 Sylvan D. Burgstahler (mathematics and engineering—Duluth)
- Assistant Professor and Acting Head to Associate Professor and Acting Head*
 Walter L. Baeumler (sociology—Duluth)
- Assistant Professor and Chairman to Associate Professor and Chairman*
 David A. Stoppel (education—Crookston)
- Assistant Professor and Assistant Director to Associate Professor and Director*
 Alma Sparrow (public health nursing)
- Assistant Professor to Associate Professor and Director*
 Norman Craig (College of Medical Sciences)
- Assistant Professor and Assistant Director to Associate Professor and Assistant Director*
 Sheldon Goldstein (General Extension Division)
 Richard P. McDermott (Speech and Hearing Clinic)
- Assistant Professor and University Planner to Associate Professor and University Planner*
 Hugh G. S. Peacock (School of Architecture)
- Assistant Professor and District Supervisor to Associate Professor and District Supervisor*
 Dorothea Riemann (home economics extension)
- Assistant Professor and Clinic Dentist to Associate Professor and Clinic Dentist*
 Eugene E. Petersen (School of Dentistry)
- Assistant Professor and Extension Dairyman to Associate Professor and Extension Dairyman*
 J. William Mudge (animal science)

Soil Conservation Agent, Wright County, and Assistant Professor to Area Soils Agent and Associate Professor

J. Eugene Ellis (soil conservation agent)

Area Extension Coordinator and Assistant Professor to Area Extension Coordinator and Associate Professor

James R. Hoffbeck (area extension personnel)

Assistant to Director, Hospital Laboratories, and Assistant Professor to Associate Professor

Grace M. Ederer (laboratory medicine)

Assistant Professor to Associate Professor

Richard E. W. Adams (anthropology)

Russell S. Adams, Jr. (soil science)

H. Lee Adey (speech, communication, and theatre arts)

Joan Aldous (Family Study Center)

Wassilij Alexeev (Slavic and East European languages)

William J. Bemrick (veterinary pathology and parasitology)

Melvyn Berger (School of Mathematics)

Kenley J. Brauer (history)

William A. Brun (agronomy and plant genetics)

James N. Butcher (psychology)

Evelyn D. Crisp (General College)

Dale C. Dahl (agricultural economics)

Gary W. Dickson (management, production, and transportation)

Samuel D. Evans (West Central School and Experiment Station—Morris)

Paul W. Fox (psychology)

Virginia Fredricks (speech, communication, and theatre arts)

Erhard M. Friedrichsmeyer (German)

Benjamin Fuller (medicine)

Margaret P. Grindereng (School of Home Economics)

John M. Grewe (School of Dentistry)

Clifford Haga (English)

Daniel Halpern (physical medicine and rehabilitation)

Russell G. Hamilton, Jr. (Romance languages)

Harley E. Hanke (West Central School and Experiment Station—Morris)

Griselda F. Hanlon (veterinary surgery and radiology)

John P. Hill (Institute of Child Development)

Richard Hong (pediatrics)

James P. Houck, Jr. (agricultural economics)

Gerhard Joseph (English)

Donald W. Kahn (School of Mathematics)

Clara Kanun (General Extension Division)

K. S. P. Kumar (electrical engineering)

Robert T. Laudon (music)

Theodor A. Litman (hospital administration)

Joseph M. Livermore (Law School)

Keith Loken (veterinary microbiology and public health)

Owen Loveless (East and South Asian languages)

Herschel H. Lysaker (Technical Institute—Crookston)

Donald G. MacEachern (psychological foundations)

Roger E. Machmeier (agricultural engineering)

Lawrence C. Mantini (Romance languages)

Harold C. Matson (Southern School of Agriculture—Waseca)

Toni A. McNaron (English)

Willard Miller, Jr. (School of Mathematics)

Van D. Mueller (educational administration)

Robert Mullin (horticultural science)

Neal C. Nickerson, Jr. (educational administration)

Lowell E. Olson (Library School)

Donald E. Otterby (animal science)

Walter E. Parham (Minnesota Geological Survey)

Arthur W. Plumstead (English)
 Robert R. Randleman (trade and industrial education)
 Jonathan I. Richards (School of Mathematics)
 Nestor Riviere (School of Mathematics)
 Bimal Roquette (physical sciences—Morris)
 Martin Roth (English)
 Joseph W. Rust (North Central School and Experiment Station—Grand Rapids)
 Harvey B. Sarles (anthropology)
 George R. Sell (School of Mathematics)
 Hugo F. Sonnenschein (economics)
 Chester A. Sorensen (business administration—Duluth)
 Allan H. Spear (history)
 James E. Thompson (School of Mathematics)
 Cesar R. Umana (School of Dentistry)
 Stephen Wang (East and South Asian languages)
 David M. Wark (Student Counseling Bureau)
 Charles W. Wolfram (Law School)
 Mary L. Wyvell (General College)

Instructor and Director to Assistant Professor and Director

Willard D. Philipson (audio-visual extension)

Instructor and Extension Economist to Assistant Professor and Extension Economist

Charles H. Cuykendall (farm management)

Instructor and Assistant Coach to Assistant Professor and Assistant Coach

Patrick J. Bird (physical education for men)

Instructor and Senior Sanitarian to Assistant Professor and Senior Sanitarian

Walter H. Jopke (University Health Service)

Instructor to Assistant Professor

Richard H. Anderson (North Central School and Experiment Station—Grand Rapids)
 S. Marc Cohen (philosophy)
 James F. Cumming (anesthesiology and pharmacology)
 Nils H. Grimsbo (North Central School and Experiment Station—Grand Rapids)
 Alvin R. Hallgren (School of Forestry)
 Milton Howard (studio arts)
 Alfred H. Jones (history)
 Willis Kelly (education—Morris)
 Mary K. Klaurens (secondary education)
 Harvey J. Kupferberg (College of Pharmacy)
 Roger Larson (General College)
 Joseph G. Likely, Jr. (physics—Duluth)
 John Lin (mathematics—Morris)
 Amy Matsumoto (East and South Asian languages)
 John H. Ness (speech—Duluth)
 Earl Nolting, Jr. (Student Counseling Bureau)
 Dale W. Olsen (political science—Duluth)
 James Olson (physical sciences—Morris)
 Starling W. Price (rhetoric)
 Fredrick W. Seidl (social science—Morris)
 John K. Simmons (accounting)
 Thomas M. Speidel (pediatrics and School of Dentistry)
 George Starr (secondary education—Duluth)
 Jerry B. Stevens (veterinary pathology and parasitology)
 Dale E. Stroud (mortuary science)
 James D. Tracy (history)
 Reiko Tsukimura (East and South Asian languages)

Clinical Instructor to Clinical Assistant Professor

Melvin P. Baken (obstetrics and gynecology)
 Frederick E. Drill (orthopedic surgery)
 John A. Haugen (obstetrics and gynecology)
 Henry C. Meeker (obstetrics and gynecology)

Lecturer to Assistant Professor

Gene L. Piché (secondary education and speech, communication, and theatre arts)

Research Fellow to Assistant Professor

Sung Kyun John (otolaryngology)

LEAVES OF ABSENCE, 1966-67

- John Berryman, professor, humanities program, without salary 1966-67, to accept a Guggenheim Fellowship.
- Ernest G. Bormann, professor of speech and theatre arts, sabbatical furlough 1966-67, to write a book on religious and reform speaking in the United States from 1620 to 1920.
- John S. Chipman, professor of economics, without salary 1966-67, to serve as visiting professor at Harvard University.
- George C. Christie, professor, Law School, without salary February 1, 1966, to June 15, 1967, to serve as assistant general counsel for the Near East and South Asia, Agency for International Development.
- Richard J. Clendenen, professor, Law School, with salary September 6 to October 7, 1966, to work with the President's Commission on Law Enforcement and the Administration of Justice in Washington, D.C.
- Dean A. Crawford, professor and head of secondary education, University of Minnesota, Duluth, sabbatical leave 1966-67, to study factors influencing school adjustment and progress of Indian children in Northeast Minnesota.
- Laurence K. Cutkomp, professor of entomology, fisheries, and wildlife, continuation of leave without salary September 1, 1966, to June 30, 1967, to accept position as Senior Officer in the Joint Food and Agriculture Organization, International Atomic Energy Agency, Vienna, Austria.
- Allen Downs, professor, art department, 67% time leave without salary 1966-67, to work in Minnesota School Mathematics Center producing geometry films.
- Marvin D. Dunnette, professor of psychology, 50% time leave without salary spring quarter 1965-66, to head a team of psychologists in a national survey of research involving identifying management potential.
- Arnold M. Flikke, professor of agricultural engineering, without salary September 16, 1966, to December 15, 1967, to accept a National Science Foundation Science Faculty Scholarship for study at Auburn University, Auburn, Alabama.
- Edward W. Francel, professor, School of Social Work, sabbatical furlough October 1, 1966, to June 30, 1967, to accept a fellowship grant under the Fulbright-Hays Act and lecture in community development at the Social Services Academy in Ankara, Turkey.
- Harry Furstenberg, professor, School of Mathematics, continuation of leave without salary 1966-67, to accept an Alfred P. Sloan Foundation Research Fellowship at Hebrew University, Israel.
- Alrik Gustafson, professor and chairman, department of Scandinavian, and director, Center for Northwest European Language and Area Studies, without salary January 1 to June 15, 1967, to accept an award as director of the Center for Northwest Studies offered by the Office of Education in Washington to continue work on a book, *Strindberg and the Theatre*, in Stockholm, Sweden.
- Helmut G. Heinrich, professor of aeronautics and engineering mechanics, without salary winter quarter 1966-67, to present a paper at the Society of Aerospace Sciences in Germany and to be a guest lecturer at the University of Stuttgart, Germany.

- Walter W. Heller, professor of economics, without salary 1966-67, to use a Carnegie Corporation "Year of Reflection" Fellowship.
- Edward L. Hill, professor, School of Physics, without salary 1966-67.
- William S. Howell, professor of speech, communication, and theatre arts, without salary December 16, 1966, to June 15, 1967, to accept a guest professorship at the University of Hawaii.
- Thomas H. King, professor of plant pathology and physiology, continuation of leave without salary January 1 to June 30, 1967, to serve as project manager of a United Nations Fund project to organize and operate a center for research and training in rice production in Thailand.
- Samuel Krislov, professor of political science, without salary September 16, 1966, to January 31, 1967, to serve as visiting professor at Columbia University, and sabbatical furlough February 1 to June 15, 1967, for research and further study in law and social science methods.
- Jerome Liebling, professor of studio arts, sabbatical furlough 1966-67, for special studies in film and still photography in Spain and France.
- Benjamin E. Lippincott, professor of political science, without salary 1966-67, to serve as visiting professor at Johns Hopkins University.
- Eugene Mather, professor of geography, without salary fall quarter 1966-67, to teach at the University of British Columbia.
- Grover E. Maxwell, professor, Minnesota Center for Philosophy of Science, sabbatical furlough 1966-67, for research and study in the philosophy of science at London School of Economics.
- Allen H. McCoid, professor, Law School, sabbatical furlough September 16, 1966, to March 15, 1967, for research in the area of law and medicine, time to be spent in the Twin Cities area.
- Gayle W. McElrath, professor of mechanical engineering, continuation of 75% time leave without salary 1966-67, to serve as consultant with the firm Bayer, Kobert and Associates.
- Charles H. McLaughlin, professor of political science, without salary 1966-67, to serve as visiting professor at the University of Hawaii.
- William C. Meecham, professor of aeronautics and engineering mechanics, without salary 1966-67, to conduct research at Lockheed Research Laboratory, Palo Alto, California.
- Jack C. Merwin, professor of educational psychology, continuation of leave without salary fall and winter quarters 1966-67, to serve as director of the Exploratory Committee on Assessing the Progress of Education.
- Robert E. Moore, professor of English, sabbatical furlough 1966-67, to study architecture, painting, and landscape design in England.
- Thomas Morley, professor of botany, sabbatical furlough 1966-67, for research on spring flora of Minnesota and travel to Brazil to collect plant material.
- Glenn C. Nelson, professor, Division of Humanities, Duluth, sabbatical furlough 1966-67, to do research on ceramics in Europe.
- Johannes C. G. Nitsche, professor, School of Mathematics, sabbatical furlough 1966-67, to carry out intensified research on partial differential equations and minimal surfaces in Minneapolis and in Heidelberg, Germany.
- Arvid N. Pearson, professor and head, Division of Social Sciences, Duluth, continuation of leave without salary 1966-67, to serve as adult education and rural sociology expert for UNESCO to establish a Department of Agricultural Education at the Mindanao Institute of Technology, Philippine Islands.
- Otto P. Pflanze, professor of history, sabbatical furlough 1966-67, for research and writing in Germany on the second volume of the book *Bismarck and the Development of Germany*.
- Valworth R. Plumb, professor and chairman, Division of Education and Psychology, Duluth, without salary December 1, 1966, to June 30, 1967, to serve as project specialist in educational procedures for the Ford Foundation at the University of Calcutta.
- Stephen Prager, professor, School of Chemistry, sabbatical furlough 1966-67, to serve as visiting professor at the University of Erlangen, Germany.
- William E. Ranz, professor of chemical engineering, sabbatical furlough 1966-67, for research in fluid mechanics at Stanford University.

- Armand A. Renaud, professor of Romance languages, sabbatical furlough 1966-67, to complete a manuscript on the baroque literature in France, with time to be spent in various countries in Europe.
- A. Glenn Richards, professor of entomology, fisheries, and wildlife, sabbatical furlough October 1, 1966, to September 30, 1967, for research at Max Planck Institut für Verhaltensphysiologie, Seewiesen, Germany.
- John Rood, professor of studio arts, without salary 1966-67, for research projects and creative work.
- Arnold Rose, professor of sociology, without salary 1966-67, for research project on European integration under the Office of International Programs.
- Harold Ruben, professor of statistics, without salary 1966-67, to serve as visiting professor at the University of Toronto.
- Burtrum C. Schiele, professor of psychiatry and neurology, with salary October 26 to December 26, 1966, to study the status of tranquilizing and anti-depressant drugs in India for the Clinical Drug Evaluation Committee of the National Institute of Mental Health, with time to be spent in India, Korea, Thailand, and Lebanon.
- Peter Signer, associate professor, School of Physics, continuation of leave without salary 1966-67, to set up a laboratory of mass spectroscopy at the Federal Institute of Technology in Zurich, Switzerland.
- Ephraim M. Sparrow, professor of mechanical engineering, continuation of leave without salary 1966-67, to participate in a United States Agency for International Development program at the University of Brazil to develop a graduate program in mechanical engineering.
- Athelstan F. Spilhaus, professor, School of Physics, with salary fall quarter 1966-67, to develop a series of science seminars and lectures.
- Allen Tate, professor of English, without salary 1966-67, to serve as visiting professor at the University of North Carolina for the fall semester and at Vanderbilt or Princeton in the spring.
- Hans F. Weinberger, professor, School of Mathematics, sabbatical furlough 1966-67, for mathematical research at the Courant Institute of Mathematical Sciences of New York University.
- Paul W. Bamford, associate professor of history, without salary 1966-67, to accept a fellowship for research at the Institute of Advanced Study, Princeton, New Jersey.
- John O. Buxell, associate professor, School of Public Health, continuation of leave without salary 100% time July 1 to September 30, 1966, and 50% time October 1, 1966, to June 30, 1967, because of illness.
- Eugene R. Chenette, associate professor of electrical engineering, without salary 1966-67, to work for Bell Labs, Allentown Semiconductor Device Laboratory.
- Donald E. Davis, associate professor of educational administration, continuation of 75% time leave without salary 1966-67, to serve as Title V program director for the State Department of Education.
- Gordon B. Davis, associate professor and director of School of Business Administration Computer Center, without salary June 16, 1966, to September 15, 1967, to serve as consultant to American Institute of Certified Public Accountants.
- Arnold N. Enker, associate professor, Law School, without salary 1966-67, to teach at the University of Israel.
- Paul C. Fife, associate professor, School of Mathematics, without salary 1966-67, to accept a Fulbright grant for research at Technische Hochschule, Karlsruhe, Germany.
- William H. Flanagan, associate professor of political science, without salary spring quarter 1966-67, for research on the development of political behavior laboratories under a grant from the Office of Education.
- Edwin Fogelman, associate professor of political science, without salary spring quarter 1966-67, to work on the development of comparative politics laboratories under a grant from the Office of Education.
- Caroline M. Frederickson, associate professor and district supervisor, home economics extension, without salary April 29, 1966, to June 30, 1967.
- Donald A. Geffen, associate professor, School of Physics, sabbatical furlough 1966-67, for research program with the physics department at the Massachusetts Institute of Technology.

- Peter Gregory, associate professor of economics, without salary 1966-67, to accept a visiting appointment to the economics research staff of the International Labour Office in Geneva.
- William L. Hathaway, associate professor, General College, without salary fall quarter 1966-67, to campaign for candidacy for the House of Representatives in the Fifth Congressional District.
- John C. Hause, associate professor of economics, without salary spring quarter 1966-67, to conduct independent research.
- Frank D. Hirschbach, associate professor of German, without salary 1966-67, to serve as guest professor at Macalester College.
- Howard B. Jenkins, associate professor, School of Mathematics, without salary 1966-67, to visit Stanford University.
- John V. Jensen, associate professor, communication program and speech and theatre arts, sabbatical furlough 1966-67, for research and writing, time to be spent in Minneapolis.
- Martin H. Lease, Jr., associate professor, Division of Social Science, Duluth, sabbatical furlough 1966-67, to study the judiciary and conduct research on common law procedures and legal systems in Minnesota, England, France, and Germany.
- Sanford Lipsky, associate professor, School of Chemistry, sabbatical furlough 1966-67, for research at the National Bureau of Standards.
- Albert Marden, associate professor, School of Mathematics, without salary 1966-67, to serve as visiting associate professor at Cornell University.
- Rupert I. Murrill, associate professor of anthropology, sabbatical furlough 1966-67, for research on social biology of ancient Greece at the University of Athens, Greece.
- J. Russell Nelson, associate professor, School of Business Administration, without salary 1966-67, to serve an internship in academic administration with the American Council on Education.
- Lewis H. Nosanow, associate professor, School of Physics, without salary December 16, 1966, to June 15, 1967, to study at the University of Utrecht, the Netherlands.
- George L. Perry, associate professor of economics, without salary 1966-67, to accept a Ford Foundation Faculty Fellowship.
- Philip W. Porter, associate professor of geography, sabbatical furlough 1966-67, to continue research on African subsistence economies in relation to areal and secular variability of environmental parameters.
- John W. Reynolds, associate professor of pediatrics, with salary August 1, 1966, to June 30, 1967, to participate in research with Dr. Egon Diczfalusy of the Karolinska Institut, Stockholm, Sweden.
- Burton M. Sapin, associate professor of political science, without salary January 16 to March 15, 1967, to lecture on American government and foreign policy at African colleges and universities under a State Department "American specialist" grant.
- James C. Sentz, associate professor of agronomy and plant genetics, without salary 1966-68, to serve as visiting professor at the University of the Philippines College of Agriculture.
- Ralph E. Smith, associate professor and superintendent, West Central School of Agriculture and Experiment Station, Morris, sabbatical furlough February 1 to May 31, 1966, and September 12, 1966, to January 31, 1967, for graduate study at the University of Nebraska.
- Warren B. Stenberg, associate professor, School of Mathematics, without salary 1966-67, to continue work on a writing team producing new texts in mathematics at Stanford University.
- Theodore W. Sudia, associate professor of agronomy and plant genetics, without salary February 1 to December 31, 1967, to serve as associate executive director of the American Institute of Biological Sciences, Washington, D.C.
- Romeyn Taylor, associate professor of history, sabbatical furlough 1966-67, for research in Taiwan.
- John C. Wright, associate professor, Institute of Child Development, sabbatical furlough December 16, 1966, to June 15, 1967, to study cognitive development in children at Harvard University.

- Helen J. Yesner, associate professor, School of Social Work, sabbatical furlough 1966-67, to evaluate the community development training program in the impoverished section of Northeast Thailand.
- Earl R. Andrews, assistant professor, Division of Education and Psychology, Duluth, without salary 1966-67, to continue graduate work at the University of Missouri.
- Donald R. Bender, assistant professor, School of Home Economics and anthropology, and extension specialist, Agricultural Extension Service, with salary June 13 to July 20, 1966, and without salary July 21 to August 6, 1966, to accept an NDEA Foreign Language Fellowship in the Yoruba language at Duquesne University.
- Melvyn S. Berger, associate professor, School of Mathematics, without salary for September 16, 1966, to June 15, 1968, for writing and research at the Courant Institute of Mathematical Sciences, New York University.
- Richard W. Burkey, assistant professor, Division of Science and Mathematics, Morris, without salary 1966-67, to further education.
- Charles E. Carson, assistant professor, Division of Science and Mathematics, Duluth, without salary winter quarter 1966-67, for travel and study in Australia.
- Evelyn D. Crisp, assistant professor, General College, without salary winter quarter 1966-67, for personal reasons.
- Nina Draxten, assistant professor, General College, sabbatical furlough 1966-67, to do further research and writing on Kristofer Janson, time to be spent in Minneapolis.
- Laverne B. Forest, Rock County agricultural agent and assistant professor, Agricultural Extension Service, sabbatical furlough October 1, 1966, to June 14, 1967, to study for master's degree at Colorado State University.
- Harry M. Friedman, assistant professor, Division of Science and Mathematics, Morris, without salary spring quarter 1966-67, for graduate study.
- John B. Heald, assistant professor, Division of Humanities, Morris, without salary 1966-67, for graduate study.
- Mary J. Hitchcock, assistant professor, School of Home Economics, without salary 1966-67, to continue work toward Ph.D. degree at the University of Wisconsin.
- Mei Ling Hsu, assistant professor of geography, without salary September 16, 1966, to March 15, 1967, for field research in Taiwan and East Asia.
- Yolande J. Jenny, assistant professor, Division of Humanities, Duluth, without salary winter quarter 1966-67, to complete requirements for Ph.D. degree at Duke University.
- Maxine Klein, assistant professor of speech, communication, and theatre arts, without salary spring quarter 1966-67, to join her husband in Guatemala.
- M. Jean Krech, Martin County home agent and assistant professor, Agricultural Extension Service, sabbatical furlough March 18, 1967, to March 15, 1968, for graduate study.
- Josef A. Mestenhauer, assistant professor and assistant director, Office of Adviser to Foreign Students, sabbatical furlough 1966-67, to supplement pending requests for grants in order to study cross-cultural variables of leadership in the Philippines.
- Michael R. Moldover, assistant professor, School of Physics, without salary September 16 to December 31, 1966, to complete work at Stanford University.
- Ernest J. Pavlock, assistant professor, School of Business Administration, without salary 1966-67 to serve with the accounting firm Touche, Ross, Bailey and Smart, Chicago.
- Arthur W. Plumstead, assistant professor of English, without salary 1966-67, to edit Emerson's journals at Harvard University.
- Richard K. Randell, assistant professor of studio arts, without salary 1966-67, time to be spent at Sacramento State College.
- Howard L. Stensrud, assistant professor, Division of Science and Mathematics, Morris, without salary 1966-67, to study oceanography at the University of Washington.
- Thomas P. Sullivan, assistant professor of veterinary physiology and pharmacology, without salary July 1, 1966, to June 30, 1968, to serve in the A.I.D. program at Ahmadu Bello University in Nigeria.

Suzanne S. Tinker, assistant professor of physical education for women, without salary May 1, 1966, to June 15, 1967, for medical reasons.

LEAVES OF ABSENCE, 1967-68

- Alfred Aeppli, professor, School of Mathematics, sabbatical furlough 1967-68, to work at the University of Oxford in differential topology and to give talks in Germany.
- Henry E. Allen, professor and coordinator, Students' Religious Activities, sabbatical furlough September 1, 1967, to May 31, 1968, to study religious phenomena and developments in Asia.
- Donald E. Anderson, professor of electrical engineering, without salary 1967-68, to work for the G. T. Schjeldahl Company, Northfield, Minnesota.
- V. Elving Anderson, professor of genetics and assistant director, Dight Institute, sabbatical furlough September 16, 1967, to June 15, 1968, to study behavior in phenylketonuric children at the Mental Retardation Clinic of the Children's Hospital Medical Center, Boston.
- Richard G. Bond, professor and director of environmental health, School of Public Health, 75% time leave without salary January 1 to March 15, 1968, to serve as consultant for the National Institutes of Health, Bethesda, Maryland.
- Robert C. Brasted, professor, School of Chemistry, with salary May 29 to June 15, 1967, to lecture and present a paper for the National Foundation in India.
- Jan O. M. Broek, professor of geography, without salary September 16, 1967, to March 15, 1968, to teach at the University of California, Berkeley.
- Oswald H. Brownlee, professor of economics, without salary 1967-68, to serve as Rockefeller Foundation representative in economics at the University of Chile and the Catholic University, Santiago.
- Daniel V. Bryan, professor and chairman, communication program, without salary 1967-68, for research training at the Center for Research in Human Learning under a National Institute of Mental Health Fellowship.
- Theodore W. Clymer, professor of elementary education, without salary 1967-68, to study new developments in psychology of learning, language learning, reading research, and linguistics.
- Willard W. Cochrane, dean, Office of International Programs, and professor of agricultural economics, without salary February 1 to April 30, 1968, to serve as Ford Foundation consultant on agricultural planning to the Ministry of Agriculture, government of India.
- Ruth E. Eckert, professor of foundations of education, sabbatical furlough March 16 to June 15, 1968, and December 16, 1968, to March 15, 1969, to complete research and writings on a study of faculty in American colleges and universities and to visit institutions in America and abroad at which similar research is conducted.
- Arnold M. Flikke, professor of agricultural engineering, sabbatical furlough December 16, 1967, to August 31, 1968, to complete studies for Ph.D. degree at Auburn University.
- Charles H. Foster, professor of English, sabbatical furlough 1967-68, to edit the Journals 1847-55 of Benjamin Browne Foster and other papers on the development of New England intellectual and social history from the American Renaissance to the Gilded Age.
- Albert W. Frenkel, professor of botany, sabbatical furlough 1967-68, to attend the International Biochemical Congress in Tokyo and to visit laboratories engaged in the study of photosynthesis in Japan and possibly in Europe.
- Robert Fulton, professor of sociology, without salary 1967-68, to work at the University of Osmania in Hyderabad, India, in connection with a contract between the U.S. State Department and the University of Minnesota.
- Steven A. Gaal, professor, School of Mathematics, sabbatical furlough 1967-68, to further research in number theory and abstract harmonic analysis, with time to be spent at the University of Minnesota.
- Mark A. Graubard, professor and chairman, natural science program, sabbatical furlough 1967-68, for research on the history of Japanese astrology and alchemy, and to be a guest lecturer at the University of Kyoto.

- Vivian H. Hewer, professor of psychology, Student Counseling Bureau, sabbatical furlough January 1 to March 31, 1968, to expand the manuscript on Training of Psychologists for Young Adults, with emphasis on a review of research literature on the characteristics of the young adult.
- William A. Kavanaugh, professor of industrial education, without salary 1967-69 (continued), to serve as teacher education consultant and specialist in curriculum for the government of Turkey and the United States government at the Men's Technical Teacher Training College, Ankara, Turkey.
- Robert J. Keller, professor and dean, College of Education, with salary November 2, 1967, to February 3, 1968, to participate in the Office of International Programs Project for Teacher Education and Development in Thailand and Afghanistan.
- Samuel Krislov, professor of political science, sabbatical furlough fall quarter 1967-68, for research and further study in law and social science methods under a grant from the Russell Sage Foundation at Northwestern University.
- David L. LaBerge, professor of psychology, without salary 1967-68, to explore new ways of teaching undergraduate psychology courses and to study and reflect on research project in "human attention" at the University of California, Irvine.
- Robert J. Levy, professor, Law School, sabbatical furlough 1967-68, to accept appointment as Fellow, Center for Advanced Study in Behavioral Sciences, Palo Alto, California.
- Walter Littman, professor, School of Mathematics, sabbatical furlough 1967-68, to improve skills in the area of partial differential equations and related topics at the Courant Institute of Mathematical Sciences, New York University.
- Thomas S. Lundgren, professor of aeronautics and engineering mechanics, sabbatical furlough 1967-68, to study applied mathematics and fluid mechanics at the California Institute of Technology.
- Kenneth MacCorquodale, professor of psychology, sabbatical furlough 1967-68, to prepare and write a critical review of Skinner's and Chomsky's opposite views on verbal behavior and to write up empirical data already collected and being analyzed, with time to be spent at the University of California, San Diego.
- Richard M. Magraw, director, comprehensive clinic program, and professor of internal medicine and psychiatry and neurology, without salary October 1, 1967, to March 31, 1969, to serve with the Bureau of Health Services, Silver Springs, Maryland.
- Eugene Mather, professor of geography, without salary winter quarter 1967-68, to carry out established field investigation and to further research and writing projects.
- William A. McDonald, professor of classics, sabbatical furlough 1967-68, to continue field direction of University of Minnesota Messenia Expedition in Greece.
- Harold M. Mooney, professor of geology and geophysics, sabbatical furlough winter and spring quarters 1967-68, for research on deep-focus earthquakes in the southwest Pacific regions.
- C. Robert Morris, professor, Law School, without salary 1967-68, to teach at Stanford University Law School.
- Lura M. Morse, professor, School of Home Economics, sabbatical furlough September 1, 1967, to August 31, 1968, to do research on the mechanism of induction of congenital abnormalities in folic acid deficiency at Berkeley, California.
- Albert J. Moscovitz, professor, School of Chemistry, sabbatical furlough 1967-68, to collaborate with scientific colleagues on research problems at the Bell Telephone Laboratories in Murray Hill, New Jersey.
- Paul R. O'Connor, professor, School of Chemistry, without salary spring quarter 1967-68, to assist with the organization and presentation of a series of institutes for high school and college chemistry teachers under the auspices of the National Science Foundation.
- Arvid N. Pearson, professor and head, Division of Social Sciences, Duluth, continuation of leave without salary 1967-68, to serve as adult education and rural sociology expert for UNESCO to establish a department of

- agricultural education at the Mindanao Institute of Technology, Philippine Islands.
- Luther J. Pickrel, professor and director of extension, with salary 1967-68, to carry out an investigation of the impact of federal research funding on the University of Minnesota in cooperation with the Graduate School.
- Valworth R. Plumb, professor and chairman, Division of Education and Psychology, Duluth, continuation of leave without salary 1967-68, for assignment as project specialist with the Ford Foundation in India.
- Harold Ruben, professor of statistics, without salary 1967-68, to serve at Birkbeck College, University of London.
- H. Etta Saloshin, professor, School of Social Work, sabbatical furlough 1967-68, to review human behavior content, with some time to be spent in Europe.
- Robert L. Scott, professor of speech, communication, and theatre arts, sabbatical furlough 1967-68, for study and writing, with time to be spent at the University of Minnesota.
- L. Edward Scriven, II, professor of chemical engineering, without salary fall quarter 1967-68, to serve as visiting professor at the University of Pennsylvania.
- James Serrin, professor, School of Mathematics, sabbatical furlough 1967-68, for research in partial differential equations, calculus of variations, and fluid mechanics and possibly writing a graduate text on the theory of differentiation.
- Mulford Q. Sibley, professor of political science, without salary 1967-68, to serve as visiting professor at the State University of New York, Binghamton, New York.
- Gerald M. Siegel, professor of speech, Speech Clinic, sabbatical furlough September 1, 1967, to June 30, 1968, for development research on fluency characteristics of young children at the University of Kansas.
- Milton Sobel, professor of statistics, without salary fall quarter 1967-68 and winter quarter 1968-69, and sabbatical furlough December 16, 1967, to December 15, 1968, for research and writing in the area of London.
- Martin Steinmann, Jr., professor of English, sabbatical furlough winter quarter 1967-68, for research in theory and metatheory of rhetoric, with time to be spent in Minneapolis.
- Harold W. Stevenson, director and professor, Institute of Child Development, without salary 1967-68, to serve as Fellow, Center for Advanced Studies in the Behavioral Sciences, Stanford, California.
- Murray A. Straus, professor of sociology, without salary fall quarter 1967-68, to serve as visiting professor, University of Kentucky.
- Hylton A. Thomas, professor of art history, sabbatical furlough 1967-68, for research on German, Austrian, and Italian art of the 18th century on a Fulbright grant, with time to be spent in Germany, London, Venice, and New York.
- Russell S. Tobias, professor, School of Chemistry, sabbatical furlough September 1, 1967, to August 31, 1968, to study the synthesis, structure, and bonding of organometallic compounds of the transition metals at Technical University, Munich, and Imperial College, London.
- Fernando Torres, professor of neurology, with salary February 13 to April 14, 1967, to serve on the ship "Hope" and teach at the University of Cartagena Medical School, Colombia, South America.
- Kenneth T. Whitby, professor of mechanical engineering, sabbatical furlough 1967-68, to study aerosol and particle technology at the Institute for Mechanische Verfahrenstechnik of the Technische Hochschule Karlsruhe, Zurich, Switzerland.
- Frank M. Whiting, professor of speech, communication, and theatre arts, sabbatical furlough fall quarter 1967-68, to do reading and research in the avant-garde theatre.
- Roger E. Wilk, professor and chairman of educational psychology, without salary September 1, 1967, to August 31, 1968, to accept a postdoctoral fellowship in educational research at the Stanford Center for Research and Development on Teaching, Palo Alto, California.
- John E. Anderson, associate professor of mechanical engineering, without salary November 1, 1967, to June 15, 1968, to serve as an exchange staff

- member at the Institute of Heat and Mass Transfer in Minsk, Russia, in the exchange program between the National Academy of Sciences of the United States and the Soviet Academy of Sciences.
- Ayers Bagley, associate professor of foundations of education, sabbatical furlough winter and spring quarters 1967-68 and spring quarter 1968-69, for research and writing at the University of Minnesota and in East Coast American libraries and British libraries.
- Frank T. Benson, Jr., associate professor and administrative assistant, General College, leave of absence September 1, 1967, to May 31, 1968, to serve as administrative intern at Ohio University, salary to be paid by the American Council on Education.
- Hyman Berman, associate professor of history, without salary 1967-68, to serve as visiting professor at the University of California, Berkeley.
- Patrick J. Borich, district supervisor of county extension work and associate professor, Agricultural Extension Service, sabbatical furlough October 31, 1967, to October 31, 1968, for graduate study at the University of Chicago.
- Charles R. Bruning, associate professor and chairman, Division of Education, Morris, without salary June 15, 1967, to June 14, 1968, to assume a position with the Upper Midwest Regional Laboratory.
- Martin K. Christiansen, associate professor of agricultural economics and extension economist in marketing, without salary January 29, 1968, to January 31, 1969, to serve with the Economic Research Service, USDA, Washington, D.C.
- Evelyn S. Coleman, associate professor of German and northwest European language and area studies, without salary 1967-68, for research in Modern and Old Icelandic at the University of Iceland under a Fulbright-Hays Center Faculty Fellowship.
- Beulah E. R. Compton, associate professor, School of Social Work, without salary 1967-68, for research on the concept of human motivation at Chicago University under a grant from the National Institutes of Health.
- Evelyn D. Crisp, associate professor, General College, without salary spring quarter 1967-68, for personal reasons.
- Carlos F. Diaz, associate professor of economics, without salary fall and winter quarters 1966-67, to accept a Guggenheim Foundation Fellowship.
- Margaret M. Forbes, associate professor of classics, without salary 1967-68, to serve as visiting associate professor at the University of Texas.
- William E. Gardner, associate professor of secondary education, sabbatical furlough 1967-68, for research on the ways in which British teachers of history and social science view their role in the political socialization of children, with time to be spent in Britain.
- C. Gustav Hard, associate professor of horticultural science and extension horticulturist, sabbatical furlough 1967-68, for a comprehensive study of regional recreation area development at the Agricultural College for Norway, to help produce a master plan that may serve as a model in other regions.
- Nils Hasselmo, associate professor, Center for Northwest European Language and Area Studies and Scandinavian, without salary fall quarter 1967-68, to teach at Harvard University.
- John C. Hause, associate professor of economics, without salary spring quarter 1967-68, to conduct independent research.
- Jesse K. Lair, associate professor of rhetoric, without salary 1967-68, to teach in Montana because of health.
- John Logothetis, associate professor of neurology, sabbatical furlough January 1 to December 31, 1968, to conduct a study in Greece to assess the frequency and type of neurologic disorders associated with hemoglobinopathies.
- Gareth B. Matthews, associate professor of philosophy, sabbatical furlough September 16, 1967, to June 15, 1968, for research on St. Anselm's Ontological Argument at Harvard University.
- Stewart Oakley, associate professor, Center for Northwest European Language and Area Studies, without salary 1967-68, to serve as visiting professor at the University of Edinburgh.
- John Overend, associate professor, School of Chemistry, sabbatical furlough 1967-68, to pursue work in the area of anharmonic vibrations and vibra-

- tion-rotation interactions in polyatomic molecules in Berkeley, California, and Kyoto, Japan.
- William E. Pruitt, associate professor, School of Mathematics, sabbatical furlough 1967-68, to study sample path properties of processes having stationary and independent increments with Professor S. J. Taylor at the University of London.
- Charles R. Purdy, associate professor, School of Business Administration, without salary 1967-68, to teach at the University of Washington.
- Peter A. Rejto, associate professor, School of Mathematics, sabbatical furlough 1967-68, for study of the mathematical methods of quantum field theory at Universidad de Zaragoza, Spain.
- George R. Sell, associate professor, School of Mathematics, without salary 1967-68, to visit the University of Southern California.
- Curtis H. Stanley, associate professor, School of Business Administration, without salary 1967-68, to teach and do research and writing at Ohio State University.
- Travis I. Thompson, associate professor of psychiatry and neurology, without salary September 1, 1967, to August 31, 1968, for cooperative research at Cambridge University, England.
- David A. Wark, associate professor of sociology, without salary winter quarter 1967-68, to serve as visiting professor at the University of California, Riverside.
- William R. Webber, associate professor, School of Physics, sabbatical furlough 1967-68, to study the relationships between cosmic ray astrophysics and radio astronomy and the new field of x-ray astronomy and to serve as visiting professor at the University of Adelaide, Australia.
- William Zimmermann, Jr., associate professor, School of Physics, without salary 1967-68, for research in low temperature physics at the Technical University of Helsinki, Finland.
- Kinley J. Brauer, assistant professor of history, without salary spring quarter 1967-68, for research in England and France for a study on "The Diplomacy of the American Civil War."
- John P. Campbell, assistant professor of psychology, without salary 1967-68, to accept a Ford Foundation Faculty Research Fellowship.
- Kenneth M. Carlier, Meeker County associate county agricultural agent and assistant professor, sabbatical furlough April 22 to June 30, 1968, for graduate study at the University of Minnesota.
- Eugene Eidenberg, assistant professor of political science, without salary spring quarter 1967-68, to become executive assistant to Mayor Naftalin of Minneapolis.
- Delphie J. Fredlund, assistant professor, School of Public Health, sabbatical furlough September 16, 1967, to September 16, 1968, for a post-masters program in maternal and child nursing, with emphasis on the growth and development of children, at the Boston University School of Nursing.
- Harry M. Friedman, assistant professor, Division of Science and Mathematics, Morris, without salary 1967-68, for study and travel.
- Sheldon Goldstein, assistant professor and assistant director of radio and television, without salary February 13 to May 15, 1967, to serve as consultant in the office of the Assistant for Educational Television, Assistant Secretary of the U.S. Department of Health, Education and Welfare.
- Marjorie Hamann, Washington County home agent and assistant professor, October 16, 1967, to August 31, 1968, to work toward M.S. degree at the University of Minnesota.
- Charles C. Hanna, assistant professor and director of admissions, Morris, sabbatical furlough 1967-68, to study at Montana State University or at the Mott Intern-University Clinical Preparation for Educational Leaders at Flint, Michigan.
- Donald K. Harriss, assistant professor, Division of Science and Mathematics, Duluth, without salary 1967-68, for research at the Theoretical Chemistry Institute, University of Wisconsin.
- Jeanette W. Hauschild, Lincoln County home agent and assistant professor, Agricultural Extension Service, sabbatical furlough 1967-68, for graduate study at the University of Minnesota.

- Norlin A. Hein, Redwood County associate county agricultural agent and assistant professor, Agricultural Extension Service, sabbatical leave without salary October 6, 1967, to December 31, 1968, to work toward M.S. degree at North Dakota State University.
- Mary J. Hitchcock, assistant professor, School of Home Economics, continuation of leave 10% time without salary 1967-68, to complete work for Ph.D. degree at the University of Wisconsin.
- Ralph H. Hofmeister, assistant professor of economics, without salary 1967-68, to accept appointment as a postdoctoral fellow in economic policy at the Brookings Institution, Washington, D.C.
- Harlan J. Johnsrud, Faribault County soil conservation agent and assistant professor, Agricultural Extension Service, sabbatical furlough October 19, 1967, to September 15, 1968, to obtain advanced degree at the University of Minnesota.
- James T. Joichi, assistant professor, School of Mathematics, sabbatical furlough 1967-68, for study and research in functional analysis, with time to be spent in Minneapolis.
- Maxine Klein, assistant professor of speech, communication, and theatre arts, without salary spring quarter 1967-68, to join her husband, who is on leave in Guatemala.
- K. S. P. Kumar, assistant professor of electrical engineering, without salary fall quarter 1967-68, to serve at the California Institute of Technology, Pasadena.
- Arnold S. Leonard, assistant professor of surgery, with salary 1967-68, for a research project at Ohio State University.
- Douglas E. Lewis, assistant professor of philosophy, without salary winter quarter 1967-68, to serve as visiting assistant professor at the University of Michigan.
- Gregory D. Luehr, Fillmore County associate county agricultural agent and assistant professor, Agricultural Extension Service, sabbatical furlough January 31 to March 15, 1968, for study toward a master's degree.
- Sheila McNally, assistant professor of art history, sabbatical furlough 1967-68, to study the art of Roman Dalmatia in Yugoslavia and Italy.
- Freddy M. Munoz, assistant professor, Division of Humanities, Duluth, sabbatical furlough 1967-68, to devote full time to painting in Paris.
- Jeffrie G. Murphy, assistant professor of philosophy, without salary winter quarter 1967-68, to serve as visiting assistant professor at the University of California, Los Angeles.
- Ilene M. Naley, Todd County home agent and assistant professor, Agricultural Extension Service, sabbatical furlough October 3, 1967, to June 30, 1968, for study at the University of Minnesota.
- Charles M. Nolte, assistant professor of speech, communication, and theatre arts, without salary fall quarter 1967-68, to write and travel.
- Bruce A. Nord, assistant professor, Division of Social Sciences, Morris, sabbatical furlough 1967-68, to pursue doctoral degree in the behavioral science program at Rice University.
- Eugene Ogan, assistant professor of anthropology, without salary winter quarter 1967-68, for field research, sponsored in part by the Office of International Programs, in New Guinea and Australia.
- Janis Friedkalns, assistant professor of veterinary anatomy, without salary September 1, 1967, to June 30, 1968, to obtain advanced training in quantitative cytological methodology at the Universitat Munchen, Germany.
- Mabel D. Schauland, assistant professor, Division of Education and Psychology, Duluth, sabbatical furlough 1967-68, for graduate work at the University of Colorado.
- Wayne W. Schmaedeke, assistant professor, School of Mathematics, without salary 1967-68, to work on a problem in partial differential equations at Esso Production Research and to teach part time at Rice University.
- Lawrence R. Simonson, extension specialist in tourist services and assistant professor, Agricultural Extension Service, sabbatical furlough September 16, 1967, to June 9, 1968, for graduate study in recreation resource development at Texas A & M University.

- Hugo F. Sonnenschein, assistant professor of economics, without salary 1967-68, to serve as SSRC Training Fellow in Mathematics at the University of Michigan.
- Allan H. Spear, assistant professor of history, without salary winter and spring quarters 1967-68, for research under a grant from the National Foundation for the Humanities and the Arts.
- Wayne A. Stein, assistant professor, School of Physics, without salary spring quarter 1967-68, to work at the University of California.
- Jeanne Marie Sword, assistant professor, Division of Education and Psychology, Duluth, sabbatical furlough 1967-68, for additional graduate study in elementary education.
- Eugenia R. Taylor, assistant professor, School of Nursing, sabbatical furlough September 25, 1967, to September 15, 1968, for post-masters study in nursing at the University of California.
- James B. Togeas, assistant professor, Division of Science and Mathematics, Morris, without salary 1967-68, for graduate work at the University of Iowa.
- Richard C. Walter, Goodhue County associate county agricultural agent and assistant professor, Agricultural Extension Service, sabbatical furlough October 10, 1967, to June 8, 1968, to work toward master's degree at the University of Minnesota.

SINGLE QUARTER LEAVES, 1966-67

- Wayne J. Anderson, professor of psychology, philosophy, and family studies, spring quarter, for a study of courtship patterns in two centers of population in Switzerland and Germany and a comparison of their patterns with those that exist in Minnesota.
- Arthur H. Ballet, professor of speech and theatre arts, winter quarter, for a comparative study of repertory theatres, actor training institutions, and playwrighting programs in Israel, Austria-Germany, and England.
- Robert F. Berkhofer, Jr., associate professor of history, spring quarter, for completion of a book manuscript entitled "A Behavioral Approach to Historical Analysis."
- Peter F. Briggs, associate professor of physical medicine and rehabilitation, winter quarter, to study visual form perception deficiencies in young children.
- May Brodbeck, professor of philosophy, fall quarter, for translation from the Italian of the lengthy introduction to a work on optics and perception by the late medieval scholar Blasius of Parma and for studies in problems of explanation and prediction in the social sciences.
- Jan O. M. Broek, professor of geography, fall quarter, for a project entitled "The Map Image of the Malay Archipelago, 16th and 18th Centuries."
- Dorothy M. Burrows, associate professor of literature, speech, writing, and languages, spring quarter, for an inquiry into developments in the teaching of composition, language, and literature in public junior colleges and in selected public and private four-year colleges.
- Robert J. Collins, professor and head of electrical engineering, fall quarter, for theoretical investigation of the giant pulse mode of operation in solid state lasers.
- William M. Crockett, associate professor of English, Duluth, spring quarter, for a study of Oscar Wilde's aesthetic theory.
- Kenneth N. DeYoung, associate professor of psychology, Duluth, fall quarter, for a search for factors related to the identification of briefly presented complex visual stimuli.
- Ernst R. G. Eckert, professor of mechanical engineering, spring quarter, for a study of heat transfer in cryo-engineering and in non-equilibrium boundary layers.
- Ruth E. Eckert, professor of general education, winter quarter, for an analysis of the college faculty member's teaching role.
- Henry J. Ehlers, professor of philosophy, Duluth, spring quarter, for an adaptation of set theory symbolism to dyadic relations.

- Faith F. Finnberg, associate professor of literature, speech, writing, and language, spring quarter, for an inquiry into developments in the teaching of composition, language, and literature in public junior colleges and in selected public and private four-year colleges.
- Edward Flaccus, associate professor of biology, Duluth, fall quarter, for a study of the effect of Lake Superior on distribution of *Acer saccharus*, *Tilia americana* and *Betula lutea*.
- Robert J. Forsyth, associate professor, School of Home Economics, spring quarter, for a study of historical textiles in important public collections of Northern France and Western Germany.
- Virginia M. Fredricks, assistant professor of speech and theatre arts, spring quarter, for research on listening tests for oral interpretation of poetry.
- Ramon M. Fusaro, assistant professor of medicine, summer 1966, for research on extracellular glycogen.
- Evelyn D. Harne, associate professor, Agricultural Extension Service, spring quarter, for a study of 4-H Clubs or similar organizations and other groups concerned with home and family in Chile and one or more other Latin American countries.
- Helmut G. Heinrich, professor of aeronautics and engineering mechanics, fall quarter, for a study of parachute stresses under dynamic pressure loading during the period of inflation.
- John Q. Imholte, associate professor and chairman, Division of Social Sciences, Morris, fall quarter, for a comparative study of the international aspects of organized peace movements in the United States and Europe during the 19th Century.
- Philip D. Jordan, professor of history, spring quarter, to study law and order on the Middle Border, 1830-1860.
- Byrl J. Kennedy, associate professor of medicine, winter quarter, for reading and writing relating to research and teaching in advanced malignant diseases.
- Eric Klinger, associate professor of psychology, Morris, spring quarter, for research and writing on functions of fantasy.
- Frederic J. Kottke, professor of physical medicine and rehabilitation, spring quarter, for evaluation of rehabilitation teaching and research programs in a foreign country which has a well-developed rehabilitation program (Israel) and a country in which medical and rehabilitative care is primitive (Pakistan).
- Donald B. Lawrence, professor of botany, winter quarter, to study the history of climatic change in Southern South America.
- Jooinn Lee, associate professor of political science, Morris, spring quarter, for an investigation on the motives and process of Japanization of religion.
- Nathan Lifson, professor of physiology, fall quarter, to visit the European workers and laboratories of importance in the field of intestinal absorption.
- Maude L. Lindquist, professor of history, Duluth, spring quarter, for a study of early Protestant missionaries in the Minnesota country.
- Benjamin Y. H. Liu, assistant professor of mechanical engineering, spring quarter, for research on aerosol measurement by nuclear instrumentation.
- Willem J. Luyten, professor and chairman of astronomy, fall quarter, for proper motion survey with the 48-inch Schmidt telescope.
- Philip W. Manson, professor of agricultural engineering, summer 1966, to study and evaluate new agricultural drainage practices being developed in Europe.
- Robert E. McAdam, associate professor of physical education, fall quarter, for the construction of cartridge films dealing with mechanical principles of human motion.
- George H. McCune, professor of social studies, spring quarter, to research materials relating to science and technology in the first half of the 19th Century and to visit specialized museums.
- Gerald R. McKay, professor, Agricultural Extension Service, winter quarter, for a study of the organizational and functional structures of agricultural visual aids in nine universities.

- Eugene C. Miller, assistant professor, Northwest School of Agriculture and Experiment Station, Crookston, spring quarter, to study and evaluate the current and projected needs for agricultural engineering technicians.
- Ralph G. Nichols, professor of rhetoric, winter quarter, to study four selected aspects of communication training in the seven major universities of Australia and New Zealand.
- Wayland E. Noland, professor of organic chemistry, spring quarter, for research on molecular rearrangements.
- Lewis H. Nosanow, associate professor of physics and astronomy, fall quarter, for a study of theory of quantum crystals.
- Allen Nussbaum, associate professor of electrical engineering, spring quarter, to study "Theory of PN-Junctions at High Injection Levels" and "Applications of Group Theory to Science and Engineering."
- Pertti J. Pelto, associate professor of anthropology, spring quarter, for a study of "Twilight Zone of Poverty: Northern Minnesota."
- Alton L. Raygor, professor, Student Counseling Bureau, winter quarter, to prepare research reports for publication.
- John C. Sim, associate professor of journalism, winter quarter, for a study of the role of the community press and its probable future course.
- Allen R. Solem, professor, School of Business Administration, winter quarter, for a study of the nature of leader commitment as related to the use of disagreement in group problem solving.
- James E. Stageberg, associate professor, School of Architecture, spring quarter, for travel to and study of the past and present architecture of Greece, Egypt, and Israel.
- Anna L. Stensland, associate professor of English, Duluth, fall quarter, for study of senior high school literature programs in the state of Minnesota.
- Robert E. Summers, dean of Admissions and Records and professor, winter quarter, for a study of integrated information systems.
- Wolfgang F. Taraba, associate professor of German, fall quarter, to work on a book entitled *Friedrich Nietzsche*.
- Henry L. Taylor, professor, Laboratory of Physiological Hygiene, winter quarter, for study of the epidemiology of chronic disease.
- Louis Tobian, Jr., professor of medicine, spring quarter, for a study of renal and electrolyte factors in arterial hypertension.
- John E. Turner, professor of political science, fall quarter, to work on the book *Doorstep Politics*, a study of organization and leadership in three local labour parties in the London area.
- Melvin Waldfogel, associate professor of art, fall quarter, for research on English watercolor landscape painting, 1775-1825.
- Thomas F. Water, associate professor of entomology, fisheries, and wildlife, summer 1966, for research on ecology of freshwater invertebrates in streams of the Rocky Mountains.
- Albert K. Wickesberg, professor, School of Business Administration, winter quarter, for study of informal networks in the business organization structure.
- Raymond E. Willis, associate professor, School of Business Administration, winter quarter, for a study of production and inventory systems with finite obsolescence horizons.

SINGLE QUARTER LEAVES, 1967-68

- Josef L. Altholz, associate professor of history, spring quarter, to write a bibliographical handbook for the history of Victorian England and an edition of the correspondence of Lord Acton and Richard Simpson.
- Laird H. Barber, associate professor of humanities, Morris, spring quarter, for a study in comparative literature: "A Critical Analysis of Sir John Harrington's Translation of Ariosto's *Orlando Furioso*."
- Iver Bogen, assistant professor of psychology, Duluth, spring quarter, to study the relationship of verbal responses in small groups to measures of attitudes and the relationship of self-concept to personal definitions of group boundaries.

- James R. Bolton, associate professor of physical chemistry, spring quarter, for research on electron transfer reactions in photosynthesis.
- David Cooperman, professor, social science program, winter quarter, for a study: "Toward a Systematic Analysis of Comparative Ideologies."
- John A. Dettmann, professor of business administration, Duluth, spring quarter, for an investigation of the auditing function as it relates to smaller, nonprofit organizations.
- John D. Donker, professor of animal science, summer 1967, for review of energy metabolism studies at several American and European research centers and participation at the 4th Symposium on Energy Metabolism in Warsaw, Poland.
- George A. Donohue, professor of sociology and Agricultural Extension Service, winter quarter, for a project entitled "Community as an Analytical and Action Concept."
- Florence A. Ehrenkranz, professor, School of Home Economics, fall quarter, for a study of the reasons for similarities and dissimilarities in home equipment in the United States, the Scandinavian countries, Finland, England, and Holland.
- Carl J. Eide, professor of plant pathology, summer 1967, for a study of methods of determining the prevalence of *Verticillium albo-atrum* in soil.
- Luther P. Gerlach, associate professor of anthropology, fall quarter, for processing of data on religious conversion, commitment, and behavioral change.
- Jesus Gil de Lamadrid, associate professor of mathematics, spring quarter, to write an expository monograph on topological tensor products.
- Robert L. Glass, associate professor of biochemistry, spring quarter, for observation of advanced and instrumental techniques in lipid chemistry at the Hormel Institute, Austin.
- Charles J. Glotzbach, associate professor, Student Personnel Office, winter quarter, for study of counseling and student personnel work in the junior colleges.
- George W. Greenlees, professor of physics, spring quarter, for determination of nuclear matter distributions.
- Laurence R. Harper, assistant professor of mathematics, winter or spring quarter, for research on simple power-associative algebras of degree two.
- William L. Hathaway, associate professor of social studies, spring quarter, for a study of Minnesota state government and politics.
- Thomas R. Hoffmann, professor, School of Business Administration, fall quarter, to research computer applications for small businesses.
- Daniel D. Joseph, associate professor of aeronautics and engineering mechanics, winter quarter, for preparation of a research monograph on hydrodynamic stability.
- Bill W. Kennedy, associate professor of plant pathology and physiology, summer 1967, for analysis of reactions of soybean genotypes to bacteria in the genus *Pseudomonas*.
- E. Fred Koller, professor of agricultural economics, winter quarter, to study agricultural cooperatives as an element in market structure.
- E. Bruce Lee, professor of electrical engineering, winter quarter, for research on interaction and control of dynamical systems involving time delayed information.
- Chun-jo Liu, professor, East and South Asian languages, spring quarter, for a Chinese language project for the compilation of an annotated *Advanced Vernacular Texts*.
- Lawrence Markus, professor of mathematics, spring quarter, to study non-linear dynamical systems.
- Homer E. Mason, associate professor of philosophy, fall quarter, for study of the place of decision in ethics.
- Warren G. Meyer, professor of secondary education, winter quarter, for an analysis of the roles and objectives of distributive teacher education in the United States, with implications for undergraduate and graduate teacher education at the University of Minnesota.
- Howard A. Morris, professor of food science and industries, spring quarter, for a study tour of Europe and England to confer with personnel in cheese research and technology.

- Juliette I. Myren, associate professor of home economics, spring quarter, to study the collections of furniture and decorative arts in museums in Northeastern United States.
- Donald E. Olson, assistant professor of physics, Duluth, fall quarter, for measurement of air-earth current density on a world-wide basis in a study of the global current system and the effect of auroral activity on this system.
- Ruth Palmer, professor of home economics, Duluth, spring quarter, for a study of an educational program to develop leadership personnel in technical education in the field of home economics, with implications for future programs at the University of Minnesota, Duluth.
- John Parker, professor, James Ford Bell Collection, University Library, fall quarter, to write an edition of the *Journals* of Jonathan Carver.
- Walter T. Pattison, professor of Romance languages, spring quarter, to write a book, *The Life and Works of Emilia Pardo Bazan*.
- Lyle P. Pederson, assistant professor of civil engineering, spring quarter, for a study of soils and foundation engineering problems associated with earth dams and related structures.
- Frederick W. Peterson, associate professor of art, Morris, spring quarter, for a European study tour in art history.
- Warren L. Reynolds, associate professor of chemistry, fall or spring quarter, to write a reference book about the chemistry and properties of the compound dimethyl sulfoxide.
- Arturo Serrano-Plaja, professor of Romance languages, fall quarter, to study Los Suenos in connection with the paintings of H. Bosch and "oneiric writings" of the Surrealists.
- George L. Shapiro, associate professor of speech, communication, and theatre arts, spring quarter, for observation and application of two methods of training in small group communication.
- Carl D. Sheppard, professor of art history, fall quarter, for research on Byzantine carved slabs dating from the 6th to the 12th Century.
- Chieh-Shyang Song, associate professor of civil engineering and hydraulics, winter quarter, for a project on establishment and maintenance of stratified flow.
- Eduard J. Stadelmann, associate professor of horticulture, spring quarter, to write a manuscript for a book, *Permeability for Water*, in the series "Protoplasmatologia."
- Theofanis G. Stavrou, associate professor of history, fall quarter, to write the biography of Porfirii Uspenskii, precursor of Russian cultural policy in the Near East in the 19th Century.
- Armas W. Tamminen, professor of psychology, Duluth, winter quarter, for an examination of current activities, goals, and problems in guidance and of assumptions underlying these activities, for the purpose of moving toward a theory of guidance.
- Aldert van der Ziel, professor of electrical engineering, fall quarter, for a project on correlation effects in thermal light, as encountered in the Hanbury Brown-Twiss experiment.
- Karel M. van Vliet, professor of electrical engineering, spring quarter, to study the quantum theory of noise due to transitions.
- Cecil J. Waddington, associate professor of physics and astronomy, fall quarter, to conduct a search for the emission of energetic gamma-rays from point sources of astrophysical interest and a detailed investigation of the charge composition of the heaviest nuclei present in the primary cosmic radiation and of the fragmentation of cosmic ray nuclei in hydrogen.
- Frederick T. Witzig, professor of geography, Duluth, spring quarter, for a study of historical geography of the iron mining districts of Northern Wisconsin and the Upper Peninsula of Michigan.

DEATHS, 1966-68

With deep regret and a profound sense of loss, the University recorded the following deaths during the biennium:

Benjamin J. Lazan, professor of aeronautics and engineering mechanics, June 29, 1966.

- Patrick J. McGinnis, assistant professor, Division of Humanities, Morris, August 24, 1966.
- S. Marx White, professor emeritus of medicine, August 29, 1966.
- Carlos Martinez, professor of physiology, September 22, 1966.
- Borghild Hansen, associate professor of physical medicine and rehabilitation, October 6, 1966.
- Suzanne S. Tinker, assistant professor of physical education for women, October 14, 1966.
- Loyal A. Johnson, lecturer in civil engineering and hydraulics, November 17, 1966.
- Norman J. DeWitt, professor of classics, November 18, 1966.
- Oscar Cooperman, professor emeritus, School of Dentistry, November 23, 1966.
- Jack Indritz, associate professor, School of Mathematics, November 30, 1966.
- Henry B. Clark, Jr., professor of oral surgery, December 3, 1966.
- John R. DuPriest, professor emeritus of mechanical engineering, December 26, 1966.
- Richard Radway, Olmsted County agricultural agent and associate professor, Agricultural Extension Service, January 18, 1967.
- Howard P. Longstaff, professor of psychology, February 11, 1967.
- Gordon O. Voss, professor and head, Division of Education and Psychology, Duluth, May 28, 1967.
- Ned E. Olson, associate professor of veterinary medicine, July 5, 1967.
- Ames Naslund, clinical assistant professor of radiology (without salary), August 14, 1967.
- Jacob Schmookler, professor of economics, October 3, 1967.
- Carl G. Ash, Polk (West) County agricultural agent and professor, Agricultural Extension Service, October 18, 1967.
- James S. Barden, instructor in journalism and mass communication, November 11, 1967.
- Arnold Rose, professor of sociology, January 2, 1968.
- John K. Grotting, clinical assistant professor of surgery, February 8, 1968.
- Walter W. Quirt, professor of studio arts, March 19, 1968.

HONORS AND DISTINCTIONS

ADMINISTRATION

MALCOLM MOOS received an honorary LL.D. degree from Georgetown University; and an honorary LL.D. degree from the University of North Dakota.

DIVISIONS OF ACADEMIC ADMINISTRATION

Administration

WILLIAM G. SHEPHERD served as vice president, Pan American Congress of Engineering; and president, junior past president, senior past president, and secretary, Institute of Electrical and Electronics Engineers; and received the Engineer of the Year Award from the Minnesota Society of Professional Engineers.

Institute of Agriculture

Administration

SHERWOOD O. BERG served as member, Governor's State Planning Agency Advisory Committee; member, Upper Midwest Regional Export Expansion Council; member, Counseling Committee on Church and Society, Board of Christian Education of the United Presbyterian Church in the United States of America (Philadelphia, Pa.); member, Farm Forum Steering Committee; member, Board of Trustees, Farm Foundation; member, Governor's Agricultural Committee on Rural Community Development; member, President's Commission on Income Maintenance Programs; and member, Cosmos Club (Washington, D.C.); was selected as Honorary State Farmer by the Minnesota Future Farmers of America; and received the Fiftieth Anniversary Medal for Outstanding Contribution to American Agriculture from the Federal Land

Bank (St. Paul); and the Outstanding Achievement Award from the Greater Minneapolis Chamber of Commerce.

Agricultural Experiment Station

WILLIAM F. HUEG, JR., served as vice chairman, Committee of Nine, advisory committee to the Secretary of Agriculture; and was elected to Gamma Sigma Delta and Phi Zeta.

Agricultural Extension Service

ARLEEN L. BARKEIM served as secretary, Family Living Section, Adult Education Association of the United States of America.

GRACE D. BRILL received the Thirty Years U.S. Department of Agriculture Length of Service Award.

WAYNE E. CARLSON was elected to Epsilon Sigma Phi.

EVELYN D. HARNE served as rural youth consultant (South Vietnam), Agricultural Development Service of the U.S. Department of Agriculture and Agency for International Development.

EDNA K. JORDAHL served as board member, Minnesota Home Economics Association; and board member, Epsilon Sigma Phi.

RONALD L. PITZER served as president, Minnesota Council on Family Relations; and received a program grant from the U.S. Office of Education.

HARLUND G. ROUTHE was elected to Gamma Sigma Delta.

ATHELENE H. SCHEID was elected to Delta Kappa Gamma.

LAWRENCE R. SIMONSON served as member, Planning and Steering Committee, National Extension Recreation Specialist Conference; and received a Recreation and Parks Fellowship from Texas A & M University.

MARVIN E. SMITH served as member, Minnesota Lands and Forestry Advisory Committee, State Division of Lands and Forestry, Department of Conservation.

HERMAN J. VOSSEN served as a livestock specialist, Chile Agricultural Project, Ford Foundation.

College of Agriculture, Forestry, and Home Economics

KEITH N. MCFARLAND served as vice president and president, Association of Minnesota Colleges.

RALPH E. MILLER served as member, National Panel of Arbitrators, American Arbitration Association; and director and adviser, American Institute of Parliamentarians.

DEPARTMENT OF AGRICULTURAL ECONOMICS

CHARLES H. CUYKENDALL was elected to Sigma Xi.

DALE C. DAHL received the Danforth Associate Award for Outstanding Teaching from the Danforth Foundation.

REYNOLD P. DAHL served as member, National Oilseed and Peanut Crops Research Advisory Committee, U.S. Department of Agriculture.

JAMES P. HOUCK received the Thomas Lawrance Pawlett Scholarship from the University of Sydney (Australia).

JOHN S. HOYT served as secretary, North Central Committee on Economic Development of Rural Areas; and member, Board of Directors, Mid-Continent Research and Development Council.

E. FRED KOLLER served as research associate, University of California (Berkeley); and received the Fiftieth Anniversary Commemorative Medal from the Federal Land Bank.

TRUMAN R. NODLAND served as secretary-treasurer, Minnesota Farm Managers and Rural Appraisers Association; and received an honorary life membership, Minnesota Farm Managers and Rural Appraisers Association.

PHILIP M. RAUP served as guest lecturer, Institute of Foreign Agriculture, Technical University of Berlin; member, International Panel of Experts on Land Tenure and Settlement, Food and Agriculture Organization; and participant, U.S. State Department Visiting Scholar Program (Poland, Yugoslavia, Bulgaria, India, and the Netherlands).

VERNON W. RUTTAN served as vice president, American Agricultural Economics Association; and received the Best Article of the Year Award from the *Journal of Farm Economics*; and a grant from the Rockefeller Foundation.

FRANCIS J. SMITH, JR., was elected to Gamma Sigma Delta.

ROBERT W. SNYDER was elected to Gamma Sigma Delta.

KENNETH H. THOMAS was elected to Gamma Sigma Delta.

CAROLE B. YOHO was elected to Epsilon Sigma Phi.

DEPARTMENT OF AGRICULTURAL ENGINEERING

WILLIAM F. BEAR served as visiting professor, Universidade Federal do Parana Escola do Agronomia (Curitiba, Parana, Brazil); and was selected as Honorary State Farmer by the Minnesota Future Farmers of America.

LANDIS L. BOYD received the Outstanding 4-H Alumni Award from Iowa State University; and a National Science Foundation Undergraduate Instruction Equipment Grant; and served as visiting scholar and visiting professor, University of Michigan.

CURTIS L. LARSON received a research grant from the Office of Water Resources Research, U.S. Department of the Interior.

ROGER E. MACHMEIER served as secretary-treasurer and chairman, Minnesota Section, American Society of Agricultural Engineers; and was elected to Sigma Xi.

JESSE H. POMROY was elected to Alpha Epsilon and Gamma Sigma Delta; and served as chairman, Minnesota Section, American Society of Agricultural Engineers; and member, Board of Directors, Minnesota Federation of Engineering Societies.

DEPARTMENT OF AGRONOMY AND PLANT GENETICS

RICHARD BEHRENS served as president, Weed Science Society of America.

CHARLES R. BURNHAM received a research grant from the National Science Foundation.

JEAN W. LAMBERT served as associate editor, *Agronomy Journal*, and visiting scientist, American Society of Agronomy; and received the "Notable Nebraskan Award," Nebraska Centennial Celebration.

DONALD C. RASMUSSEN served as member, Board of Directors, American Society of Agronomy; and received a research grant from the Atomic Energy Commission.

HARLEY J. OTTO was elected to Gamma Sigma Delta.

DEON D. STUTHMAN was elected to full membership in Sigma Xi.

DEPARTMENT OF ANIMAL SCIENCE

ROBERT W. BERG was elected to Epsilon Sigma Phi.

WILLIAM J. BOYLAN received a research grant from the Hill Family Foundation.

CHARLES J. CHRISTIANS received the 4-H Alumni Recognition Award from the Iowa State University Cooperative Extension Service.

LESTER E. HANSON served as chairman, North Central Regional Advisory Committee in Animal Husbandry; and member, American Institute of Nutrition.

ALAN G. HUNTER served as member, Society for the Study of Reproduction; and state membership chairman, American Dairy Science Association; received a travel grant to the International Congress of Animal Reproduction from the National Science Foundation; and was named the Outstanding Young Professional Man by the Roseville Jaycees.

ROBERT M. JORDAN was named Honorary State Farmer by Minnesota Future Farmers of America; and received a grant from the Ford Motor Company.

JAY C. MEISKE served as member, Program Committee of Ruminant Nutrition, American Society of Animal Science; and received a research grant from the Dow Chemical Company.

WILLIAM E. REMPEL received a research grant from the Hill Family Foundation.

ROBERT N. SHOFFNER served as first vice president and president, Poultry Science Association; and received a research grant from the Hill Family Foundation.

PAUL E. WAIBEL served as president-elect and president, Gamma Sigma Delta; received the National Turkey Federation Outstanding Research Award; and the Ranelius Award for Service to the Minnesota Turkey Industry from the Minnesota Turkey Growers Association; and was named fellow by the American Association for the Advancement of Science.

RALPH W. WAYNE served as chairman, Dairy Records Committee, and state membership director, American Dairy Science Association; and received a Presidential Citation for a joint U.S. Department of Agriculture-University of Minnesota project; and a citation from the American-Scandinavian Foundation.

DEPARTMENT OF ENTOMOLOGY, FISHERIES, AND WILDLIFE

MARION A. BROOKS received a research grant from the National Institutes of Health.

LAURENCE K. CUTKOMP served as entomologist, International Atomic Energy Agency (Vienna, Austria).

PHILLIP K. HAREIN received a research grant from the U.S. Department of Agriculture.

ALEXANDER C. HODSON served as chairman, North Central States Branch, Entomological Society of America.

HERBERT M. KULMAN served as secretary, Division of Entomology and Pathology, Society of American Foresters.

EDWARD B. RADCLIFFE was elected to Gamma Sigma Delta.

A. GLENN RICHARDS served as guest professor, University of Munich (Germany); and visiting investigator, Max Planck Institute for Behavioral Physiology (Seewiesen über Starnberg, Germany).

LLOYD L. SMITH served as president, American Fisheries Society.

DEPARTMENT OF FOOD SCIENCE AND INDUSTRIES

PAUL B. ADDIS received a research fellowship from the Max Planck Society (Germany); and a Fulbright grant.

SCHOOL OF FORESTRY

ROBERT W. ERICKSON was elected to Sigma Xi.

JOHN G. HAYGREEN served as president-elect, Society of Wood Science and Technology; and visiting scientist (Iowa State University), National Science Foundation.

RALPH L. HOSSFELD received a grant from the Forest Service, U.S. Department of Agriculture.

FRANK H. KAUFERT served as president, Association of State College and University Forestry Research Organizations.

LAWRENCE C. MERRIAM, JR., was elected to Sigma Xi; served as vice chairman, Board of Trustees and Executive Committee, National Parks Association; and received a grant for European study from the Ford Foundation.

MERLE P. MEYER served as president-elect, Minnesota Academy of Science.

WILLIAM R. MILES served as secretary-treasurer, Upper Mississippi Valley Section, Society of American Foresters.

HAROLD SCHOLTEN was elected to Sigma Xi.

RICHARD A. SKOK served as secretary, Division of Forest Economics and Policy, Society of American Foresters.

PAUL C. SMITH was elected to Gamma Sigma Delta.

ROBERT D. THOMPSON was elected to Gamma Sigma Delta.

SCHOOL OF HOME ECONOMICS

RICHARD A. ABELL conducted a crafts workshop, University of Manitoba (Winnipeg); and served as speaker, National Home Economics Association meeting.

BARBARA B. CONKLIN served as vice president and program chairman, Minnesota Home Economics Association; and president, Alpha Alumnae Chapter, Phi Upsilon Omicron.

SUZANNE DAVISON received the Women's Centennial Honor Award from the University of Missouri and the Centennial Committee for the One Hundredth Anniversary of the Admission of Women.

GERTRUDE A. ESTEROS served as president, American Association of Housing Educators; and visiting professor, Oregon State University.

LURA M. MORSE served as member, Teratology Society; and received a research fellowship from the Public Health Service.

JULIETTE I. MYREN served as visiting lecturer, Dalhousie University (Halifax, Nova Scotia).

LINDA E. REY was elected to Iota Sigma Pi and Sigma Xi.

LOUISE A. STEDMAN served as vice president, American Home Economics Association; and representative, North Central Region, International Federation of Home Economics meeting (Bristol, England); and received an Outstanding Achievement Award from the National Home Economists in Business.

DEPARTMENT OF HORTICULTURAL SCIENCE

C. GUSTAV HARD served as visiting professor, Institute of Landscape Architecture, Norway Landbrukshøyskole; and was named fellow, American Scandinavian Foundation.

LEONARD B. HERTZ served as secretary, Minnesota Fruit Growers Association.

ROBERT E. NYLUND received the "Fiftieth Anniversary of Finland's Independence" Medal from the government of Finland.

PAUL E. READ served as member, International Plant Propagators Society; and was elected to Pi Alpha Xi.

CECIL STUSHNOFF was elected to full membership in Alpha Sigma Xi; and received a summer teacher training grant from the National Science Foundation.

ORRIN C. TURNQUIST received a travel grant from the Ford Foundation.

CONRAD J. WEISER received the Alex Laurie Award from the American Society for Horticultural Science; and served as participant, Stress Physiology Symposium (San Jose, Costa Rica), National Academy of Sciences.

HAROLD F. WILKINS received a research grant from the Gloeckner Foundation (New York, N.Y.).

DEPARTMENT OF INFORMATION AND AGRICULTURAL JOURNALISM

JOSEPHINE B. NELSON was elected to Gamma Sigma Delta; served as member, North Star Chapter, American Women in Radio and Television; president, Minnesota Branch, National League of American Pen Women; and chairman, Public Relations, Minnesota Nutrition Council; and participated in an Inter-cultural Radio Project with Norway.

RAYMOND S. WOLF was elected to Phi Zeta and Gamma Sigma Delta; served as president, Minnesota Adult Education Association; and chairman, State Agricultural U.S. Savings Bonds Committee; and received the Tenth Anniversary Award from KTCA-TV; and the Minute Man Trophy from the U.S. Treasury Department.

DEPARTMENT OF PLANT PATHOLOGY

LUCAS CALPOUZOS received a research grant from the Esso Research and Engineering Company.

CLYDE M. CHRISTENSEN served as president, Minnesota Chapter, Sigma Xi; and received research grants from the U.S. Department of Agriculture Agricultural Research Service and the National Institutes of Health.

CARL J. EIDE served as visiting professor, Colorado State University; and received an honorary life membership in the Potato Association of America.

BILL W. KENNEDY served as research associate, University of California (Berkeley); and received a research grant from the U.S. Department of Agriculture.

MILTON F. KERNKAMP served as treasurer-business manager, American Phytopathological Society; and received a research grant from the U.S. Army Biological Laboratories.

THOR KOMMEDAHL served as editor-in-chief, *Phytopathology*, American Phytopathological Society; and received a Fulbright award from the National Research Council of Iceland; and an Award of Excellence from the Weed Science Society of America.

CHESTER J. MIROCHA was elected to honorary membership, Minnesota Agricultural Chemicals Association; and received a research grant from the Public Health Service.

DEPARTMENT OF RHETORIC

JAMES I. BROWN was elected to Gamma Sigma Delta.

RALPH G. NICHOLS received the Alumni Achievement Award from the University of Northern Iowa.

EDWARD B. SAVAGE served as visiting associate professor, Columbia University.

MARJORIE H. THURSTON was elected to Gamma Sigma Delta; and received the Award for Outstanding Service to the College from Dakota Wesleyan University (Mitchell, S.D.).

EUGENE S. WRIGHT was elected to Gamma Sigma Delta.

DEPARTMENT OF SOIL SCIENCE

RUSSELL S. ADAMS, JR., received a travel grant to the International Congress of Soil Science (Adelaide, Australia) from the Soil Science Society of America.

GEORGE R. BLAKE served as member, Western Society of Soil Science; member, Committee on Training of Soil Scientists, Soil Science Society of America; associate editor, *Agronomy Journal*, American Society of Agronomy; and visiting professor, Universidad de Concepción (Chile).

JOHN M. MACGREGOR served as associate editor, *Agronomy Journal*, American Society of Agronomy.

WILLIAM P. MARTIN served as president, Soil Science Society of America; and was named fellow, American Association for the Advancement of Science.

RICHARD H. RUST served as chairman, Division of Soil Mineralogy, Soil Science Society of America.

College of Biological Sciences

Department of Biochemistry

JOHN S. ANDERSON received a research grant from the National Institute of Allergy and Infectious Diseases.

DAVID R. BRIGGS served as executive secretary, Office of Scientific Personnel Advisory Committee, National Academy of Sciences.

JOHN E. GANDER received a Research Career Development Award and a research grant from the Public Health Service.

H. ORIN HALVORSON served as member, Ad Hoc Committee on Waste Management for Space Travel, National Academy of Sciences.

LAVELL M. HENDERSON served as member, Nutritional Sciences Training Committee, National Institute of General Medical Sciences; and member, Food and Nutrition Board, National Research Council.

IRVIN E. LIENER received a travel grant for research at Cambridge University (England) from the Wellcome Trust Foundation.

REX E. LOVRIEN served as member, Federation of American Societies for Experimental Biology; and received a research grant from the National Institutes of Health.

MAX O. SCHULTZE received a research grant from the National Institutes of Health.

HUBER R. WARNER served as member, American Society of Biological Chemists.

Department of Botany

ERNST C. ABBE received the Distinguished Service Award from the Minnesota Academy of Science.

EDWARD J. CUSHING was named fellow, Geological Society of America.

ALBERT W. FRENKEL served as member, American Society for Oceanography; and researcher in residence, Hopkins Marine Station, Stanford University; and received research grants from the National Institutes of Health; and a travel award to the International Congress of Biochemistry (Tokyo, Japan) from the National Science Foundation.

EVILLE GORHAM served as vice president, Minnesota Chapter, American Association of University Professors.

DONALD B. LAWRENCE served as member, Graduate Committee, Oak Ridge Associated Universities; and external examiner for the Ph.D., Australian National University; and received a research grant from the National Science Foundation; and a Distinguished Service Award from the Minnesota Academy of Science.

DOUGLAS C. PRATT received a research grant from the National Science Foundation.

Department of Ecology and Behavioral Biology

DONALD B. SINIFF received a grant from the Office of Antarctic Biology, National Science Foundation.

JOHN TESTER received a training grant from the National Institutes of Health.

Field Biology Program

WILLIAM H. MARSHALL served as president, Organization of Inland Field Biology Stations; special lecturer, S & H Foundation Lectureship Program, Mary Baldwin College (Staunton, Va.); and member, Task Force, Bureau of Commercial Fisheries; and received the Outstanding Citizen of the Community Award from the Minnehaha Women's Chapter, Izaak Walton League; and research grants from the National Science Foundation.

Department of Genetics and Cell Biology

V. ELVING ANDERSON served as president, Academy Conference, American Association for the Advancement of Science; and visiting research associate, Harvard University; and received a research grant from the Ferndale Foundation; and a research fellowship from the National Institutes of Health.

RALPH E. COMSTOCK received the Animal Genetics and Breeding Award from the American Society of Animal Science; and a grant from the National Institutes of Health.

FRANKLIN D. ENFIELD served as chairman, Animal Breeding and Genetics Section, American Society of Animal Sciences.

ROBERT K. HERMAN received a research grant from the Public Health Service.

ALAN B. HOOPER served as visiting assistant professor, Massachusetts Institute of Technology.

SHELDON C. REED received a training grant from the Public Health Service.

James Ford Bell Museum of Natural History

RICHARD E. BARTHELEMY received a program grant from the Governor's Council on Aging, State of Minnesota.

WALTER J. BRECKENRIDGE served as member, Board of Directors, Minnesota Committee for Environmental Information; member, Advisory Council on Natural Areas, Minnesota Conservation Commissioner; special lecturer, Audubon Wildlife Program Series, National Audubon Society; and judge, International Photographic Salon, Twin City Council of Camera Clubs; and received the Distinguished Citizens Award from Phi Beta Kappa; and the Minnesota Award from the Minnesota Chapter, Wildlife Society.

ALBERT W. ERICKSON served as scientific adviser, Norsk Polar Institute and University of Oslo (Norway); and received a research grant from the Office of Antarctic Biology, National Science Foundation.

Department of Zoology

NORMAN S. KERR served as member, Society for Developmental Biology.

NELSON T. SPRATT, JR., served as visiting professor, University of Puerto Rico; and received a research grant from the National Aeronautics and Space Administration.

FRANKLIN G. WALLACE served as vice president, American Microscopical Society; presiding officer, Annual Midwestern Conference of Parasitologists; and council member-at-large, American Society of Parasitologists; and received a research grant from the National Institutes of Health.

School of Business Administration*Administration*

PAUL V. GRAMBSCH served as vice president and president-elect, American Association of Collegiate Schools of Business; member, Management Education Board, U.S. Department of Defense; and chairman, Minnesota State Council on Economic Education.

GEORGE SELTZER served as chairman, Unemployment Compensation Subcommittee, Advisory Council, Minnesota Department of Employment Security.

Department of Accounting

JOHN K. SIMMONS received a visiting faculty fellowship to the Manned Spacecraft Center (Houston, Tex.) from the National Aeronautics and Space Administration.

JAY M. SMITH, JR., served as chairman, Education Committee, Twin Cities Chapter, Planning Executives Institute; and was selected as one of the Outstanding Young Men of America by the Junior Chamber of Commerce.

Department of Finance and Insurance

J. RUSSELL NELSON was named Fellow in Academic Administration, American Council on Education.

C. ARTHUR WILLIAMS, JR., served as member, American Academy of Actuaries; and member, Administrative Board, S. S. Huebner Foundation for Insurance Education.

Department of Industrial Relations

RENE V. DAWIS received a Special Research Award from the American Personnel and Guidance Association.

JOHN J. FLAGLER served as first vice president and chairman, Research Committee, University Labor Education Association; member, National Board, American Professors for Peace in the Middle East; member, National Board, American Histadrut Cultural Exchange Institute; chairman, International Advisory Committee, Sogang University Institute of Labor and Management (Seoul, Korea); member, U.S. Delegation, First World Conference on Workers Education, International Confederation of Free Trade Unions; and lecturer (Israel), Histadrut and University of Tel Aviv; and received grants from the Office of Economic Opportunity and the Department of Health, Education, and Welfare.

HERBERT G. HENEMAN served as chairman, Advisory Council, and chairman, Manpower Subcommittee, Minnesota Department of Employment Security.

DAVID J. WEISS received a Special Research Award from the American Personnel and Guidance Association.

MAHMOOD A. ZAIDI received research grants from the Economic Council of Canada and the Canadian Task Force on Labour Relations.

Department of Management, Production, and Transportation

RICHARD S. JURALEWICZ received a visiting faculty fellowship to the Manned Spacecraft Center (Houston, Tex.) from the National Aeronautics and Space Administration.

JOHN J. MAURIEL received a research grant from the Minnesota Mining and Manufacturing Foundation; and served as member, Board of Directors, H. B. Fuller Company.

EDMUND A. NIGHTINGALE received the Distinguished Transportation Educator Award from the Board of Directors, Associated Traffic Clubs of America.

Department of Marketing and Business Law

ROBERT J. HOLLOWAY served as president, American Marketing Association; and member, National Marketing Advisory Committee, U.S. Department of Commerce; and received the Alpha Kappa Psi Award for an article in the *Journal of Marketing*; and a grant from the American Association of Advertising Agencies.

C. WILLIAM RUDELIUS received a visiting faculty fellowship to the Manned Spacecraft Center (Houston, Tex.) from the National Aeronautics and Space Administration.

Department of Quantitative Analysis

GARY M. ANDREW was elected to full membership, Operations Research Society of America; and served as treasurer, Upper Midwest Chapter, Operations Research Society of America; and chairman, local chapter, Institute of Management Science.

JOHN NETER served as council member, American Statistical Association.

University of Minnesota Technical Institute, Crookston*Administration*

RONALD F. EBNER served as treasurer, Province Rho, Sigma Alpha Epsilon.

STANLEY D. SAHLSTROM served as visiting professor, University of North Dakota; and state publication chairman, Minnesota Cancer Society; received the Twenty-Five Year Award from the Minnesota Vocational Agriculture Instructors Association; and was named Honorary State Farmer by the Minnesota Future Farmers of America.

Division of Business

BETTY L. BRECKO was elected to Delta Kappa Gamma; served as member, American Association of University Women; and secretary, Business and Professional Women's Club, Inc. (Crookston); and was listed in *Who's Who in American Education*.

Division of General Education

DAVID A. STOPPEL served as participant, National Science Foundation Conference on Biochemistry; and was named fellow, American Association for the Advancement of Science.

HAROLD J. OPGRAND served as vice chairman, Academic Section, Minnesota Library Association; and supervisor, Learning Resources, St. Cloud State College; and was listed in *Who's Who in Library Service*.

School of Dentistry

ROBERT J. BOLLER served as president, Academy of Dentistry for the Handicapped.

HELEN B. COST received a postdoctoral fellowship from the Minnesota Cancer Society; and was named one of the Outstanding Young Women of America.

DONALD O. ERICKSON served as president, American Academy of Practice Administration.

RICHARD J. GOODKIND served as member, American Prosthodontic Society; and member, Minnesota Prosthodontic Society.

ROBERT J. GORLIN served as president, American Academy of Oral Pathology; vice president and president-elect, International Society of Cranio-facial Biology; honorary member, Hollywood Academy of Medicine; and honorary member, Western Study Club of Combined Therapy; received a research grant from the Public Health Service; and was named the Howard Fox Lecturer in Dermatology by the New York Academy of Medicine.

MELLOR R. HOLLAND served as member, Committee on Social Characteristics, American College of Dentists.

NORMAN O. HOLTE served as secretary, Minnesota Society of Oral Surgeons.

ROBERT J. ISAACSON served as member, Ad Hoc Task Force for Placement of Trainees, National Institute of Dental Research; consultant, Council on Dental Education, American Dental Association; member, Dental Health Research and Education Advisory Committee, Bureau of Health Manpower; member, Standing Committee on Advanced Education, American Association of Dental Schools; and member, Edward H. Angle Society of Orthodontics; was elected to Omicron Kappa Upsilon; and received a postdoctoral research training grant from the Public Health Service.

MAURICE W. MEYER served as member, Microcirculatory Society; and president, Minnesota Section, International Association for Dental Research; and received a Research Career Development Award and a research grant from the Public Health Service.

ANDREW T. MORSTAD served as member, International College of Dentists; and president, Beta Beta Chapter, Omicron Kappa Upsilon.

EDMUND S. OLSEN was elected to Beta Beta Chapter, Omicron Kappa Upsilon; was named fellow, International College of Dentists; and fellow, Academy of Denture Prosthetics; and served as visiting professor, Creighton University (Omaha, Neb.); president-elect, American Association of Hospital Dentists; vice chairman, Council on Dental Materials and Devices, American Dental Association; chairman, Hospitality Committee, Academy of Denture Prosthetics; chairman, Program Committee, American Prosthodontic Society; chairman, Program Committee, and chairman, Study Course Committee, Minneapolis District Dental Society; and member, Constitution and By-Laws Committee, Dental Materials Group, International Association for Dental Research.

FREEMAN N. ROSENBLUM served as member, American Academy of Pedodontics.

ERWIN M. SCHAFFER served as chairman, American Board of Periodontology; and member, Executive Council, American Association of Dental Schools.

HEDDIE O. SEDANO was named fellow, American Academy of Oral Pathology; and served as visiting professor, University of Paris.

BURTON L. SHAPIRO was elected to Omicron Kappa Upsilon and Sigma Xi; served as president, Minnesota Section, International Association for Dental Research; and was named advanced fellow, American Cancer Society.

LEON SINGER served as member, Dental Study Section, National Institute of Dental Research.

RICHARD E. STALLARD served as honorary member, Society for the Preservation of Oral Health; member, Board of Directors, American Society of Periodontists; associate editor, *Journal of Periodontal Research*; and member, Editorial Board, *Periodontics*; and received research grants from the National Institute of Dental Research, Colgate Palmolive Company, and National Presto Industries.

HELEN M. TUCHNER served as trustee and project site visitor, American Dental Assistant Association.

ROBERT A. VICKERS served as president, Dental Section, American Association for Cancer Education; and council member, American Academy of Oral Pathology.

DANIEL E. WAITE served as member, International Society of Oral Surgeons; and chairman, Board of Trustees Faculty Committee, Graceland College (Lamoni, Iowa); and was appointed coordinator, Oral Surgery Educational Program, Project Hope (Ceylon).

JOHN W. WAKELY was named fellow, International College of Dentists; and served as president, Council of Deputies, Delta Sigma Delta National Meeting (Washington, D.C.).

WALTER S. WARPEHA served as president, American Prosthodontic Society.

CARL J. WITKOP served as secretary, American Society of Human Genetics; and received research grants from the Public Health Service and the Ford Foundation.

GEORGE M. YAMANE served as chairman, Cancer Liaison Committee, Minnesota State Dental Society.

DOUGLAS H. YOCK served as chairman-elect, Fixed Partial Prosthodontic Section, American Association of Dental Schools; program chairman, American Academy of Fixed Partial Prosthodontics; and dentistry consultant, Veterans Administration Central Office.

University of Minnesota, Duluth

Administration

THOMAS W. CHAMBERLIN served as president, Duluth Community Action Board; and president, Duluth Public Library Board.

Division of Education and Psychology

THOMAS G. BOMAN received a grant from the Upper Midwest Regional Educational Laboratory.

DEAN A. CRAWFORD served as treasurer, Higher Education Section, Minnesota Education Association; and received a study grant from the Upper Midwest Regional Education Laboratory.

MOY F. GUM served as participant, National Defense Education Act Elementary Guidance and Counseling Institute, U.S. Office of Education.

RICHARD G. LIDBERG served as recording secretary and vice president, University of Minnesota, Duluth, Chapter, Phi Kappa Delta.

HUBERT M. LOY received a Fulbright grant to Malaysia.

RUTH H. RICHARDS served as vice president, Kappa Chapter, Delta Kappa Gamma.

ALBERT TEZLA was named adviser, Ph.D. candidates in Hungarian literature, Columbia University; and received a research grant from the American Council of Learned Societies.

Division of Humanities

H. BOYD CHRISTENSEN received a 1966 Biennial of Painting and Sculpture Merit Award from the Walker Art Center.

RICHARD J. DE LUCA received a National Defense Foreign Language Fellowship in Portuguese (Stanford University).

HENRY J. EHLERS served as secretary, vice president, and president, Regional Chapter, Philosophy of Education Society; and visiting professor, University of Washington.

PACY FRIEDMAN served as visiting professor, University of Wisconsin (Superior); and workshop director, University of Wisconsin (Eau Claire).

ARTHUR J. LARSEN served as member, Board of Governors, St. Louis County Historical Society.

SHIRLEY A. MUNGER received First Prize, National Composition Contest, Mu Phi Epsilon.

JAMES R. MURPHY served as visiting professor and conductor of bands, University of Wisconsin (Madison).

RUDOLPH I. SCHAUER served as exhibitor, Rochester Art Center.

E. RUTH VAN APPLIEDORN was named fellow, American Society for Psychological Research, Inc.

Library

RUDOLPH JOHNSON served as acting director of libraries, Universidad de Concepción (Chile).

Division of Science and Mathematics

THOMAS J. BYDALEK served as president, Lake Superior Section, American Chemical Society; and received a grant from the National Science Foundation.

RONALD CAPLE served as president-elect, Lake Superior Section, American Chemical Society; and received a grant from the Petroleum Research Fund, American Chemical Society.

JOHN B. CARLSON received a research grant from the U.S. Department of Agriculture.

EDWARD FLACCUS served as chairman, Botany Section, Minnesota Academy of Science.

PERSHING B. HOFSLUND served as second vice president, Wilson Ornithological Society.

RALPH W. MARSDEN served as vice president, American Institute of Mining, Metallurgical, and Petroleum Engineers.

PAUL H. MONSON served as participant, Summer Institute in Systematics II, Smithsonian Institution, American Society of Plant Taxonomists, National Science Foundation, and Air Force Office of Scientific Research.

FRANCIS B. MOORE served as president, Minnesota College Chemistry Teachers Section, Minnesota Academy of Science.

JAMES C. NICHOL served as councilor, Lake Superior Section, American Chemical Society; and received a research grant from the Public Health Service.

College of Education

Administration

STANLEY B. KEGLER served as vice chairman, Conference on English Education; and received the School Bell Award from the Minnesota Education Association.

ROBERT J. KELLER served as member, Executive Board, Commission on Colleges and Universities, North Central Association of Colleges and Secondary Schools; and member, Board of Directors, vice president, and president-elect, American Association for Higher Education.

Department of Agricultural Education

R. PAUL MARVIN received a research grant from the U.S. Office of Education.

MARTIN B. McMILLION served as member, American Education Research Association; chairman, National Conference, Student Teachers in Agriculture; and visiting assistant professor, University of Parana (Curitiba, Parana, Brazil).

EDGAR A. PERSONS was named to *American Men of Science*; served as visiting lecturer, South Dakota State University; and received a research grant from the U.S. Office of Education.

MILO J. PETERSON served as visiting professor, Cornell University; and received a grant from the U.S. Office of Education.

Institute of Child Development

ANN J. CARLSON served as director, Head Start Summer Orientation for Teachers and Aides, State of Minnesota.

JOHN H. FLAVELL served as member, Association de Psychologie Scientifique de Langue Francaise; and member, Executive Committee, Developmental Psychology Division, American Psychological Association; and received a research grant from the National Institute of Child Health and Human Development.

SHIRLEY G. MOORE served as board member, Midwestern Association for the Education of Young Children; and treasurer, National Association for the Education of Young Children; and received a training grant from the National Institute of Child Health and Human Development.

HERBERT L. PICK, JR., received a Career Development Fellowship from the National Institute of Child Health and Human Development.

MERRILL ROFF served as president, Society for Multivariate Experimental Psychology.

HAROLD W. STEVENSON served as president-elect, Society for Research in Child Development; and member, Behavioral Sciences Committee, National Research Council, National Academy of Sciences.

JOHN C. WRIGHT served as member, Psychonomic Society; visiting professor, University of Wisconsin (Madison); and visiting research associate, Harvard University.

JACQUELINE YAMAHIRO served as president, Minnesota Preschool Education Association.

Department of Educational Administration

NEAL C. NICKERSON, JR., served as visiting assistant professor, University of Washington.

Department of Educational Psychology

DONALD H. BLOCHER received the Harvard Education Award from Harvard Alumni in Education; and a Fulbright lectureship at the University of Keele (England).

RAYMOND O. COLLIER, JR., was named fellow, American Psychological Association; and served as associate editor, Applied Section, *Journal of the American Statistical Association*.

EVELYN N. DENO served as member, Executive Council, Minnesota Psychological Association; and received the first Citizenship Award from the Civitan Club.

WELLS HIVELY, II, received the Palmer O. Johnson Award from the American Educational Research Association.

JACK C. MERWIN served as vice president, American Educational Research Association; and trustee, Association for Measurement Evaluation and Guidance.

S. JAY SAMUELS received a study grant (Sweden) from the Swedish government and the United Nations Educational, Scientific, and Cultural Organization.

W. WESLEY TENNYSON served as president, National Vocational Guidance Association; president, Minnesota Association of Counselor Education and Supervision; member, Executive Council, American Personnel and Guidance Association; and visiting professor, University of Nevada; and received a Certificate for Leadership in Bringing Career Development to Vocational Practice from the Harvard Graduate School Association; a Commendation for Illustrious Leadership from the National Vocational Guidance Association; and a grant from the U.S. Office of Education.

FRANK B. WILDERSON served as visiting professor, University of Washington; member, National Advisory Committee for Handicapped Children, U.S. Commissioner of Education; and member, Region VI Health Advisory Committee, Surgeon General, Public Health Service; and received a grant from the U.S. Office of Education.

Department of Elementary Education

JAMES R. CURTIN received an honorary life membership and an Institute Tribute from the Minnesota Elementary School Principals Association.

ALAN H. HUMPHREYS received a workshop grant from the National Science Foundation.

Division of Home Economics Education

EMMA B. WHITEFORD served as treasurer, National Council of Administrators of Home Economics; visiting professor, research associate, and coordinator, Institute of Post-High School Programs in Home Economics, University of Illinois (Urbana).

Department of Physical Education for Men

JOHN F. ALEXANDER served as visiting professor, University of Wyoming.

RICHARD J. DONNELLY served as treasurer, Central District Association for Health, Physical Education, and Recreation.

BILL C. FITCH was named Ohio College Coach of the Year by the Columbus Dispatch and Ohio coaches; and Mid-America Conference Basketball Coach of the Year by the Mid-America Conference.

WALLACE T. JOHNSON was named to the Helms Hall of Fame for Amateur Wrestling by the Helms Foundation.

G. ROBERT MOWERSON served as president, Big Ten Swimming Coaches Association; chairman, Swimming Rules Committee, and Records Chairman for Swimming, National Collegiate Athletic Association; and member, Selection Committee, Swimming Hall of Fame.

C. E. MUELLER served as president, Sigma Delta Psi; and secretary-treasurer, National College Physical Education Association for Men.

RALPH A. PIPER served as secretary, Dance Division, American Association for Health, Physical Education, and Recreation; member, Dance Notation Bureau; member, American Association of University Professors; and member, Committee on Research in Dance, National Dance Guild.

RICHARD W. SIEBERT served as second vice president and chairman, Professional Baseball Committee, American Association of College Baseball Coaches; and member, Professional Relations Committee, National Collegiate Athletic Association.

Department of Physical Education for Women

JACQUELINE M. SHICK served as visiting instructor, Drake University.

LELA J. STONER served as research chairman, Central Association of Physical Education for College Women; and received the Outstanding Research Award from Delta Psi Kappa.

Bureau of Recommendations

WILLIAM E. RAMEY served as visiting associate professor, Drake University.

Department of Recreation and Park Administration

JACKSON M. ANDERSON served as vice president-elect, American Association for Health, Physical Education, and Recreation; vice president, Minnesota Association for Health, Physical Education, and Recreation; visiting professor, University of Colorado; and visiting scholar, General Beadle State College; and received a Distinguished Service Award from the American Association for Health, Physical Education, and Recreation.

FREDERICK M. CHAPMAN served as member, American Association for Health, Physical Education, and Recreation; and received a grant from the Rehabilitation Services Administration, U.S. Department of Health, Education, and Welfare.

Department of Secondary Education

CLARENCE H. BOECK served as vice president and chairman, Education Section, American Association for the Advancement of Science; and received a grant from the Upper Midwest Regional Educational Laboratory.

EUGENE D. GENNARO served as member, National Association of Research in Science Teaching; and vice president, Association for the Education of Teachers of Science; and received a grant from the Upper Midwest Regional Educational Laboratory.

LORRAINE S. HANSEN served as editor, *The School Counselor*; and was named to the *Dictionary of International Biography*.

DONOVAN A. JOHNSON served as council member, Conference Board of the Mathematical Sciences; and president, National Council of Teachers of Mathematics.

MARY K. KLAURENS was elected to Delta Kappa Gamma; and received an Outstanding Service Award from the Minnesota Chapter, Distributive Education Clubs of America.

NEVILLE P. PEARSON received a Presidential Citation from the Audio Visual Coordinators Association of Minnesota.

RAY G. PRICE served as vice president, Policies Commission for Business and Economic Education; vice chairman, Board of Governors for Research and Development in Business Education; member, Executive Board, National Business Education Association; and member, Executive Committee, North Central Business Education Association.

Department of Special Education

FRANK H. WOOD received a project grant from the U.S. Office of Education.

Department of Trade and Industrial Education

JEROME MOSS, JR., served as member, Subcommittee on Research, National Manpower Advisory Committee, U.S. Department of Health, Education, and Welfare.

HOWARD F. NELSON served as president, American Council on Industrial Arts Teacher Education; and vice president, Occupational Training Center (St. Paul); and received travel grants to Uruguay from the Alliance for Progress.

General College*Administration*

FRANK T. BENSON was named Fellow in Academic Administration by the American Council on Education.

Division of General Arts

LOUIS T. SAFER served as member, Minnesota Art Educators.

Division of Natural Science and Mathematics

ALLEN B. JOHNSON served as vice president and president, Twin Cities Chapter, and member, American Meteorological Society; and visiting instructor, Drake University.

Division of Psychology, Philosophy, and Family Studies

LESLIE A. KING served as president, Twin City Vocational Guidance Association.

Division of Social Studies

THEODORE D. HARRIS served as member, Executive Council, Association for the Study of Negro Life and History; and member, Editorial Board, *Negro History Bulletin*.

FREDRIC R. STEINHAUSER served as state coordinator, National Council for Geographic Education; received a Medal for Merit from the Department of Military Affairs, State of Minnesota; and was listed in *American Men of Science*.

Division of Student Personnel Services

G. GORDON KINGSLEY served as visiting professor, National Defense Education Act Institute for Counseling and Guidance, University of Arizona.

General Extension Division

Administration

AUSTIN G. ANDERSON served as secretary-treasurer, Association of Continuing Legal Education Administrators.

WILLARD L. THOMPSON served as secretary and member, Executive Board, Council on Extension, National Association of State Universities and Land-Grant Colleges; member, Board of Directors, North Central Conference on Summer Schools; and editor, *The Spectator*, National University Extension Association.

DONALD Z. WOODS served as president, Missouri Valley Adult Education Association; and received an Achievement Award from the Missouri Valley Adult Education Association.

World Affairs Center

WILLIAM C. ROGERS served as secretary-treasurer, Society for Citizen Education in World Affairs; secretary-treasurer, National Council of County World Affairs Organizations; and vice president, International Education Association; and received a Wilton Park Fellowship from the British Foreign Office.

BARBARA J. STUHLER served as member, U.S. National Commission, United Nations Educational, Scientific, and Cultural Organization.

Graduate School

Administration

BRYCE CRAWFORD, JR., served as chairman, President's Committee on the National Medal of Science, National Science Foundation; president, Minnesota Chapter, Sigma Xi; and chairman, Advisory Committee, Office of Scientific Personnel, National Research Council; and received a Fulbright Professorship at the University of Tokyo (Japan).

ERRETT W. McDIARMID served as chief-of-party, University of Concepción-University of Minnesota Cooperative Program (Chile).

Environmental Health Research and Training Center

CONRAD P. STRAUB received an honorary Doctor of Engineering degree from Newark College of Engineering (New Jersey); and was honored by the establishment of an annual lecture in his name by the Environmental Health Sciences Branch, Public Health Service.

Hormel Institute

RALPH T. HOLMAN served as member, Governing Board, American Oil Chemists Society; and member, International Editorial Board, *Biochemistry, Excerpta Medica*; and received the Borden Award from the American Institute of Nutrition.

HOWARD M. JENKIN served as member, Tissue Culture Association; and symposium participant, North Central Branch, American Society of Microbiology; and received a research grant from the Public Health Service.

WALTER O. LUNDBERG received the Alton E. Bailey Award from the North Central Section, American Oil Chemists Society.

HELMUT K. MANGOLD served as editor, *Chemical Physical Lipids*; member, Editorial Board, *Journal of Lipid Research*; and member, Editorial Board, *Separation Science*.

ORVILLE S. PRIVETT received the Stefano Fachini Award in Lipid Chemistry from the Italian Oil Chemists' Society (Bologna, Italy).

Mayo Graduate School of Medicine

ALEXANDER ALBERT served as member, Career Awards Study Section, and member, Pituitary Hormone Disorders Committee, National Institutes of Health.

HOWARD A. ANDERSEN served as member, Board of Trustees, member, Editorial Board, and member, Air Resources Committee, American Medical Association.

ARCHIE H. BAGGENSTOSS served as member, Panel on Liver Pathology, National Halothane Study.

EDWARD A. BANNER served as president-elect, Continental Gynecologic Society; and medical director, Advisory Board, *Postgraduate Medicine*.

MAURICE J. BARRY, JR., served as member, Committee on Therapy, American Psychiatric Association.

EDWIN D. BAYRD served as chairman, Membership Committee, American Society of Hematology.

OLIVER H. BEAHR served as president, Society of Head and Neck Surgeons.

KENNETH G. BERGE served as fellow, Council on Epidemiology, American Heart Association.

PHILIP E. BERNATZ served as member, Committee on Postgraduate Training, Society of Thoracic Surgeons; and member, Council on Cerebrovascular Disease, American Heart Association.

REGINALD G. BICKFORD served as member, Advisory Committee on the Epilepsies, National Institutes of Health.

HARRY F. BISEL served as member, Cancer Training Committee, National Cancer Institute; and member, Board of Directors, American Cancer Society.

JOHN R. BLINKS served as established investigator, American Heart Association.

DAVID A. BOYD, JR., served as member, Residency Review Committee for Psychiatry and Neurology, American Medical Association.

ROBERT O. BRANDENBURG served as member, Board of Directors, and fellow, Council of Clinical Cardiology, American Heart Association.

JAMES C. BROADBENT served as member, Medical Advisory Panel, Federal Aviation Administration; and fellow, Council on Clinical Cardiology, American Heart Association.

JOE R. BROWN served as president, Central Neuropsychology Association.

ERAN O. BURGERT, JR., served as member, Committee on Acute Leukemia Study, National Institutes of Health.

EDMUND C. BURKE served as president, Southern Minnesota Medical Society.

HUGH R. BUTT served as chairman, Subspecialty Board, Gastroenterology Institute; and chairman, Board of Scientific Counselors, National Cancer Institute.

JAMES C. CAIN served as member, Minnesota State Board of Medical Examiners; Presidential consultant; member, President's Health Advisory Committee; chairman, National Advisory Committee, Selective Service; and medical consultant, Surgeon General of the Army.

JOHN A. CALLAHAN served as vice president, Minnesota Board of Examiners in the Basic Sciences.

DAVID T. CARR served as president-elect, Mississippi Valley Tuberculosis Conference.

EARL T. CARTER served as member, Residency Review Committee for Preventive Medicine, American Medical Association.

DONALD S. CHILDS, JR., served as member, Committee on Radioactive Isotopes, American College of Radiology.

OSCAR T. CLAGETT received the third Clement Price Thomas Award from the Council of the Royal College of Surgeons of England.

CHARLES F. CODE served as member, Physiological and Gastroenterological Training Study Section, National Institutes of Health.

DOUGLAS T. CODY received the Dr. John Black Award for Surgery from Dalhousie University (Halifax, Nova Scotia).

DANIEL C. CONNOLLY served as fellow, Council on Clinical Cardiology, American Heart Association.

ORMOND S. CULP served as secretary-treasurer, American Society of Genito-Urinary Surgeons.

FREDERIC L. DARLEY served as chairman, Committee on Organizational Structure, American Speech and Hearing Association.

GEORGE D. DAVIS served as vice president, Rocky Mountain Radiological Society.

WILLIAM H. DEARING served as chairman, Executive Committee, American Medical Association.

EDGAR R. DICKSON received a research grant from the National Institutes of Health.

PAUL DIDISHEIM served as member, Advisory Committee on Plasma Research, American Red Cross.

FRANCIS E. DONOGHUE served as president, Minnesota Thoracic Society.

BRUCE E. DOUGLASS served as president, Minnesota Academy of Occupational Medicine and Surgery.

EARL C. ELKINS served as chairman, Research Review Committee for Physical Medicine and Rehabilitation, American Medical Association; and member, Executive Council, American Congress of Physical Medicine and Rehabilitation.

FRANKLIN H. ELLIS, JR., served as member, Nominating Committee, Society of Clinical Surgery; and member, Membership Committee, Society for Vascular Surgeons.

JOHN F. FAIRBAIRN, II, served as member, Council on Arteriosclerosis, American Heart Association.

ALBERT FAULCONER, JR., served as chairman, Anesthesiology Resident Review Committee, American Board of Anesthesiology.

WILLIAM T. FOULK, JR., served as member, Administrative Committee, American Gastroenterological Association; and member, Editorial Board, *Gastroenterology*.

WARD S. FOWLER served as member, Anesthesiology Training Committee, National Institutes of Health.

CLIFFORD F. GASTINEAU served as secretary-treasurer, Central Research Club.

JOSEPH E. GERACI served as president, Minnesota Chapter, American College of Chest Physicians.

JOSEPH A. GIBLISCO served as member, Dental Study Section, National Institutes of Health.

NORMAN P. GOLDSTEIN served as visiting professor, George Washington University.

CLARENCE A. GOOD, JR., served as president, American Roentgen Ray Society.

ALLAN B. GOULD, JR., served as director, American Society of Anesthesiologists.

JOHN B. GROSS served as member, Research Committee, American Gastroenterological Association.

JACK W. HALL received the Edward John Noble Foundation Award.

LYOYD E. HARRIS served as president-elect, Northwest Pediatric Society.

LEROY D. HEDGECOCK served as member, House of State Delegates, American Speech and Hearing Association.

EDWARD D. HENDERSON served as member, Residency Review Committee, American Medical Association.

LOWELL L. HENDERSON served as president, American College of Allergists; and secretary, Section of Allergy, American Medical Association.

NORMAN G. G. HEPPEL served as member, Committee on Therapy, American Thoracic Society.

JOHN R. HILL served as trustee, Research Foundation, American Proctologic Society.

ALAN F. HOFMANN received a Wellcome Trust Travel Award from the National Science Foundation.

WILLIAM H. HOLLINSHEAD served as member, Anatomy Testing Committee, National Board of Medical Examiners; and second vice president, American Association of Anatomists.

COLIN B. HOLMAN served as president-elect, American Society of Neuro-radiology.

JAMES C. HUNT served as member, Medical Advisory Board, Cooperative Study of Renal Vascular Hypertension, National Heart Institute; member, Medical Advisory Board, Upper Midwest Chapter, National Kidney Foundation; and member, Research Study Section, American Heart Association.

JOHN C. IVINS served as member, Trauma Committee, American College of Surgeons.

RAYMOND J. JACKMAN served as president, American Proctologic Society.

WILLIAM J. JOHNSON served as chairman, Committee on Dialysis and Transplant, American Heart Association; and member, Scientific Advisory Committee, Upper Midwest Chapter, National Kidney Foundation.

JENIFER JOWSEY served as member, Nominations Committee, and member, Executive Committee, Orthopedic Research Society.

JOHN L. JUERGENS served as president, Minnesota Heart Association.

ALFRED G. KARLSON served as member, Committee on Special Grants, and member, Tuberculosis Program, Guidance Committee, National Tuberculosis Association.

THOMAS P. KEARNS served as vice president, Minnesota Academy of Ophthalmology and Otolaryngology.

PATRICK J. KELLY served as member, Program Committee, Orthopaedic Research Society.

ROBERT R. KIERLAND served as secretary, American Dermatological Association.

OWINGS W. KINCAID served as vice chairman, Program Committee, Radiological Society of North America.

DONALD W. KLASS served as chairman, Public and Legal Relations Committee, American Electroencephalographic Society.

LEONARD T. KURLAND served as member, American Advisory Committee, Albert Schweitzer Hospital; member, Advisory Committee on Research, National Multiple Sclerosis Society; and member, Epidemiology Control Study Section, National Institutes of Health.

WALTER F. KVALE served as member, Central Advisory Committee, American Heart Association.

EDWARD H. LAMBERT served as member, Grants Committee, Myasthenia Gravis Foundation; member, Executive Council, International Federation of Electroencephalography and Clinical Neurophysiology; and member, Neurology Study Section, Research Division, Public Health Service.

WILLIAM R. LANEY served as member, Board of Directors, and executive secretary, American Academy of Maxillofacial Prosthodontics.

FREDERICK W. LAWSON served as member, Neurology Study Section, National Institutes of Health.

PAUL F. LEONARD served as member, Professional Group on Biomedical Electronics, Institute of Electrical and Electronics Engineers.

MALCOLM I. LINDSAY, JR., received the Edward John Noble Foundation Award.

EDWARD M. LITIN served as member, Committee on Remotivation, American Psychiatric Association.

GEORGE B. LOGAN served as member, Joint Council, and president, National Pediatric Society.

STANLEY A. LOVESTEDT served as member, Dental Study Section, National Institutes of Health.

COLLIN S. MACCARTY served as secretary, Congressional Affairs, World Federation of Neurological Societies; and member, Residency Review Committee, Section on Medical Education, American Medical Association.

HAROLD T. MANKIN served as member, Heart Committee, Northlands Regional Medical Program.

THEODORE G. MARTENS received the Faculty Home Study Honor Award from the American Academy of Ophthalmology and Otolaryngology.

JAMES K. MASSON served as president, Midwestern Association of Plastic Surgeons.

JOHN G. MAYNE served as member, Advisory Committee on Hospital Effectiveness, U.S. Department of Health, Education, and Welfare; and member, Ad Hoc Committee on Biomedical Engineering, American College of Physicians.

BENJAMIN D. McCALLISTER served as member, Subcommittee on Cardiac Rehabilitation, Regional Medical Care Program.

WILLIAM M. McCONAHEY served as secretary, American Thyroid Association.

CLARK H. MILLIKAN served as chairman, Advisory Group, National Institute of Neurological Diseases and Blindness.

EMERSON A. MOFFITT served as president, Minnesota Society of Anesthesiology.

GERALD M. NEEDHAM served as member, American Board of Microbiology.

ARTHUR M. OLSEN served as president-elect, American College of Chest Physicians.

JAIME PARIS served as member, Membership Committee, American Thyroid Association.

THOMAS W. PARKIN served as member, Council on Clinical Cardiology, American Heart Association.

GUSTAVUS A. PETERS served as secretary, North Central Allergy Society.

HOWARD F. POLLEY served as member, Executive Committee, Arthritis Foundation.

RAYMOND D. PRUITT served as president, Association of University Cardiologists.

RAYMOND V. RANDALL served as secretary-treasurer, Central Clinical Research Club.

FENWICK C. RILEY received the Schroeder Ophthalmology Award.

DONALD G. RITTER served as member, Council on Rheumatic Fever and Congenital Heart Disease, American Heart Association.

JOSEPH G. RUSHTON served as president, Section on Neurology, American Medical Association.

WILLIAM G. SAUER served as Mayo representative, Regional Advisory Group, Northlands Regional Medical Program.

ALEXANDER SCHIRGER served as president, Association of Minnesota Internists.

SHELDON G. SHEPS served as member, Advisory Board, Council on Circulation, and member, Advisory Board, Hypertension Research Council, American Heart Association.

RICHARD M. SHICK served as member, Council on Circulation, American Heart Association.

RALPH E. SMITH served as president, Minnesota Heart Association.

JOHN A. SPITTELL, JR., served as member, Council on Arteriosclerosis, and member, Advisory Board, and council member, Council on Circulation, American Heart Association.

RICHARD M. STEINHILBER served as chairman, Committee on Public Relations, Association for Research on Nervous and Mental Disease; and president, Minnesota Psychiatric Society.

GUNNAR B. STICKLER served as council member, Midwest Society for Pediatric Research.

GEORGE K. STILLWELL served as president, Minnesota Psychiatric Society.

WENDELL M. SWENSON served as member, Grant Review Committee, National Institute of Mental Health.

HOWARD F. TASWELL served as member, Executive Committee, National Cooperative Study, National Institutes of Health.

WELBY N. TAUXE served as president, Central Chapter, Society of Nuclear Medicine.

WILLIAM F. TAYLOR served as member, Ad Hoc Evaluation Committee, Perinatal Research Project, National Institute of Neurological Diseases and Blindness; and member, Biometry and Epidemiology Training Grant Committee, National Institutes of Health.

RICHARD A. TJALMA served as member, Epidemiology and Disease Control Study, Division of Research Grants, National Institutes of Health; member, Epidemiology Committee, Special Leukemia Virus Program, Public Health Service; and member, Epidemiology Section Council, American Public Health Association.

LAURENTIUS O. UNDERDAHL served as president, American Diabetes Association.

WILLIAM H. WEIDMAN served as president, Midwest Society for Pediatric Research; and chairman, Congenital Heart Disease Committee, and member, Executive Committee, Council on Rheumatic Fever, American Heart Association.

Law School

CARL A. AUERBACH served as member, American Law Institute; member, Division of Behavioral Sciences, National Research Council; member, Board of

Trustees, Law and Society Association; member, President's Commission on Marine Science, Engineering, and Resources; member, Governor's Bipartisan Reapportionment Commission; member, National Highway Safety Advisory Committee; and visiting professor, University of Iowa and University of Utah.

RICHARD J. CLENDENEN served as president, National Council of State Committees for Children and Youth; and third vice president, National Conference of Social Work; and received a Certificate of Honor from Western Reserve University.

BRUNO H. GREENE served as member, Scribes.

WILLIAM B. LOCKHART served as member, President's Commission on Obscenity and Pornography; and president-elect, Association of American Law Schools.

College of Liberal Arts

Administration

JOHN G. TURNBULL received a grant for research in Europe from the Hill Family Foundation.

E. WILLIAM ZIEBARTH served as member, National Commission on Arts and Sciences; and member, Board of Governors, National Council of Arts and Sciences; and received a research grant for study in the Soviet Union from the Hill Family Foundation.

Department of Anthropology

RICHARD E. W. ADAMS was named fellow, American Association for the Advancement of Science; and received a traineeship grant from the Ford Foundation.

ROBERT F. SPENCER served as editor, American Ethnological Society.

Department of Art History

SHEILA McNALLY received a grant from the Smithsonian Institution for excavations in Yugoslavia; and a Fulbright Fellowship.

MARION NELSON served as director, American-Norwegian Museum (Decorah, Iowa).

CARL D. SHEPPARD served as member, Board of Directors, College Art Association.

Department of Classics

DONALD C. SWANSON served as visiting professor, University of Michigan.

Communication Program

DANIEL V. BRYAN received a research fellowship from the National Institute of Mental Health.

Department of East and South Asian Languages

USHARBUDH ARYA was named fellow, Royal Anthropological Institute (London, England); and served as member, American Oriental Society.

CHUN-JO LIU served as visiting professor, University of Wisconsin (Madison); and received a McMillan travel grant to Taiwan and Hong Kong.

RICHARD B. MATHER served as member, Program Committee, Association for Asian Studies; member, Nominating Committee, American Oriental Society; and visiting professor, University of Michigan.

Department of Economics

JOHN A. BUTTRICK served as visiting professor, University of California (Berkeley).

JOHN S. CHIPMAN served as visiting professor, Harvard University.

WALTER W. HELLER received an honorary LL.D. degree from Ripon College; an honorary L.H.D. degree from Coe College; an honorary LL.D. degree from Long Island University; a Year-of-Reflection Fellowship from the Carnegie Corporation; and a Distinguished Service Award from the U.S. Treasury Department; and served as vice president, American Economic Association; and member, Board of Trustees, Oberlin College.

CLIFFORD HILDRETH served as vice president, American Statistical Association; was named fellow, Institute of Mathematical Statistics; and received a research grant from the National Science Foundation.

LEONID HURWICZ served as vice president, Econometric Society; and received a project grant from the National Science Foundation.

ANNE O. KRUEGER received a research grant from the National Science Foundation.

HERBERT MOHRING was named fellow, Royal Economic Society; and received a research grant from the National Science Foundation.

GEORGE L. PERRY received a research fellowship from the Ford Foundation.

Department of English

HAROLD B. ALLEN served as president, Teachers of English to Speakers of Other Languages; and received grants from the National Endowment for the Humanities, the Upper Midwest Regional Educational Laboratory, and the U.S. Office of Education.

CHARLES H. FOSTER served as president, local chapter, Phi Beta Kappa; member, Executive Council, American Studies Association; and member, Board of Editors, *New England Quarterly*.

EDWARD M. GRIFFIN served as visiting assistant professor, University of San Francisco; and received a stipend from the National Endowment for the Humanities.

CALVIN B. KENDALL received a grant from the American Philosophical Society.

TONI A. H. McNARON received a grant from the National Endowment for the Humanities.

ROBERT E. MOORE served as visiting professor, Columbia University.

LEONARD H. UNGER served as fellow, Indiana School of Letters, Indiana University.

Family Study Center

RICHARD HEY served as president, National Council on Family Relations.

GERHARD NEUBECK served as president-elect, American Association of Marriage Counselors.

Department of Geography

JOHN R. BORCHERT served as vice president, Association of American Geographers; chairman, Earth Sciences Division, National Research Council; and member, Social Sciences Advisory Committee, National Science Foundation.

COTTON E. MATHER served as visiting professor, University of Toronto (Canada).

PHILIP W. PORTER served as member, Panel on Geography, Advisory Committee on Space Programs for Earth Observations, U.S. Geological Survey; and received a research grant (England and Africa) from the Social Science Research Council.

JOSEPH E. SCHWARTZBERG served as member, Membership Committee, and member, Committee on South Asia, Association for Asian Studies; and visiting professor, University of Pennsylvania; and received a project grant from the U.S. Office of Education.

JOHN W. WEBB served as consulting editor, McGraw-Hill Book Company.

Department of German

FRANK D. HIRSCHBACH served as visiting professor, Macalester College.

E. THEODOR VOSS served as visiting professor, Columbia University.

GERHARD H. WEISS served as secretary and chairman, German I Section, Midwest Modern Language Association; and visiting professor, Stanford University; and received a travel grant from the McMillan Foundation.

Department of History

JOSEF L. ALTHOLZ served as advisory editor, *Catholic Historical Review*.

BERNARD S. BACHRACH received a McMillan travel grant and a grant from the American Council of Learned Societies; and the McKnight Prize in European History.

PAUL W. BAMFORD served as resident member, Institute for Advanced Study (Princeton, N.J.).

ROBERT F. BERKHOFFER, JR., received a research grant from the American Philosophical Society.

ROBERT S. HOYT served as corresponding member, Advisory Board, Mediaeval Association of the Pacific; councilor, Mediaeval Academy of America; president, Midwest Mediaeval Conference; and president, Upper Midwest History Conference.

TOM B. JONES was named fellow, American Numismatic Society; and served as visiting professor, Smith College; and member, Board of Editors, *American Historical Review*, American Historical Association.

PHILIP D. JORDAN was named fellow, Royal Historical Society (England); and served as member, Advisory Committee, American Bibliographical Center; director, Advisory Board for Archival Affairs, General Services Administration, National Archives and Records Service; and lecturer, University of Birmingham (England).

RODNEY C. LOEHR was named honorary fellow, Forest History Society; served as member, National Committee to Revise Naval ROTC Curriculum; and received a citation from Edina High School.

OTTO P. PFLANZE received a fellowship from the John Simon Guggenheim Memorial Foundation.

TIMOTHY L. SMITH received research grants (Southern Italy and Central Europe) from the Fund for the Advancement of Education and the U.S. Office of Education; and a Doctor of Letters degree from Houghton College (New York).

RUDOLPH J. VECOLI served as chairman, Program Committee, Immigration History Group; and president, American Italian Historical Association.

DAVID H. WILLSON served as president, Midwest Conference on British Historical Studies; and visiting professor, University of Texas.

Humanities Program

JOHN BERRYMAN received awards from the National Foundation for the Humanities and Fine Arts and the American Academy of Poets.

Center for International Relations and Area Studies

SAMUEL M. BURKE served as member, Pakistan Council, Asia Society; and received a study and travel grant to Pakistan from the Ford Foundation.

School of Journalism and Mass Communication

WALTER H. BROVALD served as honorary member, Minnesota Newspaper Association.

ROY E. CARTER served as visiting professor and acting director, Institute of Sociology, University of Concepción (Chile); and received a grant from the Social Science Research Council.

ROBERT L. JONES served as president, Association for Education in Journalism; and chairman, Steering Committee, Journalism Awards Program, William Randolph Hearst Foundation.

ROBERT LINDSAY served as member, Inter-American Press Association; member, American Society of International Law; member, Educational Advisory Committee, Public Relations Division, Association for Education in Journalism; and mass communication specialist (Bolivia), U.S. State Department; and received a fellowship from the Foundation for Public Relations Research and Education.

RAYMOND B. NIXON served as member, Overseas Press Club of New York; and member, Executive Committee, International Association for Mass Communication Research; director, Interdisciplinary Team (Ecuador and India), Ford Foundation; and participant, East-West Seminar, Charles University (Prague, Czechoslovakia).

Library School

DAVID K. BERNINGHAUSEN served as member, Advisory Board, Educational Resources Information Center in Reading.

CHARLENE MASON served as participant, Aerospace Analysis and Writing Intern Program (Houston, Tex.), National Aeronautics and Space Administration.

LOWELL E. OLSON served as participant, National Defense Education Act Institute for Library School Supervisors, U.S. Office of Education.

MARIE SAMANISKY served as vice chairman and chairman-elect, Technical Services Division, Minnesota Library Association.

Department of Linguistics

HOWARD W. LAW was named fellow, American Anthropological Society; and served as visiting professor, Seattle Pacific College.

WALTER LEHN served as member, Executive Council, Canadian Linguistic Association.

Department of Music

DOMINICK J. ARGENTO received the Standard Award from the American Society of Composers, Authors, and Publishers; and the Outstanding Alumni Award from the Peabody Conservatory of Music (Baltimore, Md.).

PAUL W. FREED served as president, Minnesota Music Teachers' Association; president, Alpha Sigma Chapter, Pi Kappa Lambda; and vice chairman, Piano Section, Music Teachers' National Association.

CHARLES F. SCHWARTZ served as president, Pi Kappa Lambda; director, Minnesota All-State Choir; and director, Lake Conference Vocal Festival.

Department of Philosophy

MAY BRODBECK received a research grant from the National Science Foundation.

HERBERT FEIGL served as member, Société Internationale de la Philosophie des Sciences; and president, Institute for the Unity of Science.

GROVER MAXWELL received a research grant from the National Science Foundation.

KARL H. POTTER served as president, Society for Asian and Comparative Philosophy; and member, Executive Committee, American Institute of Indian Studies.

Department of Political Science

HAROLD W. CHASE served as visiting professor, University of Chicago.

WILLIAM H. FLANIGAN received a Faculty Fellowship from the Ford Foundation.

ROBERT T. HOLT received a research grant from the Social Science Research Council.

SAMUEL KRISLOV served as program chairman, Midwest Political Science Association; editor-elect, *Law and Society*; and visiting professor, Columbia University; and received grants from the U.S. Office of Education and the National Science Foundation.

CHARLES H. McLAUGHLIN served as visiting professor, University of Hawaii.

FRANK J. SORAUF served as program chairman, Midwest Political Science Association.

JOHN E. TURNER received an honorary LL.B. degree from Yankton College (South Dakota); served as chairman, Nominating Committee, Midwest Political Science Association; and received a faculty research grant from the Social Science Research Council.

Department of Psychology

JOHN P. CAMPBELL received a faculty fellowship from the Ford Foundation.

JOHN G. DARLEY served as member, Education and Training Board, American Psychological Association; member, Board of Directors, Psychological Corporation of New York; and member, Commission of Scholars, Board of Higher Education, State of Illinois; and received the E. K. Strong Memorial Medal for Research in Interest Measurement.

MARVIN D. DUNNETTE served as president, Division 14, and member, Task Force on Psychological Testing and Minority Group Employment, American Psychological Association; member, Advisory Committee, Center for Research in Careers; member, Advisory Committee, U.S. Civil Service Commission; and consulting editor, *Organizational Behavior and Human Performance*; and received research grants from the National Science Foundation, the National Institutes of Health, and the General Electric Foundation.

NORMAN GARMETZKY received the Stanley R. Dean Research Award from the Fund for the Behavioral Sciences; and a Research Career Award from the National Institute of Mental Health.

IRVING I. GOTTESMAN served as member, Editorial Board, American Eugenics Society; and member, Board of Directors, Minnesota Human Genetics League; received a research grant from the National Institute of Mental Health; and was named Symposium Medalist, Fourth International Congress of Psychiatry (Madrid, Spain).

JAMES J. JENKINS was named fellow, American Association for the Advancement of Science; served as president, Midwestern Psychological Association; and member, Council of Representatives, American Psychological Association; and received grants from the National Science Foundation and the National Institutes of Health.

LLOYD H. LOFQUIST was named fellow, American Psychological Association; served as member, Council of Representatives, American Psychological Association; and received the National Research Award from the American Personnel and Guidance Association; and training and research grants from the Rehabilitation Services Administration.

JAMES B. OVERMIER served as member, Psychonomic Society; and member, American Psychological Association; and received a travel award to Russia from the American Psychological Association; and research grants from the National Institute of Mental Health.

ROBERT G. WARNKEN served as vice president and president, Minnesota Rehabilitation Counseling Association; president-elect, Council of Rehabilita-

tion Counseling Educators; member, Executive Board, American Rehabilitation Counseling Association; secretary, Minnesota Personnel and Guidance Association; chairman, Advisory Council, St. Paul Youth Opportunity Center; member, Editorial Board, *American Personnel and Guidance Journal*; and member, Editorial Board, *Rehabilitation Counseling Bulletin*.

ROBERT D. WIRT served as chairman, Committee on Parole Commission, Governor's Commission on Law Enforcement, Administration of Justice, Corrections, and Prevention of Crime; member, Governor's Council on Health, Welfare, and Rehabilitation; member, Minnesota State Mental Health Advisory Committee; and member, Psychology Panel, Survey of the Behavioral and Social Sciences, National Academy of Sciences.

JOHN I. YELLOTT, JR., served as member, American Psychological Association; and received a travel grant to England from the National Science Foundation.

Public Administration Center

JAMES E. JERNBERG served as visiting assistant professor, University of North Carolina.

Department of Romance Languages

RICARDO A. NARVAEZ served as president, Minnesota Chapter, American Association of Teachers of Spanish and Portuguese.

ARSHI PIPA received grants from the American Council of Learned Societies.

ARMAND A. RENAUD received a research award from the McKnight Foundation.

Department of Scandinavian

ALRIK GUSTAFSON received a Fulbright grant from the U.S. State Department.

NILS HASSELMO served as vice president, Society for the Advancement of Scandinavian Studies; secretary, Scandinavian Section, Modern Language Association; and visiting lecturer, Harvard University; and received a Fulbright Faculty Fellowship (Sweden and Iceland) from the U.S. Office of Education.

Department of Slavic Languages

CATHERINE L. KULESOV received National Defense Education Act Foreign Language Fellowships.

MARILYN J. SJOBERG served as secretary-treasurer, Minnesota Chapter, American Association of Teachers of Slavic and East European Languages; secretary, Lambda Alpha Psi; and member, Language Teachers Summer Exchange (Russia), Inter-University Committee on Travel Grants.

Social Science Program

RICHARD E. SYKES received research grants from the U.S. Department of Labor.

School of Social Work

EDWARD W. FRANCEL served as Fulbright professor, Social Service Academy (Ankara, Turkey).

JOHN C. KIDNEIGH served as second vice president, National Conference on Social Welfare; senior member, American Society for Public Administration; and visiting professor, Tulane University; and received a Meritorious Service Award from the U.S. Children's Bureau; and a Certificate of Appreciation from the Minnesota Welfare Association.

THOMAS H. WALZ served as president-elect, Southern Minnesota Chapter, National Association of Social Workers.

JAMES R. WIEBLER served as workshop leader, Undergraduate Social Welfare Project, Southern Regional Education Board (Atlanta, Ga.).

Department of Sociology

DAVID COOPERMAN served as president, University of Minnesota Chapter, American Association of University Professors.

ROBERT L. FULTON served as visiting professor, University of Osmania (Hyderabad, India); and received a grant from the National Funeral Directors Association.

REUBEN L. HILL served as member, Board of Directors, Family Service Association of America; chairman, Committee on Family Research, International Sociological Association; and chairman, Committee on International Cooperation, American Sociological Association.

SCOTT G. McNALL received a Fulbright Lectureship to Greece.

MURRAY A. STRAUS served as member, Board of Directors, and chairman, Board of Publications, National Council on Family Relations; and chairman, Groves Conference on the Family.

DAVID A. WARD served as visiting associate professor, University of Rhode Island and University of California (Riverside); and was named Fellow in Law and Sociology, Harvard University.

Department of Speech, Communication, and Theatre Arts

BERNARD L. BROCK served as chairman, Professional Standards Committee, American Forensic Association.

DONALD R. BROWNE received the Outstanding Young Teacher Award from the Central States Speech Association.

JOSEPH B. CHAIKLIN was named fellow, American Speech and Hearing Association; was listed in *American Men of Science*; and served as audiology consultant, Veterans Administration Hospital and Center.

VIRGINIA FREDRICKS served as president, Speech Association of Minnesota.

KENNETH L. GRAHAM received a National Defense Education Act grant from the U.S. Office of Education.

WILLIAM S. HOWELL served as visiting professor, University of Hawaii; and received a research grant from the Ford Foundation.

J. VERNON JENSEN served as secretary and chairman, Committee on British Public Address, Speech Association of America; and received a travel grant from the McMillan Foundation.

MAXINE KLEIN served as member, Board of Directors, American Educational Theatre Association.

FRANK M. LASSMAN received the "That They May Speak" Award from the Minnesota Association for the Hearing Impaired; and a Special Commendation from the Alexander Graham Bell Association for the Deaf.

RICHARD P. McDERMOTT served as president and member, Executive Council, Minnesota Speech and Hearing Association.

CLARK D. STARR served as director, American Board of Examiners in Speech Pathology and Audiology; and visiting lecturer, Arkansas State University; and was named fellow, American Speech and Hearing Association.

FRANK M. WHITING was named honorary fellow, American Educational Theatre Association; and received an Award of Merit from the American Educational Theatre Association.

Department of Statistics

ROBERT J. BUEHLER was named fellow, American Statistical Association.

MILTON SOBEL received a John Simon Guggenheim Fellowship.

Department of Studio Arts

LYNN A. GRAY received awards for art works at the Tenth Midwest Biennial, Joselyn Art Museum (Omaha, Neb.); the First Minnesota Print and Drawing Show (St. Joseph); the Second Bucknell Annual National Drawing Show, Bucknell University (Lewisburg, Pa.); and the National Exhibition of Prints and Drawings, Dickinson State College (North Dakota).

KATHERINE E. NASH received an honorary Doctor of Fine Arts degree from Doane College (Crete, Neb.); two selection awards, Art in the Embassies, U.S. State Department; and a National Defense Education Act grant; and served as national secretary, Midwest College Art Association; and exhibitor, Walker Art Center.

SIDNEY SIMON served as visiting professor, Stanford University.

MARIO A. VOLPE served as treasurer, Midwest College Art Conference; and visiting instructor, Minnetonka Center for Arts and Education.

University Libraries

PAUL BERRISFORD served as chairman, Descriptive Cataloging Committee, Division of Resources and Technical Services, American Library Association.

AUDREY N. GROSCH served as treasurer, Documentation Division, Special Libraries Association; and founder and chairman, Minnesota Chapter, American Society for Information Science.

RALPH H. HOPP served as vice chairman and chairman-elect, Buildings and Equipment Section, Library Administration Division, American Library Association; and member, Board of Directors, Center for Research Libraries.

DORA A. JONES served as president, Minnesota Chapter, American Association of Law Librarians.

VIOLA W. NDEGA served as secretary-treasurer, Junior Members Round Table, American Library Association.

JOHN PARKER served as secretary, Society for the History of Discoveries.

HERBERT G. SCHERER served as vice chairman and chairman-elect, Art Libraries Subsection, American College and Research Libraries, American Library Association; and received research grants from the Kress Foundation and the American Philosophical Society.

EDWARD B. STANFORD served as member, Board of Directors, Association of Research Libraries; member, Board of Directors, Association of College and Research Libraries; and council member, American Library Association.

College of Medical Sciences*Administration*

ROBERT B. HOWARD served as secretary-treasurer, Association of American Medical Colleges.

Department of Anatomy

ELMO H. BREKHUS served as education chairman, American Society for Information Science; and vice president, Minnesota Microfilm Association.

ANNA-MARY P. CARPENTER received an honorary Doctor of Science degree from Geneva College (Beaver Falls, Pa.); and served as member, American Diabetes Society.

DIXIT P. KASHINATH served as member, American Association of Anatomists; and received a research grant from the Twin Cities Diabetes Association.

RICHARD L. WOOD served as president, Minnesota Electron Microscopy Society; and received a research grant from the National Institutes of Health.

Department of Anesthesiology

FREDERICK H. VAN BERGEN served as president, Academy of Anesthesiologists.

Department of Biochemistry

WALLACE D. ARMSTRONG received the Biological Mineralization Award and the H. Trendley Dean Award from the International Association of Dental Research; and the William John Gies Award from the American College of Dentists.

MARY E. DEMPSEY served as member, American Society of Biological Chemists, Inc.; and member, Biophysical Society; and received research grants from the National Heart Institute and the Muscular Dystrophy Associations of America; and a Research Award from Iota Sigma Pi.

JAMES F. KOERNER received the Distinguished Teaching Award from the Minnesota Medical Foundation; and research grants from the National Institutes of Health.

JOSEPH LARNER served as member, Membership Committee, American Society of Biological Chemists; member, Editorial Board, *Biochimica et Biophysica Acta*; and symposium speaker, Oslo Federation of European Biochemical Societies; and received the University of Michigan Sesquicentennial Distinguished Alumnus Award; and travel awards from the American Society of Biological Chemists and the Endocrine Society.

ALBERT D. NOTATION served as member, Society for the Study of Reproduction; and Averst-Squibb Travel Fellow, Endocrine Society.

DONALD B. WETLAUFER served as visiting professor, University of Illinois; and received a research grant from the National Institutes of Health.

Department of Laboratory Medicine

DAVID M. BROWN served as member, Society for Pediatric Research; and member, Endocrine Society; and received a Research Career Development Award from the Public Health Service.

KATHLEEN J. CLAYSON was elected to Sigma Delta Epsilon.

ESTHER F. FREIER served as member, New York Academy of Sciences; and representative, American Society of Medical Technologists, Board of Schools of Medical Technology, American Society of Clinical Pathologists; and received the Warner-Chulcotte Faculty Adviser Award from the American Society of Medical Technologists.

LORRAINE M. GONYEA served as member, New York Academy of Sciences; and received a research grant from the Minnesota Division, American Cancer Society.

JESSIE L. HANSEN was elected to Sigma Delta Epsilon; and received the Kimble Award in Medical Technology from the American Society of Medical Technologists.

VERNA L. RAUSCH served as president, American Society of Medical Technologists.

PAUL E. STRANDJORD served as founding member, Academic Clinical Laboratory Physicians and Scientists; and received a research grant from the National Institutes of Health.

R. DOROTHY SUNDBERG served as member, Society of Cell Biology; member, Academic Clinical Laboratory Physicians and Scientists; and invited speaker, Annual Medical Technology Convention (Houston, Tex.); and received a grant from the National Institutes of Health.

JANET M. SVARDAL served as member, American Association of Blood Banks; and received grants from the American Society of Medical Technologists and the Public Health Service.

WALID G. YASMINEH served as member, American Chemical Society.

EDMOND J. YUNIS served as member, American Society of Immunologists; and received grants from the Public Health Service and the National Institutes of Health.

Department of Medicine

HOWARD B. BURCHELL served as editor-in-chief, *Circulation*, American Heart Association.

IVAN D. FRANTZ, JR., served as member, Association of American Physicians; president, Minnesota Heart Association; and chairman, Council on Arteriosclerosis, American Heart Association; and received grants from the Public Health Service.

FREDERICK C. GOETZ served as visiting professor, Hospital Obreso (Lima, Peru).

BYRL J. KENNEDY served as member, American Society of Hematology; and received grants from the National Cancer Institute.

F. BRUCE LEWIS received a research grant from the Minnesota Heart Association.

ROBERT J. MCCOLLISTER served as member, American Society of Hematology; member, Hennepin County Medical Society; and secretary, Minneapolis Society of Internal Medicine.

MURRAY J. MURRAY served as member, Central Society for Clinical Research; member, Society for Experimental Biology and Medicine; member, American College of Cardiology; member, American Gastroenterological Association; and visiting professor, Mayo Foundation (Rochester); and received research grants from the Hartford Foundation and the National Institutes of Health.

ALVIN L. SCHULTZ served as member, American Thyroid Association; and associate editor, *University Laboratory and Clinical Medicine*; and received grants from the National Heart Institute.

SAMUEL SCHWARTZ received research grants from the Public Health Service.

WESLEY W. SPINK served as honorary member, Hobart Armory Hare Honor Medical Society, Jefferson Medical College; president, Harvard Medical Alumni Council; and visiting professor, Queen's Hospital (Honolulu) and University of Hawaii; and received the Alumni Achievement Award from Carleton College.

ATHANASIOS THEOLOGIDES served as member, American Society of Clinical Oncology; and member, American College of Physicians.

LOUIS TOBIAN served as member, American Clinical and Climatological Association; member, Circulation Society, American Physiological Society; chairman, Research Committee, Minnesota Heart Association; and visiting professor, Michigan State School of Medicine; received grants from the Public Health Service and the American Heart Association; and was appointed to the National Heart Institute Study Section on Cardiovascular Disease; and the American Heart Association Study Section on Cardiovascular Disease.

YANG WANG served as member, Coronary Care Unit Subcommittee, Minnesota Heart Association; member, Committee on Rheumatic Fever, American College of Physicians; and member, Great Plains Regional Research Advisory

Committee, American Heart Association; was named fellow, American College of Physicians; and received a grant from the National Institutes of Health.

RALPH C. WILLIAMS, JR., served as visiting professor, University of California (San Francisco) and University of Chicago; and member, Immunology Study Section, National Institutes of Health; and received grants from the Public Health Service and the National Institutes of Health.

A. S. ZELICKSON served as member, American Dermatologic Association; and member, Board of Directors, Society for Investigative Dermatology.

Department of Microbiology

MARTIN DWORKIN served as vice chairman and chairman, General Division, American Society for Microbiology; and received grants from the National Institutes of Health.

LOUIS H. MUSCHEL served as visiting professor, University of California (Berkeley); and member, Board of Editors, *Proceedings of the Society for Experimental Biology and Medicine*; and received a grant from the National Institute of Allergy and Infectious Diseases.

DENNIS W. WATSON served as vice president and president, American Society for Microbiology; member, National Advisory Council, National Institute of Allergy and Infectious Diseases; and member, United States National Committee, International Union of Biological Sciences.

Department of Obstetrics and Gynecology

JOHN J. SCIARRA served as member, Society for Gynecological Investigation; and member, American College of Surgeons.

Department of Ophthalmology

JOHN E. HARRIS served as member, American Ophthalmological Society; council member, National Institute of Neurological Diseases and Blindness; and visiting professor, University of Pennsylvania.

WILLIAM H. KNOBLOCH served as member, Retinal Society; and council member, Minnesota Academy of Ophthalmology and Otolaryngology; and received the Distinguished Faculty Teaching Award from the Minnesota Medical Foundation.

ROBERT D. LETSON received a fellowship from the Heed Foundation.

Department of Otolaryngology

ARNDT J. DUVALL, III, served as member, American Laryngological, Rhinological, and Otological Society; and chairman, Conservation of Hearing Committee, Minnesota State Medical Society; and received a grant from the National Institute of Neurological Diseases and Blindness.

SUNG K. JUHN was elected to Sigma Xi; and received a grant from the Otological Society.

FRANK M. LASSMAN served as member, Executive Council, Minnesota Speech and Hearing Association; and received the "That They May Speak" Award from the Minnesota Association for the Hearing Impaired; and a Special Commendation from the Alexander Graham Bell Association for the Deaf.

MICHAEL M. PAPARELLA served as member, American Otological Society, Inc.; member, Society of University Otolaryngologists; member, Sigma Xi; member, American Laryngological, Rhinological, and Otological Society, Inc.; member, Editorial Board, *Laryngoscope*; member, Editorial Board, *Minnesota Medicine*; member, Board of Directors, Pre-School Medical Survey of Vision and Hearing; member, Committee on Conservation of Hearing, American Academy of Ophthalmology and Otolaryngology; and visiting professor, Harvard University and State University of New York (Syracuse); and received

grants from the American Otological Society, the Deafness Research Foundation, and the National Institutes of Health.

W. DIXON WARD served as Editor of Proceedings, National Symposium on Noise as a Public Hazard, American Speech and Hearing Association; and witness, Noise Level Hearing, Senate Committee on Aging.

HENRY L. WILLIAMS served as president-elect, American Rhinologic Society; visiting professor, Mt. Sinai Hospital Medical School (New York, N.Y.); and guest of honor, American Rhinologic Society Conference.

Department of Pathology

WALTER J. RUNGE was elected to Sigma Xi; served as secretary, Society for the Study of Biological Rhythms; and received a Certificate of Merit from the American Medical Association; and a patent from the U.S. Patent Office.

LEE W. WATTENBERG served as president, Histochemical Society; and associate editor, *Cancer Research*; was named Hill Professor of Pathology by the Hill Family Foundation; and received research grants from the American Cancer Society, the American Medical Association, and the Public Health Service.

Department of Pediatrics

RAY C. ANDERSON was named fellow, American College of Cardiology; and served as chairman, Section on Cardiology, American Academy of Pediatrics.

ELIA M. AYOUB served as member, American Association of Immunologists; and member, American Society for Microbiology; and received grants from the National Institutes of Health and the American Heart Association.

PETER B. DENT served as member, American Association of Immunologists; and member, American Society for Experimental Pathology; and was named a Leukemia Society Scholar.

ROBERT A. GOOD served as member, Association of American Physicians; president, Central Society for Clinical Research; and president, American Society for Clinical Investigation; and received an honorary Doctor of Medicine degree from the University of Uppsala (Sweden); the Pemberton Lectureship Award for Outstanding Contributions to the Study of Rheumatic Disease; the R. E. Dyer Lectureships Award for Outstanding Achievement in Research Important to Medical Science; the Gordon Wilson Gold Medal from the American Clinical and Climatological Association; the Robert A. Cooke Gold Medal from the American Academy of Allergy; the Clemons Von Pirquet Gold Medal Award; the President's Medal of the University of Padua (Italy); and grants from the American Heart Association, the Minnesota Chapter of the Arthritis Foundation, the National Science Foundation, the National Institute of Allergy and Infectious Diseases, the National Institute of Neurological Diseases and Blindness, and the National Heart Institute.

RICHARD HONG served as invited speaker, International Colloquium on Proteins of the Biological Fluids (Bruges, Belgium).

WILLIAM KRIVIT served as member, American Pediatric Society; council member, Midwest Society for Pediatric Research; and member, Clinical Investigation Review Committee, Public Health Service.

PAUL G. QUIE served as member, American Society for Clinical Investigation; and visiting professor, University of Colorado College of Medicine.

JOHN W. REYNOLDS served as visiting research scientist, Hormone Laboratory, Karolinska Hospital (Stockholm, Sweden); and received a Research Career Development Award from the National Institutes of Health.

ROBERT W. TENBENSEL received a grant from the Minnesota Rheumatism Society; and a teaching award from the U.S. Naval Hospital (San Diego, Calif.).

WARREN J. WARWICK served as member, American Thoracic Society; member, Air Pollution Control Association; and secretary, Cystic Fibrosis Club.

Department of Pharmacology

NELSON D. GOLDBERG served as member, American Society of Pharmacology and Experimental Therapeutics; and received research grants from the National Institutes of Health.

AMEDEO S. MARRAZZI served as member, American Psychopathological Association; member, Pavlovian Society; council member, Society of Biological Psychiatry; member, Editorial Board, *Neurosciences Research*; member, Mental Health Medical Policy Committee, State of Minnesota Department of Public Welfare; member, Scientific and Advisory Boards, American Schizophrenia Association; and visiting professor, Lynchburg Training School and Hospital; received grants from the Air Force Office of Scientific Research, the National Science Foundation, and the Hill Family Foundation; and was named fellow, American Association for the Advancement of Science.

JACK W. MILLER received a training grant from the Public Health Service.

BERNARD L. MIRKIN received a training grant from the National Institutes of Health.

ROY W. PICKENS served as member, Behavioral Pharmacology Society; and received a research grant from the Public Health Service.

FREDERICK E. SHIDEMAN served as council member, American Therapeutic Society; and chairman, Advisory Committee on Abuse of Depressants and Stimulants, U.S. Department of Justice.

BEN G. ZIMMERMAN received a grant from the Public Health Service.

Department of Physical Medicine and Rehabilitation

ROBERT L. BOLLINGER served as chairman, Publicity and Recruitment, Minnesota Occupational Therapy Association.

SHELBY J. CLAYSON was elected to Sigma Delta Epsilon.

THEODORE M. COLE served as member, American Congress of Rehabilitation Medicine; member, American Academy of Physical Medicine and Rehabilitation; and secretary-treasurer, Minnesota Physiatriic Society.

HELEN V. SKOWLUND served as vice president, Xi Chapter, Sigma Delta Epsilon; member, Nominating Committee, Research Section, and chief Minnesota delegate, American Physical Therapy Association.

FOUAD G. ZAKI served as member, American Society for Cell Biology; and received grants from the National Heart Institute, the Institute for Metabolic Diseases and Arthritis, and the Minnesota Heart Association.

Department of Physiology

MARVIN BACANER received a grant from the Burroughs-Wellcome Company.

IRWIN J. FOX served as visiting professor, Temple University.

JUI S. LEE received research grants from the Public Health Service.

RICHARD E. POPPELE received a research grant from the National Institute of Neurological Diseases and Blindness.

RICHARD L. PURPLE served as member, American Physiological Society; and received a grant from the Public Health Service; and a Danforth Foundation Graduate Fellowship.

CARLO A. TERZUOLO served as member, New York Academy of Sciences; and received a Fulbright Fellowship to the University of Pisa (Italy).

Department of Psychiatry and Neurology

FARUK S. ABUZZAHAB served as member, Hennepin County Medical Society; member, Hennepin County Psychiatric Society; and member, Minnesota State Medical Association; and received a Faculty Development Award from the Pharmaceutical Manufacturers Association; and grants from the National Institutes of Health.

JAMES F. BERRY served as member, International Society for Neurochemistry; and senior scientist, Division of Neurosciences, City of Hope Medical Center; and received a grant from the National Institute of Neurological Diseases and Blindness.

JOHN P. BRANTNER served as member, Executive Council, Minnesota Psychological Association.

HAROLD P. COHEN served as member, District Board of Education; received a grant from the National Institutes of Health; and was listed in *Who's Who in the Midwest*.

A. JACK HAFNER received a research grant from the National Institute of Mental Health.

WILLIAM R. KENNEDY served as membership chairman, American Association of Electromyography and Electrodiagnosis.

SPING LIN was elected to Sigma Xi; and received grants from the National Institutes of Health.

DAVID T. LYKKEN received a research fellowship from the National Institute of Mental Health.

MANFRED J. MEIER served as secretary-treasurer, Minnesota Society of Neurological Sciences; and received a Research Career Development Award and a grant from the National Institute of Neurological Diseases and Blindness.

WENTWORTH QUAST served as member, Executive Council, Minnesota Psychological Association.

JOSEPH A. RESCH served as member, Council on Arteriosclerosis, and member, Council on Cerebrovascular Disease, American Heart Association; member, American Neurological Association; and president, Minnesota Society of the Neurological Sciences.

WILLIAM J. RILEY served as member, American Academy of Neurology.

BURTRUM C. SCHIELE received a grant from the Public Health Service.

JOO H. SUNG served as co-chairman, Neuropathology Course, American Academy of Neurology.

GERALD W. TIMM served as member, New York Academy of Sciences.

FERNANDO TORRES served as staff neurologist, S. S. Hope (Cartagena, Colombia); corresponding member, National Academy of Medicine (Buenos Aires, Argentina); fellow, American Academy of Neurology; chairman, Publications Committee, and member, Executive Committee, Professional Advisory Board, Epilepsy Foundation of America; member, Interamerican Affairs Committee, and member, Essay Award Committee, American Academy of Neurology; and member, Program Committee, and member, Nominating and Membership Committee, American Electroencephalographic Society; was named to *American Men of Science*; and received grants from the National Institutes of Health.

School of Public Health

GAYLORD W. ANDERSON received the Order of Hipolito Unanue from the Peruvian government; and the first Award of Recognition from the Association of Teachers of Veterinary Public Health and Preventive Medicine of the United States and Canada.

JOSEPH T. ANDERSON received a research grant from the Public Health Service.

JACOB E. BEARMAN served as chairman-elect, Biometric Section, American Statistical Association.

BYRON W. BROWN, JR., was named fellow, American Statistical Association.

DOROTHY E. DOWNEY was elected to Sigma Theta Tau.

VELVL W. GREENE served as visiting lecturer, Montana State University.

ANCEL KEYS served as chairman, Council on Epidemiology and Prevention, International Society of Cardiology; and visiting professor, California Medical College (Los Angeles, Calif.); was named the Lyman Duff Memorial Lecturer by the Council on Arteriosclerosis, American Heart Association; and received the McCollum Award from the American Society of Clinical Nutrition; and the Medal of Honor from the University of Belgrade (Yugoslavia).

RITA A. KROSKA served as a director, Minnesota League for Nursing.

RICHARD B. MCHUGH served as member, International Union for the Scientific Study of Population; member, Society for Epidemiological Research; member, New York Academy of Sciences; and visiting professor, Yale University; and was named fellow, American Public Health Association; and honorary fellow, American Statistical Association.

GEORGE S. MICHAELSEN served as president, North Central Section, American College Health Association.

THEODORE A. OLSON served as member, Conference of State and Provincial Laboratory Directors; member, Board of Directors, and vice president, International Association for Great Lakes Research; and member, Evaluation and Standards Committee, American Public Health Association; and received a grant from the U.S. Department of the Interior.

LEONARD M. SCHUMAN served as member, Technical Development Board, chairman, Epidemiology Section, and chairman, Program Area Committee on Communicable Disease, American Public Health Association; member, Task Force on Smoking and Health, Surgeon General's Office; and member, National Advisory Urban and Industrial Health Council, and member, National Advisory Committee on Bioeffects of Radiation, Public Health Service; and received grants from the Public Health Service.

ROBERT W. SCHWANKE served as president-elect, Minnesota Public Health Association.

RUTH E. STIEF served as president, Minnesota Public Health Association.

HENRY L. TAYLOR received grants from the Public Health Service.

VERNON E. WECKWERTH was elected to Sigma Psi; served as member, American Public Health Association; and received grants from the U.S. Children's Bureau and the Hospital Research and Educational Trust.

Department of Radiology

KURT AMPLATZ received a training grant from the National Heart Institute.

KOMANDURI K. N. CHARYULU received a training grant from the Public Health Service.

MARTIN T. J. HILGER served as member, Minnesota Radiological Society.

MERLE K. LOKEN served as member, Radiological Society of North America; and trustee, Midwest Chapter, Society of Nuclear Medicine.

YOSH MARUYAMA received research grants from the National Institutes of Health, the American Cancer Society, and the James Picker Foundation.

Department of Surgery

ALDO R. CASTANEDA served as member, American College of Surgeons; member, American College of Angiology; member, American College of Cardiology; member, American Association for the Advancement of Science; member, American Association for Thoracic Surgery; member, Advisory Council on Cardiovascular Surgery, American Heart Association; member, Minnesota Heart Association; member, Society of University Surgeons; member, New York Academy of Sciences; member, Association for Academic Surgery; member, Society for Vascular Surgery; member, International Cardiovascular Society; member, Society for Thoracic Surgery; member, St. Paul Surgical So-

ciety; member, Sociedad Medica de Costa Rica; and visiting professor, University of Costa Rica and University of Guatemala; and received a Distinguished Teaching Award from the Minnesota Medical Foundation.

THEODOR B. GRACE served as member, Society of Head and Neck Surgeons; and member, American Society of Clinical Oncology; and was elected to Alpha Omega Alpha.

CLAUDE R. HITCHCOCK served as member, Transplantation Society; member, Minneapolis Surgical Society; and member, Scientific Review Committee, National Institutes of Health; presented a scientific exhibit at the American College of Surgeons; and received a grant from the Hartford Foundation.

WILLIAM J. KANE served as member, American Board of Orthopedic Surgery; and secretary-treasurer, Scoliosis Research Society.

ARNOLD S. LEONARD served as member, Society of University Surgeons; member, Central Surgical Association; member, American Society of Experimental Pathology; and member, Association for Academic Surgery; received a grant from the Public Health Service; and was named fellow, American College of Surgeons.

RICHARD L. VARCO served as member, Allen O. Whipple Society; vice president, American Surgical Association; and visiting professor, State University of New York and Boston University; and received a planning grant from the National Institutes of Health.

University of Minnesota, Morris

Administration

RODNEY A. BRIGGS received a travel grant from the Rockefeller Foundation; and served as member, Board of Directors, Minnesota Civil Liberties Union; member, Governor's Commission for Law Enforcement; and member, State Planning Agency Advisory Committee.

THEODORE E. UEHLING, JR., served as president, Morris Chapter, American Association of University Professors.

Division of Education

E. LOUISE CURTIS served as secretary-treasurer, Minnesota Association for Student Teaching; president-elect, Minnesota Association for Childhood Education; visiting instructor, Southern Illinois University; and participant, National Defense Education Act Institute in Reading.

ARNOLD E. HENJUM served as participant, National Defense Education Act Advanced Instructional Media Institute (Michigan State University).

DEAN E. HINMON served as visiting assistant professor, University of Iowa.

Division of Humanities

CATHERINE E. BADDING was listed in *Outstanding Young Women of America* by the Outstanding Americans Foundation.

C. FREDERICK FARRELL served as vice president, Morris Chapter, American Association of University Professors.

VERNA M. NESS was selected for listing in the *Directory of American Scholars*.

Division of Science and Mathematics

ALEXANDER B. FILIMONOV participated in the Summer Faculty Program, Marshall Space Flight Center (Huntsville, Ala.), National Aeronautics and Space Administration.

JOHN C. W. LIN received fellowships from the National Science Foundation.

Division of Social Sciences

SUN M. KAHNG received a faculty fellowship from the Ford Foundation; and a fellowship from the Case Institute of Technology.

ERIC KLINGER received a research grant from the National Science Foundation.

JOOINN LEE served as postdoctoral research scholar, Kyoto University and Otani University (Kyoto, Japan); and received a fellowship from the Weil Foundation; and a stipend from the National Foundation for the Arts and the Humanities.

College of Pharmacy

OLE GISVOLD received an Outstanding Achievement Award from the University of Wisconsin.

PHILIP S. PORTOGHESE received a research grant from the National Institute of Neurological Diseases and Blindness.

ROBERT VINCE was elected to Sigma Xi; received research grants from the National Institutes of Health and the American Cancer Society; and was listed in *Outstanding Men of America* by the Jaycees.

LAWRENCE C. WEAVER served as member, Drug Information Association; member, American Association for Contamination Control; vice chairman, Section on Biochemistry and Pharmacology, Academy of Pharmaceutical Sciences; member, Awards Committee, American Pharmaceutical Foundation; and chairman, Health Planning Task Force, member, Executive Committee, and member, Long Range Planning Task Force, Governor's Council for Health, Welfare, and Vocational Rehabilitation.

Institute of Technology*Department of Aeronautics and Engineering Mechanics*

WILLIAM L. GARRARD served as member, Institute of Electrical and Electronics Engineers; and received a grant from the National Science Foundation.

HELMUT G. HEINRICH served as vice chairman, Technical Committee, American Institute of Aeronautics and Astronautics; visiting professor, Technische Universität Stuttgart; and research professor, Deutsche Forschungsanstalt für Luft-und Raumfahrt (Braunschweig, Germany); and received grants from the U.S. Air Force, the National Aeronautics and Space Administration, the Aerospace Division of the Teledyne Company, and the Pioneer Parachute Company.

School of Architecture and Landscape Architecture

ROGER B. MARTIN served as president, Minnesota Chapter, and member, American Society of Landscape Architects; and received a Project Design Award from the Minnesota Association of Landscape Architects.

JOHN S. MYERS received grants from the McMillan Foundation.

RALPH RAPSON was named fellow, American Institute of Architects; served as president, Minneapolis Chapter, American Institute of Architects; director, Minnesota Society of Architects; and visiting professor, University of Virginia; and received First Honor Awards from the American Institute of Architects and the Minnesota Society of Architects; and a grant from the Ford Foundation.

Department of Chemical Engineering

RUTHERFORD ARIS served as lecturer, Distinguished Lecturer's Series, Drexel Institute of Technology; and received a grant from the National Science Foundation.

ROBERT W. CARR received a research grant from the National Science Foundation.

HOWARD T. DAVIS received a fellowship from the Sloan Foundation; and a research grant from the National Science Foundation.

HERBERT S. ISBIN served as member, Advisory Committee on Reactor Safeguards, Atomic Energy Commission.

WILLIAM E. RANZ served as visiting professor, Stanford University.

L. E. SCRIVEN served as visiting professor, University of Pennsylvania; and received the Chemical Engineering Division Lectureship Award from the American Society for Engineering Education.

Department of Chemistry

JAMES R. BOLTON served as visiting professor, Cornell University; and received an Alfred P. Sloan Research Fellowship.

ROBERT C. BRASTED served as visiting professor and lecturer, Osmania University (Hyderabad, India).

EDWARD LEETE served as visiting professor, University of Arizona.

ALBERT MOSCOWITZ served as visiting professor and lecturer, University of Copenhagen.

WAYLAND E. NOLAND served as treasurer and first vice president, Minnesota Chapter, Phi Beta Kappa Society; and received a grant from the National Cancer Institute; and a contract from the U.S. Army Medical Research and Development Command.

JOHN E. WERTZ served as member, New York Academy of Sciences; and short course lecturer, American Chemical Society.

Department of Civil Engineering and Hydraulics

C. EDWARD BOWERS was elected to Tau Beta Pi; and received a Water Resources Research Grant.

PAUL P. CHRISTIANO received a research grant from the National Science Foundation.

LAWRENCE E. GOODMAN served as member, New York Academy of Sciences; and member, Special Committee, American Society for Engineering Education.

JOHN T. HANLEY served as member, American Association for the Advancement of Science; vice president, Minnesota Society of Professional Engineers; honorary member, Chi Epsilon; and honorary member, Tau Sigma Delta; received a grant from the National Science Foundation; and was listed in *American Men of Science* and *Who's Who in the Midwest*.

JOHN W. HAYDEN served as member, American Water Resources Association; and received a fellowship from the National Aeronautics and Space Administration and the American Society of Engineering Education.

WALTER K. JOHNSON served as secretary-treasurer, Northwestern Section, American Society of Civil Engineers; and received a research grant from the Federal Water Pollution Control Administration.

WALTER J. MAIER received a research grant from the Federal Water Pollution Control Administration.

EDWARD SILBERMAN served as vice president, American Water Resources Association; and received a fellowship from the National Science Foundation.

CHIEH-SHYANG SONG was elected to Phi Tau Phi and Tau Beta Pi; and served as secretary-treasurer, Mid-American Section, Phi Tau Phi.

Department of Electrical Engineering

WILLIAM F. BROWN, JR., was named fellow, Institute of Electrical and Electronics Engineers; served as chairman, Magnetics Group Chapter, Twin Cities

Section, and member, Editorial Board, Transactions on Magnetics, Institute of Electrical and Electronics Engineers; and vice chairman and chairman-elect, Minnesota Chapter, American Society for Information Science; and received the H. Cressy Morrison Award from the New York Academy of Sciences.

STEPHEN J. KAHNE served as chairman, Twin Cities Chapter on Automatic Control, and senior member, Institute of Electrical and Electronics Engineers; and visitor to Yugoslavia, National Academy of Science Exchange Program.

KLAUS P. LANGE received the Pries der Nachrichten Technischen Gesellschaft from the Verein Deutscher Elektrotechniker.

DENNIS E. SPELIOTIS received a research grant from Control Data Corporation; served as speaker, Magnetism Conference, and speaker, International Congress on Magnetism, American Physical Society.

ALBERT VAN DER ZIEL received the Western Electric Fund Award for Excellence in Instruction of Engineering Students from the American Society for Engineering.

Department of Geology and Geophysics

DONALD L. GRAF served as councilor, Geochemical Society; and councilor, Mineralogical Society of America.

HAROLD M. MOONEY served as visiting professor, Victoria University (Wellington, New Zealand); and received a Fulbright award.

VARANASI R. MURTHY received a research grant from the National Aeronautics and Space Administration.

GEORGE R. RAPP, JR., was named fellow, Geological Society of America; served as vice president, National Association of Geology Teachers; and received research grants from the National Science Foundation and the American Iron and Steel Institute.

FREDERICK M. SWAIN served as member, New York Academy of Sciences; and member, Paleontological Research Institute; and received a grant from the U.S. Bureau of Reclamation.

HERBERT E. WRIGHT, JR., received an honorary Doctor of Science degree from Trinity College (Dublin, Ireland); and served as chairman, Geomorphology Division, Geological Society of America.

Department of Mathematics

GEORGE U. BRAUER received a grant from the National Science Foundation.

ROBERT H. CAMERON served as member, Executive Committee, Minnesota Section, Mathematical Association of America.

PAUL C. FIFE received a Fulbright research grant (Germany).

BERT E. FRISTEDT received a research grant from the National Science Foundation.

JOHN P. HUNEKE served as member, Wesleyan Chapter, Society of Sigma Xi.

HOWARD B. JENKINS served as visiting associate professor, Stanford University.

OTTMAR G. LOOS received a grant from the National Science Foundation.

WARREN S. LOUD served as principal speaker, Iowa and Indiana Section Meetings, Mathematical Association of America.

ALBERT MARDEN served as visiting associate professor, Cornell University.

LAWRENCE MARKUS served as member, New York Academy of Sciences; visiting professor, Imperial College, London University; and Nuffield professor, Warwick University (England).

DANIEL PEDOE served as colloquium lecturer, University of South Carolina and University of Toronto; received the Lester R. Ford Award from the Mathematical Association of America; and a grant from the National Science Foundation; and was listed in *Who's Who* and *American Men of Science*.

MARIAN B. POUR-EL received grants from the International Union of Science, the Hungarian Mathematical Society, and the National Academy of Sciences.

Department of Mechanical Engineering

ERNST R. G. ECKERT received an honorary Doctor of Engineering degree from the Institute of Technology (Munich, Germany); and an honorary Doctor of Engineering degree from Purdue University; and served as visiting professor, Purdue University.

WARREN E. IBELE served as member, Local Consent Committee, Metropolitan Council.

RICHARD C. JORDAN served as vice president, Scientific Council, International Institut du Froid; chairman, Region VIII Engineering Education and Accreditation Committee, Engineers' Council for Professional Development; delegate, National Academy of Sciences-National Research Council, Twelfth International Congress of Refrigeration (Madrid, Spain); member, CENTO Engineering Education Symposium (Isfahan, Iran); member, United States-Brazil Workshops on Contributions of Science and Technology to Development; and chairman, United States-Brazil Binational Committee on Industrial Research, Science Cooperation Program, National Academy of Sciences-National Research Council; and received the F. Paul Andersen Medal and the E. K. Campbell Award of Merit from the American Society of Heating, Refrigerating, and Air-Conditioning Engineers.

WILLIAM A. KLEINHENZ served as chairman, Minnesota Section, American Society of Mechanical Engineers.

EMIL PFENDER received the Adams Memorial Membership Award from the American Welding Society; and a research grant from the National Science Foundation.

EPHRAIM M. SPARROW served as visiting professor, University of Brazil; and chief-of-party, Brazil Program in Graduate Engineering Education, Agency for International Development; and received an honorary doctor's degree from the University of Brazil.

RICHARD D. SPRINGER served as chairman, Industrial Relations Committee, Engineering Graphics Division, American Society for Engineering Education.

KENNETH T. WHITBY served as visiting professor, University of Karlsruhe (Germany); and received a fellowship from the Division of Air Pollution, Public Health Service.

Department of Mineral and Metallurgical Engineering

EUGENE P. PFLEIDER served as director, Society of Mining Engineers, and editor, Surface Mining volume, American Institute of Mining, Metallurgical, and Petroleum Engineers; and received the Mineral Industry Education Award from the American Institute of Mining, Metallurgical, and Petroleum Engineers.

DALE F. STEIN served as member, American Association for the Advancement of Science; and member, Transactions Committee, American Society for Metals; and received the Giesler Award from the Eastern New York Chapter, American Society for Metals; and grants from the National Science Foundation and the Atomic Energy Commission.

D. H. YARDLEY served as president, Minnesota Chapter, American Institute of Professional Geologists.

Minnesota Geological Survey

PAUL K. SIMS served as chairman, Publications Committee, Society of Economic Geologists; and director, Economic Geology Publishing Company.

School of Physics and Astronomy

ERNEST COLEMAN served as member, Deutsche Physikalische Gesellschaft; and visiting professor, University of Hamburg (Germany); and received a fellowship from the government of the Federal Republic of Germany.

DONALD A. GEFFEN served as visiting professor, Massachusetts Institute of Technology.

ALLEN M. GOLDMAN received a fellowship from the Alfred P. Sloan Foundation.

MORTON HAMERMESH served as member, Board of Trustees, Universities Research Association; and exchange visitor to Russia, U.S. National Academy of Sciences and Soviet Academy of Sciences.

ROGER S. JONES served as member, American Association of University Professors.

KARLIS KAUFMANIS served as guest lecturer, University of North Dakota, University of Northern Iowa, and St. Olaf College.

MICHAEL R. MOLDOVER received a research grant from the National Science Foundation.

LEWIS H. NOSANOW received a fellowship from the Guggenheim Foundation.

HIROSHI SUURA was named fellow, American Physical Society.

Y. C. TANG served as member, New York Academy of Sciences.

WILLIAM R. WEBBER served as member, American Astronomical Society; and visiting professor, University of Adelaide (Australia).

JAMES H. WERTZ, JR., received grants from the National Science Foundation and the Hill Family Foundation; and the Distinguished Service Citation from the American Association of Physics Teachers.

JOHN R. WINKLER received a grant from the National Science Foundation.

College of Veterinary Medicine*Department of Veterinary Anatomy*

WESLEY D. ANDERSON was elected to Phi Zeta and Gamma Sigma Delta; served as visiting assistant professor, Michigan State University; and received a research contract from the National Heart Institute.

THOMAS F. FLETCHER received the Norden Distinguished Teacher Award from the Norden Drug Company; and a grant from the National Institutes of Health.

ALVIN F. WEBER served as secretary, Histology Committee, International Committee on Veterinary Anatomical Nomenclature; coordinating representative, Histological Nomenclature Studies, American Association of Anatomists; and member, World Working Committee, London Conference of Nomina Embryologica.

Department of Veterinary Clinics

DONALD G. LOW served as vice president, American Association of Veterinary Clinicians.

Department of Veterinary Diagnostic Laboratories

MARTIN E. BERGELAND was elected to Sigma Xi.

Department of Veterinary Medicine

JAMES O. HANSON served as president, Minnesota Veterinary Medical Association.

Department of Veterinary Microbiology and Public Health

STANLEY L. DIESCH received a grant from the Public Health Service.

Department of Veterinary Pathology and Parasitology

KENNETH H. JOHNSON was elected to Gamma Sigma Delta and Sigma Xi; and received a grant from the Public Health Service.

VICTOR PERMAN served as research collaborator, Brookhaven National Laboratory, Medical Research Center (Upton, Long Island, N.Y.); and received the Distinguished Teaching Award from the Norden Drug Company.

JAY H. SAUTTER served as member, Federation of American Societies for Experimental Biology; co-chairman, Research Section, American Veterinary Medical Association meeting; and visiting professor, Texas A & M University.

JOHN C. SCHLOTTHAUER was elected to Sigma Xi.

Department of Veterinary Physiology and Pharmacology

GARY E. DUKE was elected to Michigan State University Chapter, Sigma Xi.

EVERETT C. SHORT, JR., was elected to Sigma Xi.

CLARENCE M. STOWE served as chairman, Veterinary Drug Efficacy Committee, National Academy of Sciences; and member, Planning Committee, Toxicology Study Section, National Institutes of Health.

Department of Veterinary Surgery and Radiology

JOHN P. ARNOLD served as first vice president, Minnesota Veterinary Medical Association.

GRISELDA F. HANLON was elected to Gamma Sigma Delta; and served as member, Board of Directors, and secretary, Educators in Veterinary Radiology Society.

DIVISIONS OF BUSINESS ADMINISTRATION**Administration**

LAURENCE R. LUNDEN served as member, Board of Trustees, Argonne Universities Association; and chairman, Extension Committee, Graduate School of Banking, University of Wisconsin (Madison).

Office of the University Attorney

R. JOEL TIERNEY served as second vice president, National Association of College and University Attorneys.

DIVISIONS OF EDUCATIONAL RELATIONSHIPS AND DEVELOPMENT**Administration**

STANLEY J. WENBERG received an honorary LL.D. degree from St. Mary's College (Winona); and served as delegate, Air War College Fifteenth Annual National Security Forum; member, delegation to Uruguay; member, Board of Directors, Minnesota-Uruguay Partners of the Alliance, Inc.; and vice chairman, Governor's Commission on Executive Reorganization.

Office of Admissions and Records

VERNON L. AUSEN served as member and chairman, Facilities Utilization Committee, American Association of Collegiate Registrars and Admissions Officers.

THEODORE E. KELLOGG served as president, Upper Midwest Association of Collegiate Registrars and Admissions Officers; and vice president, Professional Activities, American Association of Collegiate Registrars and Admissions Officers.

CHARLES F. LIESENFELT received a Certificate of Appreciation from the President of the United States for Selective Service work.

Office of the Dean of Students

ELLEN BERSCHIED was named to *American Men of Science*; and received research grants from the National Science Foundation.

DONALD A. BIGGS served as visiting professor, New York University.

DAVID P. CAMPBELL served as keynote speaker, International Round Table of Educational Counseling and Vocational Guidance (Salzburg, Austria).

EDWIN G. JOSELYN served as president-elect, Minnesota Personnel and Guidance Association.

HAROLD R. MARQUARDT served as consultant, Residence Hall Workshop (Indiana University).

RODNEY G. LOPER served as member, American Psychological Association; and member, American Personnel and Guidance Association.

VIVIAN H. HEWER served as chairman, Professional Affairs Committee, Division of Counseling Psychology, American Psychological Association; and examiner and consultant, North Central Association.

GERALD M. SIEGEL was named fellow, American Speech and Hearing Association; served as member, Publications Board, and member, House of State Delegates, American Speech and Hearing Association; and postdoctoral research fellow, University of Kansas; received a research grant from the National Institute of Mental Health; and was named to *American Men of Science*.

ALTON L. RAYGOR served as president-elect, National Reading Conference.

EDMUND G. WILLIAMSON received an honorary LL.D. degree from Xavier University (Cincinnati, Ohio); served as president, American Personnel and Guidance Association; president, National Association of Student Personnel Administrators; and lecturer, Japan Vocational Guidance Association (Tokyo), and consultant (Taipei, Taiwan, and Colombo, Ceylon), Asia Foundation; and received an Outstanding Professional Statesman Award from the American Personnel and Guidance Association; and a literature and research contributions award from the National Association of Student Personnel Administrators.

JAMES H. REEVES served as consultant in student affairs, Universidad de Concepción (Chile).

DOROTHY R. LOEFFLER served as member, American Psychological Association.

RONALD G. TAYLOR served as senior visiting lecturer, Bowling Green State University; and received research grants from the Gulf Oil Corporation and the U.S. Office of Education.

CATHERINE M. WARRICK was elected to Delta Kappa Gamma; and received a fellowship from the U.S. Office of Education.

University Health Service

DONALD W. COWAN was named fellow, American College Health Association; served as secretary-treasurer, councilor, member, Executive Committee, member, Finance Committee, member, Public Relations Committee, member, Awards Committee, member Program Coordinating Committee, and chairman, Local Arrangements Committee, 46th Annual Meeting, American College Health Association; and received a research grant from the Public Health Service.

EDWARD J. DVORAK was named fellow, American College Health Association.

PHILLIP D. KERNAN served as member, American College of Sports Medicine; chairman, Medical Training Service, Pan-American Games Trials; and physician, American Teams, Pre-Olympic Games (Mexico City).

GEORGE S. MICHAELSEN served as president, North Central Section, American College Health Association.

Department of Intercollegiate Athletics

MURRAY A. WARMATH served as president, American Football Coaches Association.

Department of University Relations

WILLIAM T. HARRIS, JR., served as press officer, United States Olympic Committee, Fifth Pan-American Games (Winnipeg, Canada).

WILLIAM L. NUNN served as assistant editor and member, Executive Committee, Hennepin County Historical Society; director, Great Lakes District Conference, American College Public Relations Association; and visiting professor, Colorado State University.

THE WORK OF THE UNIVERSITY

Divisions of Academic Administration

DEPARTMENT OF AEROSPACE STUDIES

JOHN C. GILL, Major, USAF

Air Force ROTC continued to accomplish very successfully its objective of identifying, motivating, selecting, and training qualified young men for commissions as second lieutenant in the U.S. Air Force. Commissioning figures for the biennium exceeded those of recent years, the 1968 total being the highest in 10 years. Enrollment and commissioning totals were as follows:

ACADEMIC YEAR	AS 300 (Jr)	AS 400 (Sr)	TOTAL	COMMISSIONED
1966-1967	42	65	107	*26
1967-1968	33	58	87	42

*Commissioning total substantially lower than AS 400 figure because large number of students completed AFROTC prior to graduation due to phase-in of two-year AFROTC program.

Enrollment — As reflected above, Air Force ROTC completed the transition to a two-year-only program. This means that students may not enroll in Air Force ROTC until their last two years of school, either in graduate or undergraduate status. Prerequisites for entry into the program include successful completion of the Air Force Officer Qualifying Test, a physical examination, and a six-week Field Training Course. The University of Minnesota Air Force ROTC detachment was a pioneer in converting from the traditional four-year program. As evidenced by the commissioning figures, the conversion has not adversely affected officer production; it has favorably reduced the overall cost per Air Force ROTC graduate.

Curriculum — Under the impetus of the ROTC Vitalization Act of 1964, the Air Force ROTC curriculum provides a high-quality educational experience that develops a professional background for future Air Force officers. The cadet does not specialize in any one military career field; rather, he receives education in areas that can be applied across the entire spectrum of officer responsibility. Leadership and management training receive particular emphasis in the revised curriculum. Qualified senior cadets receive 36½ hours of flight training, enabling them to obtain a private pilot's license at no expense to themselves.

Special Activities — Air Force ROTC continued to sponsor the Arnold Air Society, a professional service fraternity for outstanding Air Force ROTC cadets, and Angel Flight, the Arnold Air Society coed auxiliary. Both served as area headquarters for nine schools in Minnesota, Wisconsin, and the Dakotas during 1968. At the Arnold Air Society/Angel Flight National Convention held in New York City, the University of Minnesota Angel Flight won the Samuel E. Anderson Award, which is presented to the Angel Flight that best supports its Arnold Air Society. This marked the third year that the University of Minnesota Angel Flight won this award. They are the only flight in the nation to win a National Award more than once.

INSTITUTE OF AGRICULTURE

SHERWOOD O. BERG, *Dean**Resident Instruction*

Enrollment Trends in the College of Agriculture, Forestry, and Home Economics—In the last biennium, the enrollments in agriculture have declined slightly, moving from 1,183 in the fall quarter of 1965 to 1,110 in fall 1966 and 1,097 in fall 1967. Over the same period, undergraduate enrollments in forestry have increased from 379 to 403 and 427 for the years in question, and those in home economics from 784 to 903 and 981. The rapid increase in the number of home economics students has created major stresses upon both staff and facilities and has focused attention upon the need for expanded facilities for this important instructional program.

The introduction of a threshold requirement of three years of high school mathematics (through advanced algebra) for all programs of the College except related art has served to create a student body more homogeneous in background and of greater academic potential than formerly, as evidenced by a reduced academic mortality among freshman students.

The number of undergraduate students entering with advanced standing from other Minnesota colleges increased each year of the biennium and suggests the ultimate impact of the developing state junior college system and the growth in state college enrollments on the composition of University undergraduate colleges.

Curriculum Developments—In the 1966-1968 biennium, curriculum revisions completed in the previous biennium were put into operation throughout the College. Course restructuring was widespread, the CLE requirement was accommodated by all programs of the College, and the P-N grading system was made available for student use. Of special interest is the introduction of an interdisciplinary curricular program entitled Resource and Community Development, with majors in landscape design and environmental planning, recreation resource management, resource economics, and soil and water management. The School of Forestry program in recreation resource management complements its program in forest resources management and contributes to the recreation and park administration program of the School of Physical Education.

Improvement in Instruction—During the past biennium, both faculty and students of the College demonstrated interest in improving the quality of instruction in its programs. In the fall of 1966, 72 members of the faculty gathered at the Southern School at Waseca to participate in a three-day conference on the improvement of instruction. Student Council interest in instructor evaluation brought faculty cooperation in a College-wide program of student evaluation of instructors. The first issue of a quarterly instructional newsletter entitled *Toward Better Instruction* has been circulated.

In each year of the biennium, one member of the College faculty was awarded a Standard Oil Foundation Undergraduate Instructional Recognition Award. The possible contributions of audio-visual tools to effective instruction were explored in every school and department, and the use of the video-corder, auto-tutorial booths, and others devices in support of individualized instruction and independent study aroused new levels of interest in the learning process among both students and instructors.

The Career Conference on Food and Fiber—In June, 1968, a Conference on Food and Fiber was presented for selected metropolitan high school juniors and their counselors, enabling participants to become acquainted with the career opportunities for youth in these fields. The conference was organized around a multimedia presentation involving film, slides, music, and people, all directed to an explanation of the food and fiber industry; its part in the economy of Minnesota, the nation, and the world; and its manpower needs. This program, designed for use with youth groups and schools throughout the state, should do much to contribute to a fuller understanding of University programs in agriculture, forestry, and home economics.

Program Changes at the Outlying Stations—The final commencement of the Northwest School of Agriculture at Crookston was held on March 22, 1968. Opening in 1905, the Northwest School served 5,405 students over a period of 63 years. With improved educational facilities available to the north-west community, it was felt that the excellent facility at the Northwest School and Station could make an even greater contribution to Minnesota's agriculture through a different program orientation. The first class of the University of Minnesota Technical Institute—Crookston entered in the fall quarter of 1966 and graduated with associate degrees in agriculture or business in spring 1968. Fall quarter enrollments in the Technical Institute totaled 180 in 1966 and 310 in 1967.

A special study committee has recommended that a two-year technical college program of the "Crookston model" be developed at the Southern School of Agriculture at Waseca to produce semiprofessionally trained persons in agriculture, with special reference to manpower needs in horticulture; in agricultural production, technology, and business; and in food processing technology. If approved by the Board of Regents, the proposed change from the secondary level school to the technical collegiate program will be presented for consideration to the 1969 Legislature.

A new kind of educational cooperation has been demonstrated at the North Central Experiment Station at Grand Rapids. The Itasca State Junior College is now established on the North Central Experiment Station grounds, and in the single setting are found the State Junior College, an area vocational school operated by the Junior College, and the experiment station program of the Institute of Agriculture.

Research

The research program of the Minnesota Agricultural Experiment Station focuses attention on the problems that exist today, whether they be related to agricultural or forest production, the rural and urban social shifts occurring within the state, or the family as both a consumer and a social unit. General agricultural research funds are combined with funds from the Hatch Act, other federal and state grants, and private sources to obtain a high degree of flexibility in the program, which includes projects of national and international scope as well as those of particular concern to Minnesota.

A recently completed study in the area of economics shows the relationship of the crop index and farm size to income levels. Another study reports that beginning farmers can make good to excellent profits in agriculture if they are good managers and can acquire and use large quantities of land and other capital resources effectively. The importance of good management was also pointed up in a study of the Southwest Farm Management Association that showed the average earnings of farmers in the Association doubling between 1956 and 1966 but the spread in profits between high- and low-earning farms becoming wider.

A management information system begun at the Southern Experiment Station at Waseca is expected to lead to the development of electronic data systems for all types of farm operations. The Experiment Station also began contributing to the development of a state data bank and information analysis system.

Basic econometric studies on the behavior of linear and nonlinear supply curves are expected to lead to increased precision in the empirical results of agricultural supply and demand analysis. Another area of research concentrated on factors associated with low income levels in rural communities. Social and economic factors were also studied as a determinant of divergent buying behavior by families in regard to specific consumption items.

Several studies dealing with international trade were completed. Research on present and potential conflicts between domestic agricultural policies in the world market indicated that among the eight developed nations studied the United States occupies an intermediate position in the overall amount of import and export protection afforded to farmers. A prediction that United States exports of soybeans and soybean meal will continue to rise resulted from a study of the agricultural policies of the European Common Market. However, an analysis of projected world demand for soybean products through

1975 and 1980 revealed a probable weakening in domestic and international demand for soybean oil.

Research concerned with Minnesota's competitive position in relation to other regions in the United States covered several areas, including projects concerned with sugarbeet production, vegetable production and processing, cattle feeding costs, and the dairy industry.

In the area of agronomy and plant genetics, four new variety releases were made in 1968: a wheat variety, *Polk*; a flax variety, *Nored*; an early maturing soybean, *Clay*; and a brome grass variety, *Fox*. Two new garden chrysanthemums, *Sunny Glow* and *Minn White*, were also developed in 1968, bringing to 47 the number of garden chrysanthemums introduced by the University.

The superiority of hybrid vigor in crop plants for commercial production was disproved by a recent study of barley hybrids. Another study, evaluating simple and complex mixtures of varieties in barley, oats, and soybeans to simulate blends offered to farmers by seedsmen, showed the mixtures to be consistently no more productive than the average of the component varieties grown alone. Results of a four-year study completed during the biennium clearly identified reed canary grass as a superior grazing specie, producing more beef per acre than did brome grass.

Because soybeans are a major cash crop and a major contributor to the economic growth of the state, much research has been concerned with increasing soybean production. Studies have been made on yields from blends as compared to yields from single varieties, on the effects of variations in plant spacings, on genetic differences as a factor in resistance and susceptibility to bacterial blight, and on the importance of inoculation when soybeans are grown in soils essentially free of rhizobia.

Research on methods of increasing the productivity of crop land included a land-forming project in the Red River Valley and air conditioning of vegetable crops by spraying mist on the foliage. Weed control research continued to point to the importance of combining use of herbicides and proper crop selection with good cultural practices in cultivation.

Much of the research in the area of animal science has been concerned with improvements in livestock feeding processes. Studies have been made on the use of dried defatted whole fish flour to replace part of the milk protein in calf diets, the effects of dry lot production of feeder calves as compared to pasture production, and the feed costs and weight gain of steer calves fed nonprotein nitrogen as compared to soybean meal. The use of additives such as urea and nonprotein nitrogen compounds in corn silage has also been studied in several projects.

Other feed studies involved comparisons of dry, immature corn to mature corn and of ensiled beet tops to alfalfa-brome hay in regard to feed value. Rolling of high-moisture ensiled corn grain fed to heavy cattle, calcium carbonate and dicalcium phosphate as related to fermentation in corn silage, differences in growth responses of calves to nonfat dry milk, and addition of soybean meal to a high lysine corn ration for pigs were also investigated during the biennium. A project comparing lamb finishing rations of 1920 with those of 1967 showed a 158 percent improvement in weight gains. Studies also showed that lamb and wool production were not affected by confining ewes to dry lot on a year-round basis as compared to summer grazing.

Turkeys were the subject of two research projects. Breeder hens were found to maintain normal egg production, fertility, and hatchability given only 3 feet of floor space per hen and blood pressure was determined to be a selection characteristic. The latter study has particular significance in its relationship to similar characteristics in man.

Other genetics studies involved outcrossing and linebreeding comparisons with Guernsey cattle; the effects of selecting a Milking Shorthorn herd on the single basis of high milk production; a comparison of Minnesota swine breeds 1, 2, and 3 with standard breeds of Duroc, Hampshire, and Poland China on the performance of their crossbred offspring; and the relationship between breed and growth rate in crossbred lamb performance.

The pattern of chemical changes in uterine fluids through the estrus cycle was established in a study of great importance to ova transplant work. Meth-

ods were also developed to test enzymatic leakage in spermatozoa due to handling, time, temperature, and freezing.

Research involving dairy products resulted in the development of a new low-fat dairy topping. Another project concerned drug contamination of milk before the milk is drawn.

Pest control and plant disease received attention from many studies during the biennium. Two species of wild potatoes resistant to aphids were crossed with commercial potatoes to produce commercial varieties resistant to aphids; the immediate and residual effects of application of aldrin to corn were studied; and surveys of the distribution and severity of crop diseases tested the technique of low altitude flying using cameras equipped with ektochrome infrared films. Chemical control of rust by airplane application was demonstrated to be feasible and nonpoisonous chemicals were successfully used in seed treatment. Research over the past two decades culminated in the successful elimination of root rot disease and wilt in peas for processing.

Research in other areas produced a variety of results. A study of the Minnesota timber industry indicated the need for an efficient distribution center in northern Minnesota for the marketing of lumber. A previously unrecognized glacial lake was discovered in northern Minnesota as a result of soil surveys. A new peat classification system was developed, greatly facilitating bog inventories. Research on new uses for peat has indicated that Minnesota's 7.5 million acres of peat lands may well be one of its largest untapped resources.

Continuing Education

Cooperative or Agricultural Extension Service is a joint effort by the University, individual county governments, and the federal government to extend the resources of the University to the people of the state. An Extension committee in each county aids the University in financing, staffing, and developing educational programs. This arrangement is designed to assure sensitivity and responsiveness to the needs and desires of state citizens. Through the Cooperative Extension Service, the University has a staff in every Minnesota county, with 250 faculty members known as county agents, home agents, and area agents located in 91 county offices. In addition, 125 specialists and program staff in agriculture, home economics, forestry, veterinary medicine, and the social sciences are available from the Twin Cities Campus/St. Paul to provide information and support for educational programs throughout the state.

Program Magnitude — Extension program efforts serve the people of Minnesota through instructional programs, information flow in printed or audio-visual form, and individual or group consultations. Instructional programs during the biennium included short courses, in-depth teaching, field demonstrations, field days, tours, and general educational meetings. In 1966, the Extension staff conducted a total of 39,271 such instructional programs, and in 1967, a total of 46,937. Nearly 960,000 bulletins and other publications were distributed in 1966, the number rising to 1,070,000 in 1967. During the same two years, the Extension staff participated in 38,325 and 39,006 radio broadcasts. News stories prepared for newspapers and magazines totaled 23,071 in 1966 and 41,392 in 1967. The number of television broadcasts presented rose from 747 in 1966 to 1,048 in 1967. In 1966, 485,971 separate consultations were held with individuals, families, organizations, and communities; in 1967, these consultations on individual and group problems totaled 537,621.

Specific Extension Programs — Extension educational programs are both general and specific, and they are geared to the specific interests and needs of a varied clientele. Some examples of programs carried on during the biennium include:

Agricultural Production, Management, and Technology — This project continued to be of major importance for Cooperative Extension. The prime focus of these Extension educational programs is on the technical and economic problems that farmers, horticulturists, foresters, and agricultural leaders face in producing food, fiber, and forest products. Changes in educational programs have made possible greater in-depth training in the areas of animal nutrition

and reproduction, livestock management, animal health, legal affairs in farming, farm machinery and materials handling, irrigation technology, crop production, pest and disease control, farm business management, soils management, Christmas tree culture, shelter and windbreaks, gardening, fruit production, shade tree maintenance, turf management, and production and marketing outlook for crop and livestock products. Livestock improvement, soil testing, and farm business analysis programs have been modernized and computerized, bringing the farmer rapid analysis and recommendations adjusted to his individual situation. Programs for highly specialized commercial producers are being strengthened by area specialists in farm management, sugar beets, potatoes, irrigation, livestock, crops, and soils.

Community and Resource Development—Helping Minnesota develop its natural and human resources has become increasingly important in Extension's educational program. Special efforts on tourism education are helping to develop this important segment of our rural economy. Educational programs involving wood operations, Christmas tree marketing, special irrigation projects, new urban development patterns, improved industrial location, and many other activities and studies have been designed to assist in the improvement of community economies. Community leaders improve their understanding in new and changing areas of public concern through seminars that focus on such issues as public affairs, bargaining power, taxation, agricultural policy, and world trade.

Family Living and Home Economics—These programs are related to health, housing, consumer competence, child development, family stability, money management, consumer performance in the market, nutrition, textiles and clothing, and home furnishings as concerns of the family and to public concerns affecting the family. Institute of Agriculture educational programs—both collegiate and extension—now emphasize the entire family, with special emphasis on the homemaker. An estimated 40,000 women in organized groups and 31,000 young women in specialized homemaking projects participate each year. Another 45,000 women participate in Extension programs outside of group projects.

Youth—Nearly 85,000 Minnesota youths participated in the youth development program during the biennium. About 55,000 between the ages of 9 and 19 took part in the traditional 4-H program. Another 29,000 boys and girls participated in a 10-week TV Science Club and other TV club activities. Recently, limited grant funds supported experimental 4-H programs for disadvantaged urban youths. Over 900 retarded youths in the Twin Cities metropolitan area have been participating in club activities adapted to their special needs. Other urban young people visited farms in farm-city youth exchanges. Still others participated in conservation education activities conducted jointly with the public schools.

Marketing, Processing, and Distribution of Food and Fiber Products—Extension programs bring knowledge from the University and other agencies to the food and fiber industries. For example, microbiology and quality control training have been provided in short courses for milk handlers, technicians, and dairy managers. Clinics and short courses in sawmill operation and wood products utilization are being conducted. Grain marketing schools have been conducted for years, with recent emphasis on grain grading and sanitation, futures trading, market trade factors, and economic aspects of artificial drying of grain following harvest. Similar far-reaching program innovations have affected fruits, vegetables, and other crops.

Programs with Unique Clientele—The Cooperative Extension Service has been commissioned with special grant funds to carry on certain experimental programs with disadvantaged or other special clientele. One program, "Training Unlimited," attempts to provide every county with information on training and retraining opportunities. Special home economics work is being conducted on two Indian reservations and with senior citizens. "Homemakers Unlimited" is a program that helps women with physical disabilities carry on homemaking activities. Aides have been trained to work with disadvantaged groups in both urban and rural areas. In northern Minnesota, three special area agents work with community organizations to help develop local leadership in an

experimental program focused on problems of low-income families in rural areas.

Technical Services—Financed by federal funds, the technical services function is a new responsibility assigned, in part, to the Agricultural Extension Service. It includes programs on food and wood products and technologies and provides a technical information service to compile and distribute information of value to industries in a growing Minnesota.

Needs of the Agricultural Extension Service—Additional staff is essential to the Extension Service if it is to continue to meet the needs of the people of Minnesota. Continuing education is a rapidly growing undertaking. County requests for programs involving state specialists have increased from 578 in 1964-1965 to 987 for 1967-1968. Requests for multicounty or series events have increased from 50 in 1964-1965 to 244 in 1966-1967, and to 477 for 1967-1968. More specialists are needed to meet this demand.

Field staff have actually been reduced in the last few years. There were fewer county agents and home agents in 1968 than there were in 1962 or even 1960. Increasing demands cannot be met with decreasing staff assistance. Additional funds are necessary to provide the Extension Service with badly needed personnel.

Future Programs—The target for the near future is to continue and to expand work with special audiences such as youth, specialized producers, low-income families, and agribusiness groups. Major program emphasis will include the area of housing as related to the immediate physical and natural environment in which families live and develop.

Clientele requests for expanded programs, as indicated by a recent task force study and by the Institute of Agriculture Long Range Planning Report, are revealing new areas of program interest that will need to be accommodated to the extent permitted by available resources.

Extension programs relate in varying degrees to the citizen, the youth, the homemaker, the family, the community, the producer, the supplier, the processor, the distributor, and the consumer. The goal of the Cooperative Agricultural Extension Service is to relate more effectively to the growing needs and interests of these diverse groups.

International Programs

The International Agricultural Programs Office was created in 1964 to extend the Institute of Agriculture's technical services abroad and to help students prepare for professional agricultural careers in other countries. Programs of the Office are largely concerned with research on, and efforts to deal with, world food supply problems. Creation in 1967 of a Center for Research on Economics of Development in the Office of International Programs contributed to productive research efforts, which, in turn, contributed to several solid accomplishments in world agriculture during the biennium.

If the world's growing population is to be fed, the research, training, and technological resources of agricultural colleges and universities must be made available to underdeveloped nations. The International Agricultural Programs Office identifies as requisite to this sharing of resources a continuation of cooperative institution-building efforts abroad, an expansion of efforts to increase the number of native and foreign agricultural scientists trained at American universities for service abroad, and a greater emphasis on problem-oriented research.

Overseas service opportunities continue to be available to the Office, but funds for international activities are becoming as scarce as are those for research and instruction improvement. Despite substantial assistance and support provided by the Office of International Programs, a broader financial base will be essential to continued progress in agricultural research and training.

Undergraduate Instruction—Institute of Agriculture undergraduate courses with a substantial international dimension numbered 17 in 1967. Especially designed for the international approach was a joint seminar on science as related to world food problems, with the areas of social science, animal science, and plant science each offering one course. The seminar was made a require-

ment for undergraduates participating in the International Affairs Enrichment Program. In 1967-1968, a new upper division course, Communications in International Agricultural Development, was offered for the first time.

Enrichment Program in International Affairs — Principal emphasis during the biennium continued to be on utilizing elective courses to enrich the Program participant's education on international aspects of his planned professional life. Students in the program complete 18 hours of course work divided among three fields of study, one in support of the student's major and the others in areas such as language or a relevant social science. In 1966-1967, a total of 20 Institute of Agriculture undergraduates participated in the Program, which leads to a special certificate at graduation. In 1967-1968, certificates were awarded to four graduating seniors, and an additional 14 students participated in the Program.

Graduate Instruction — The Institute continued to attract both native and foreign students seeking postgraduate professional education in agriculture, forestry, and home economics. The number of foreign graduate students, excluding Canadians, increased from 119 in 1966-1967 to 137 in 1967-1968. Some of these students were supported by their governments, by international bodies, by the Agency for International Development, or by private foundations. Others had only private financial support. Some foreign graduate students were employed as research assistants on Agricultural Experiment Station projects.

Training Administrators for Agricultural Development — A joint master's degree program was developed during 1966-1967 by the Center for Public Administration and the Institute's International Agricultural Programs Office. Students may work for a degree in Public Administration with a minor in Agriculture, or vice versa. This program and a new Agricultural Administration seminar were designed primarily to meet the needs of foreign graduates in agriculture who may expect to have both professional and administrative responsibilities when they return home. The establishment in 1968 of a new professorship in Development Administration is expected to further stimulate this program effort.

Foreign Participant Training — The Department of Agricultural Short Courses, in cooperation with various federal agencies and with the schools and departments of the Institute, provided training for 221 persons from foreign countries during each year of the biennium. The length of the programs ranged from less than one week to more than ten months, with each program seeking to provide students with opportunities to know the state and its people.

Exchange Student Programs — The European Exchange Program, also directed by the Department of Agricultural Short Courses, was continued during the biennium. Each year, 37 young Europeans received work experience on Minnesota farms and were enrolled at the University for course work in the winter quarter. Plans were made to initiate a similar program for a group of African students in 1968-1969.

Home Economics Study of Intercultural-International Affairs — The School of Home Economics received a grant from the Office of International Programs to fund a year of special seminars and development of a stronger international-intercultural focus in its programs of teaching, research, and service. The special program will be initiated at the beginning of the 1968-1970 biennium with an intensive workshop for faculty and graduate students. A seminar series is planned for fall quarter 1968, and the faculty will work during the year to broaden the focus of programs in the School.

Winter Seminars on World Food Problems — The 1967 Winter Seminar series was structured around the general topic of the protein fraction of the human diet. Each of the five guest speakers spoke to the faculty of a department or departments in his field and also presented a general faculty lecture. The theme of the 1968 series was the Resource Foundation of an Adequate World Food Supply, with emphasis on soil, water, forest, and fishery problems.

Visiting Professors — During the biennium, 21 visiting professors lectured and taught in Institute departments. In addition to two specialists from the

United States, there were seven from France; three each from England and Japan; two from Scotland; and one each from Belgium, Bulgaria, Hungary, and India.

A total of 44 Institute faculty and staff members participated in conferences, seminars, agricultural projects, and research efforts abroad during the biennium. Every continent except Antarctica was visited, the various itineraries covering more than 50 countries.

Chile Agricultural Project — Major emphasis continued to be placed on the strengthening of the specialist team at the Research Institute and on the development of cooperative programs between the staff of the Research Institute's Divulgacion Technica and the numerous Chilean organizations carrying out technical education activities with farmers. Programs during the biennium centered on the production of corn, wheat, milk, and swine. Corn production efforts produced a 1966-1967 corn crop 38 percent larger than that of the previous year, with individual corn yields recorded at world-record levels. The U.S. Agency for International Development, in its report to the Congress, cited the spectacular increase in Chilean corn production since 1961 as the outstanding agricultural achievement in that country. Swine production also increased, and wheat and dairy production efforts were initiated.

The team of Chilean specialists in training, all headquartered at principal experiment stations, increased from 9 to 25 members. Minnesota team members helped to install training programs at two Chilean universities to equip graduates for work as production specialists, and several Chilean students and professors studied in the United States to prepare for future work on the project. The government of Chile, impressed by initial results of the project, reorganized its advisory services to farmers and asked the Minnesota team to assist with the development of the new agency and its program. The new organization, the Service for Agriculture and Livestock, has developed a Technical Assistance Division in cooperation with the National Agricultural Research Institute.

Tunisia Agricultural Project — During 1966-1967, a contract was signed by the University with the Agency for International Development for a new project in Tunisia. Efforts were begun to establish a Bureau of Economic Studies in the Office of the Minister of Agriculture and to develop a program of research on marketing and farm production policy problems, particularly those concerning wheat.

COLLEGE OF BIOLOGICAL SCIENCES

RICHARD S. CALDECOTT, *Dean*

Established in 1965, the College of Biological Sciences has since developed a departmental and graduate program structure designed to promote excellence in teaching and research in modern biology. The departmental units that are now a part of the College include Biochemistry, Botany, Ecology and Behavioral Biology, Genetics and Cell Biology, and Zoology. In addition, the James Ford Bell Museum of Natural History and the Dight Institute for Human Genetics were placed under the administration of the College during the biennium. Previously the Museum director was responsible to the vice president for academic administration and the Dight Institute reported through the dean of the Graduate School. These administrative changes should simplify and clarify responsibility for the development of teaching and graduate education in basic biology at the University.

The Department of Ecology and Behavioral Biology is the newest administrative unit in the College. It was established in recognition of the state's urgent need for well-trained bioscientists who can teach and do research on all aspects of man's impact on the biosphere. The Department has rapidly become the focal point for graduate training in aquatic and terrestrial ecology and behavioral biology. These graduate research and training programs, which are a major responsibility of the CBS faculty, draw heavily on the talents of scientists from the professional schools. In recognition of the need to maximize such interdisciplinary contacts, the Institute of Technology and CBS have

taken joint responsibility for operation of the Limnological Research Center to investigate more fully the engineering and biological aspects of water pollution. The Field Biology Programs at Lake Itasca and Cedar Creek are also a cooperative effort, conducted jointly by the Institute of Agriculture and the College of Biological Sciences.

During the biennium, the name of the Genetics Department was changed to include Cell Biology. Dr. Ralph E. Comstock, who was instrumental in establishing the original department and in effecting the name change, asked to be relieved of the headship to return to his teaching and research. Dr. Frederick Forro, Jr., a biophysicist from Yale University, has filled the vacancy, bringing to the University an excellent reputation as a teacher and researcher.

Approximately 8,000 students were enrolled in courses offered by the College during 1966-1967, its first year of operation. In 1968-1969, it is anticipated that the number will exceed 10,000. Students who enroll in CBS courses take an average of two offerings per academic year. This means that the CBS faculty will have personal contact with about 5,000 students, or more than 10 percent of the student body of the University, during the next academic year. Limited space and facilities have prevented this number from increasing even more dramatically.

Undergraduate students enter CBS after completing lower division work. In the fall of 1968, more than 100 students will be pursuing the B.S. degree in the College. In addition, there are more than 175 biology majors working toward the B.A. degree. Each of these students is advised personally by a CBS professor, an arrangement which, while demanding of faculty time, has proven to be of great benefit to the students.

Graduate students pursuing advanced degrees under the tutelage of CBS professors now number in excess of 200. About one third of them are teaching assistants and contribute substantially to laboratory instruction in basic biology courses. Most of the remainder are supported by federal research grants to individual professors or by departmental federal training grants. In this respect, it is gratifying that the federal support of CBS programs has increased from approximately \$900,000 in 1965-1966 to over \$1,500,000 in 1967-1968. It is significant that this increase occurred during the period when federal funding of University programs underwent a general reduction.

Resident Instruction

Organization — Major changes during the biennium involved the establishment in 1967 of the Department of Ecology and Behavioral Biology and of the expanded Department of Genetics and Cell Biology. Three academic staff members from the Department of Zoology and one from the Department of Botany were transferred to Genetics and Cell Biology to facilitate cooperative studies and greater administrative efficiency in laboratory work. As a result of these changes, the teaching responsibilities of the Zoology Department now center around whole organism zoology.

Curriculum — An undergraduate program leading to a degree in Biological Sciences with a major in biochemistry was begun in 1966. A graduate course in biochemistry jointly administered by the Graduate School and the Department of Biochemistry was expanded from two to three quarters in 1967-1968, with specialized courses to be offered in alternate years at the St. Paul and Minneapolis facilities to provide maximum flexibility in scheduling for students.

The Department of Ecology and Behavioral Biology has developed ecology courses for students in fields other than biology. Included are an introductory course designed for the widest possible variety of students and a special course for engineering students. A graduate Training Program in Vertebrate Behavior and Ecology was also established, with a \$450,000 grant from the National Institutes of Health to continue the Program for five years. The establishment of special graduate programs in genetics and human behavior genetics was funded by grants to the Department of Genetics and Cell Biology during the biennium.

Research — Major projects in the Department of Ecology and Behavioral Biology included the continued use of radio-telemetry in research on animal behavior, an Antarctic seal population study, and studies on the dynamics of blue-green algae populations in polluted and unpolluted lakes. An enzyme research project in the Department of Biochemistry was terminated after seven years of work. The project was made possible by a National Institutes of Health grant of over \$300,000; a similar grant is pending for continuation of the study. Other grants for research in the Department totaled over \$400,000 during the biennium and supported a wide variety of studies. Research in the Departments of Botany, Zoology, and Genetics and Cell Biology also covered diverse subjects, with many projects funded by grants from the National Institutes of Health, the National Science Foundation, and the National Aeronautics and Space Administration.

Additions and Needs — Facilities at the Gortner Laboratory of Biochemistry became available in 1966 for use by members of the Department of Biochemistry and the Department of Genetics and Cell Biology. The space needs of these Departments have been met well by the new Laboratory, but floor tile and air conditioning are yet to be installed. Office and laboratory space was also made available to the Department of Genetics and Cell Biology in Snyder Hall. However, since present facilities will permit only limited further growth, this Department and the Department of Botany are preparing plans and a request for a new building to house both of them.

A major need of the Department of Ecology and Behavioral Biology is a building on the Minneapolis campus. This Department also needs more faculty positions if it is to develop programs in the important areas of ecology. The Zoology Department is suffering an acute space problem that could be resolved by completion of the front of the building. Internal remodeling, if funds are granted, will provide office space for half of the new staff members expected to be added to the Department. Needs of the Department of Biochemistry include major instrumentation, both to meet the needs of the staff and to attract outstanding research scientists to the University, and services in the areas of electronics, machine shops, and glassblowing that are now lacking on the St. Paul campus.

Dight Institute for Human Genetics

Training grants in human genetics and in human behavioral genetics, both from the National Institutes of Health, have been effectively utilized and have provided half of the salaries of Professors V. Elving Anderson and Irving I. Gottesman. In addition, these grants provide stipends for fourteen graduate students. The accomplishments of the Dight Institute would have been meager indeed without this substantial financial assistance.

In 1967 a study was completed on the behavioral effects of phenylketonuria, a metabolic error that usually results in mental retardation and other behavioral problems. The results indicated deficits in attention and manual dexterity. Professor V. Elving Anderson, assistant director of the Dight Institute, extended this research at the Children's Hospital Medical Center in Boston while on leave of absence during the 1967-1968 academic year.

The major advances in human genetics in recent years have been in the biochemical descriptions of the steps between the genes and the visible traits they produce. The Dight Institute has not been able to participate directly in these advances because of lack of space in which a biochemical laboratory could be established to carry out projects. It would be possible to obtain funds to support a biochemist to do this work if space could be found for his laboratory and office. This is the urgent need at present.

Field Biology Program

This program was established in July, 1966, to further develop the activities in research and teaching that exploit the two excellent field stations maintained by the University. It has been placed in the College of Biological Sciences since it serves staff and students from many colleges who are concerned with basic aspects of ecology and animal behavior.

Cedar Creek Natural History Area — The Natural History Area, 40 miles from the Twin Cities campus, serves as the outdoor laboratory for a wide variety of classes and research projects. During the biennium, groups from six University departments and nine other colleges in the state have visited the area many times to study habitats and review projects. Research programs in animal behavior and various aspects of ecology have been particularly active, with major grants from federal agencies supporting them. Studies of animal movements and activity using the radio-telemetry installation have attracted international attention. One portion of the Area has been zoned to allow construction of large flight pens for investigating waterfowl behavior by use of modern techniques such as time-lapse cameras and remote sensors. The Area, which is quite free of water, noise, electronic, and air pollution, has proven of immense value in these studies as well as in certain observations of properties of the ionosphere carried out by the Department of Physics.

Land acquisitions in the tract, which is planned for about 5,500 acres, are nearing completion. This has been made possible by appropriations from the Minnesota Resources Commission Fund and by application to the U.S. Bureau of Outdoor Recreation through the Minnesota Department of Conservation for matching land and water conservation funds.

The Area, now one of the largest tracts of land in University ownership, is in need of additional personnel for day-to-day management. Also essential is a program for compiling and collating data from the various research programs so that continuity is assured. Aerial photogrammetry, last carried out in 1954, should be repeated so that changes in habitat can be fully documented over the years.

Of immediate concern is the threat to the Area by the proposed development of a Metropolitan Airport at the so-called "Isanti" site, which is adjacent to the property. Further representations to the Metropolitan Planning Council should be made by the University.

Lake Itasca Biology Sessions — The Biology Sessions, a unit of the Summer Sessions, have expanded to two five-week terms. These Sessions are conducted at the Itasca Forestry and Biological Station in Itasca State Park. An exceptional variety of rich and undisturbed aquatic and terrestrial habitats surround the Station. Ten to twelve field biology courses are offered each term by seven departments. As field work is the major element in this instruction, enrollment in each course is limited to 15 to 20 students.

Demands for the courses exceed the places available. Graduate students constitute approximately 66 percent of the enrollment, with upperclassmen filling the remaining places. Students from five colleges within the University and from 25 to 30 other American and foreign institutions have been in attendance each year. Staff members are drawn in about equal proportions from the University and from other schools.

A very important aspect of the program is research, for which major support has been provided by the National Science Foundation. Most of the graduate students are engaged in this activity, with emphasis on the fields of limnology and plant ecology. Opportunities for year-round research have become available since winterized facilities were constructed.

In June, 1967, the new Aquatics Laboratory-Library Building was dedicated. This facility, with four new cabins, allows research and teaching use of the Station during the entire year. The building was financed by a grant from the National Science Foundation and by legislative appropriations. In conjunction with it, an excellent library of approximately 1,200 books and 20 journals of value to field studies has been developed through private donations.

Staff needs for the program at Itasca include partial support of faculty during the Biology Sessions, as the necessarily small class size precludes income from tuition equal to expenses. A resident biologist staff position is also needed to assure better coordination of the developing year-round programs and collation of long-range research. Projected class use of the Station includes a winter ecology course and spring limnology and ornithology courses, each of which would be unique and of real value to students in field biology.

James Ford Bell Museum of Natural History

In May, 1967, ceremonies took place renaming the "Minnesota Museum of Natural History" the "James Ford Bell Museum of Natural History." This was in recognition of Mr. Bell's extensive personal interest in the development of the Museum, as well as his financial aid over many years. Mr. Bell was a pioneer in the recognition of the great importance of man's responsibilities in the management of his natural environment. Alerting the public to these responsibilities remains one of the prime purposes of this Museum.

A new Museum Advisory Committee was named during the biennium after the Museum became a part of the College of Biological Sciences. The committee is made up of four members from outside the University, three members from the College of Biological Sciences, and three members from other colleges in the University. Dean Richard S. Caldecott of the College of Biological Sciences was named an *ex officio* member.

Research — During the biennium, Museum personnel have been involved in a wide variety of research activities, some of them joint projects with other departments. Research grants from government agencies and private foundations have financed studies on the effects of radiation exposure on animals, the use of radio transmitters in animal studies, a biochemical approach to classifying animals, animal behavior as a key to understanding human behavior, the environment's role in determining animal populations, energy needs in animals, Arctic and Antarctic animal resources, and plant and animal interrelations. The variety of research conducted indicates the scope of the Museum's scientific contributions.

Two Museum staff members were transferred to the new Department of Ecology and Behavioral Biology after its establishment in 1967. Research work in the two departments is closely coordinated.

The following specimens have been added to Museum research collections: 1,076 birds, 68 mammals, 769 fishes, and 5 collections of Pleistocene vertebrates. In addition, 623 new slides and 2,000 feet of 16mm motion picture film were acquired during the biennium. Other departments and institutions have received loans from the Museum of 1,200 birds, 75 mammals, 444 amphibians, and 500 fishes for scientific study; 2,500 birds, 50 mammals, and 100 fishes have been borrowed from other institutions for studies carried on by Museum personnel.

Public Education — The appointment of Richard E. Barthelemy as public education coordinator is bringing about a considerable expansion of Museum services to various segments of the non-University public. Particular emphasis has been placed on programs for preschool, kindergarten, and primary school children, including active participation in the Head Start program. Senior citizens, economically disadvantaged persons, retarded and disturbed children, and the deaf and blind are other groups for whom programs have been developed. Plans are being made for the training of student teachers in the use of the Museum's exhibits and other facilities and for improved coordination of the Museum program presented to elementary, junior high, and high school students with their school curriculum. The Museum has also been involved in the development of numerous outdoor instructional organizations and facilities such as the Golden Valley Environmental Research Center, the Hennepin County Park Reserve's Carver Park Nature Center, the St. Paul Science Museum, Mrs. Edith Herman's "Spring Meadow Farm," Camp Katherine Parsons, the Thomas Irvin Dodge Foundation, and the Title III ESEA project at Granite Falls.

Arrangements were made for the television showing in 18 major U.S. cities of three 40-minute films produced by the Museum. Several hundred feet of film were also made available to CBS for a series of television programs on "Animal Secrets." These were produced as educational films and are receiving national distribution.

Plans have been made to evaluate the ecology training given to the several thousand camp counselors employed annually by the 200 children's camps in the state. This investigation, involving six departments in the University, is being coordinated through the Museum. Dialogues have been held with the State Departments of Education and Conservation in an attempt to correlate

the ecological education programs of the two departments and the Museum's program.

State parks nature interpretation work was interrupted by the resignation of Donald K. Lewis at the beginning of the 1967 summer season, but he had succeeded in getting the naturalists signed up and much of their material assigned and ready for delivery. Mr. Barthelemy has assumed direction of the Museum's work with the Division of State Parks. The Parks Division is planning a greatly expanded service in interpretation of the history, natural history, and archeology of the areas preserved as state parks. Attendance data on the state park interpretive program are not yet available for the years 1966 and 1967, but since the naturalists' services at least kept pace with the 17 percent increase in park attendance, extrapolations have been made from 1964-1965 data as follows: Approximately 174,000 persons used the self-guiding trails, 35,000 persons participated in conducted tours and trail trips, 87,000 persons attended the evening programs, and 420,000 persons visited park museums.

Gifts — Significant gifts to the Museum during the biennium included \$2,000 from the World Wildlife Fund to Dr. A. Erickson, Curator of Mammals, for a study of the South American Spectacled Bear; \$1,000 from the Avon Foundation for audio-visual work; \$500 from the North American Wildlife Management Institute for a study of Virginia and Sora Rails; a pledge of \$1,000 from Donald Weesner for completion of the Golden Eagle group; and \$40 annually from Jefferson Benner and \$200 annually from the Minneapolis Audubon Society for undesignated work of the Museum. An interest-free loan of \$32,500 was received from the W. M. Dayton Foundation for publication of a book, the loan to be returned as copies sell. Also included was a generous stipulation that should the book not sell, the loan would not need to be repaid. Lewis Oring has donated an outstanding collection of 307 waterfowl specimens to the Museum's ornithological series; 133 European and African bird skins and game heads, horns, and skins were donated by L. J. Pickrel and Mrs. W. J. Wilwerding; a number of books and field notes were given to the Museum library by Mrs. Ruth Grout, Jefferson Benner, Dr. S. Eddy, and Mrs. C. C. Prosser; 250 16mm slides were donated by G. Rysgaard, B. Keyworth, and C. E. Peel; and a 36-inch world globe was donated by the St. Paul Science Museum.

Attendance — Sunday programs continued to be well attended, with a total of 15,125 visitors for the biennium and an average attendance of 375 persons per program. Museum guides conducted 603 organized groups on tours in 1966-1967 and 659 in 1967-1968, for a total attendance of 34,990 persons during the biennium. During this period 456 groups, a total of 23,513 persons, visited the Museum guided by their own leaders.

Exhibits — Two major 8-foot habitat displays were completed. A pair of Great Blue Herons at an Anoka County rookery and a pair of coyotes hunting along the St. Croix bluffs are now available for viewing. Thirty 2- and 3-panel temporary displays were installed for periods varying from three weeks to six months. Several of these, in addition to special displays, were exhibited during Minnesota week; on Editors', Legislators', and Broadcasters' Day in 1966 and 1967; and in the General Mills Office Building. A number of special displays were also constructed for the Itasca State Park Museum. Small portable habitat displays were again circulated through the schools and the state parks, with 1,975 separate loans recorded during the biennium. A series of 16 of these displays, changed twice each year, is regularly installed in the Zoology Building corridors.

Lectures — Museum staff members gave 175 lectures outside the Museum at the invitation of various organized groups. Included were two 3-week tours by Director Walter J. Breckenridge at the invitation of the National Audubon Society: 40 lectures were given in cities in southern Canada and eastern United States, with a total of 19,000 persons in attendance.

Future Plans — Two interrelated problems dominate the immediate future of the Museum: the completion of the new wing exhibits and the accommodation of expanding graduate student enrollment both in the Museum and in the Department of Ecology and Behavioral Biology. At present, the new wing

displays are at a complete standstill awaiting legislative action on the biennial request for funds. Plans have been drawn up for a series of displays depicting the geologic origins of the Minnesota region including early evidences of the appearance of man, but the limited time available for this work on the part of staff members whose major duties lie elsewhere has proven entirely inadequate to develop the carefully integrated plans needed. It is hoped that with anticipated funds a curator of exhibits, whose major duties will be the completion of these plans and the undertaking of construction, can be added to the staff. In the meantime, nearly all of the unfinished space is being temporarily used for graduate student offices, for a lecture room and demonstration area, and for informal seminars. If funds are made available by the Legislature, work can be completed on the public exhibits for which the two middle floors of the new wing were originally constructed. Space will then need to be made available elsewhere for graduate student use.

SCHOOL OF BUSINESS ADMINISTRATION

PAUL V. GRAMBSCH, *Dean*

Enrollment — Fall term enrollment data for the past five years plus a projection for the fall of 1968 are presented in the table below.

	1963	1964	1965	1966	1967	1968
Undergraduate	620	702	749	800	802	850
Graduate	262	276	388	400	588	680
M.S.	58	66	111	140	121	155
M.B.A.	*	*	*	*	178	210
E.M.B.A. (Evening)	173	182	193	220	239	300
Ph.D.	31	28	34	40	50	65

*M.S. and M.B.A. enrollment data combined for these years.

Students are admitted to the undergraduate program of the School of Business Administration after they have completed two years of college work, a factor that makes the size of this program appear deceptively small in relation to others in the University. If the School operated over the complete four years of the undergraduate program, it would enroll more than 2,000 students, making it one of the University's larger units.

The apparent leveling-off of undergraduate enrollment during the past several years is due in part to the introduction in fall 1966 of stricter entrance requirements. Mathematics up through Introductory Calculus is now a basic requirement for admission. A more specific spelling out of distribution requirements has also accounted for the leveling-off process to a certain extent. However, substantial upward pressure is indicated for the fall of 1968. Students are apparently able to meet the entrance requirements in greater and greater numbers.

Graduate enrollment has increased impressively during the biennium, especially in the master's degree programs. While some of this increase may have resulted from efforts by students to postpone military service, there is ample evidence that a substantial portion is due to a growing nationwide recognition of the School's excellent graduate program.

The increasing number of students in all degree programs has strained faculty resources to the point of endangering morale and may eventually affect the quality of education. Substantial inputs of faculty and staff are needed if the School is to continue its present program of degrees.

Curriculum — The most significant curriculum changes in the undergraduate degree programs occurred with the addition and modification of entrance requirements. The requirement of Math 40 and its prerequisites for candidacy for the regular B.S.B. degree represented a substantial change in emphasis. A new sequence of quantitative analysis courses established for the junior year is introducing innovations in educational method. Most important is the move to a modified tutorial system of instruction, with emphasis on small

groups in problem-solving situations rather than on lectures to large classes. Many of the lectures for the large classes are taped in advance for showing on closed-circuit television, leaving the lecturers free to work more closely with the small groups. It appears likely that this approach will be used in many more courses in the future.

At the graduate level, the most important change has been the addition of courses making management information systems a regular field of study for students in the M.S. and Ph.D. programs in Business Administration. The M.I.S. program, as it is called, is interdepartmental, involving all segments of the School's faculty in the courses and in the research application. The addition of seven new courses plus the modification of three courses already in existence were the basic steps taken by the faculty. Initiation of this program is planned for fall 1968. Judging from the interest the program has attracted across the country, it will serve a substantial number of students representing a wide variety of disciplines.

Special Faculty Additions—The School has been awarded the Distinguished Visiting Professorship of the American Institute of Certified Public Accountants for the 1968-1969 academic year. This will be the initial year of the Professorship, and the School was singled out for this award because of the excellent progress it has made over the past few years in the area of accounting. Professor Robert J. Mautz of the University of Illinois has been named to the Visiting Professorship.

The Frederick R. Kappel Chair in Business-Government Relations was established during 1967-1968. This Chair was funded through the University of Minnesota Foundation and money is now available for the initial appointment. A list of 135 potential candidates has been narrowed to approximately 20, and it is hoped that an appointment will be announced in the near future.

During the past two years the School sponsored three prominent visiting lecturers who were presented to the University community with the assistance of the Department of Concerts and Lectures. John Kenneth Galbraith, Professor of Economics at Harvard University and prominent national figure, spoke on "Power and Goals in the Industrial State"; Barbara Ward, Albert Schweitzer Professor of International Economic Development at Columbia University and world-renowned economist, spoke on "Organizing the World Economy"; and Paul-Henri Spaak, Executive Development Director of European Economic Community and former Premier of Belgium, spoke on "Problems of European Cooperation."

Conferences and Symposia—The School of Business Administration presents symposia and conferences of interest not only to students and faculty but to the community at large, especially the business community throughout the state. The Merrill Cohen Fund for the study of ethics in business sponsors a symposium on current ethical problems each year. The Ruvelson lecture on business-government relations brings people such as Dr. James Goddard, Director of the Pure Food and Drug Administration, to the campus. The Alumni Institute provides the opportunity for faculty, alumni, and interested citizens to discuss current issues of the day as well as to hear outstanding lecturers such as Frank Pace, now of the International Executives Service Corps.

The B-Day luncheon convocation series sponsored by 55 firms and business organizations throughout the state was continued during the biennium. Otto A. Silha, Vice President and General Manager of the Minneapolis *Star* and *Tribune*, and Stephen F. Keating, President of Honeywell, Inc., were the guest speakers for 1967 and 1968. Approximately 500 students and faculty members attended each year.

Research—The growing excellence of the faculty and the broadening of faculty interests have contributed to greatly increased research productivity during the biennium. Areas covered by projects ranged from consumer behavior to railroad merger data problems. Several studies were concerned with potential uses of management information systems and with management problems in large and small business organizations. Employee attitudes, unemployment, wage theories, and manpower forecasting were investigated by several faculty members. Attention was also given to the banking and insurance fields, public versus private medicine, marketing problems, tourism in Minnesota, regional economic development, trade and transportation policies,

financial reporting and depreciation methods, and the academic administrator as related to university goals.

Center for Experimental Studies in Business — Faculty members who participate in Center programs attend weekly discussion sessions and conduct and act as advisers on research projects. During the biennium more than 20 School of Business Administration faculty members participated, as well as staff from the Departments of Psychology and Sociology. Faculty members from various departments of SBA led the weekly discussions, which included reports by graduate students on their research projects and reports by industry personnel on research being carried on at companies such as General Mills and Control Data Corporation.

CESB studies during 1966-1967 were concerned with the effects of psychological pricing. Projects during 1967-1968 included an effort to replicate a study by Joseph Naylor on the effects of deceptive packaging, a study aimed at determining how a pre-experimental measure of expectations of two products would be affected by administration of different treatments regarding taste, marketing simulation games to determine what effects a risk measure and varying feedback schedules would have on simulated decision-making, and a survey of retailers and consumers in low-income areas of Minneapolis to discover discrepancies between what consumers desire and what they are being offered by retailers. Further work concerning marketing in low-income areas included a survey regarding aspirations of people in such areas and problems of importance to them as consumers and a survey on the problems of retailers in these areas. Another study attempted to determine the effects of integrated advertising on college students and on people in low-income areas. CESB also served as a clearing house for publications dealing with problems of low-income and Negro consumers. Annotated bibliographies were compiled for approximately 250 publications.

Industrial Relations Center — The research program of the Center has in the past few years taken new direction toward basic research. The fact-gathering surveys that the IRC pioneered have been taken over by other groups, leaving the IRC free to pursue more basic studies of relationships and methodologies. Another new emphasis in the IRC research program is that of international industrial relations.

Specific research activities included studies of manpower planning and forecasting, attitudes toward compensation, organizational effectiveness, managerial training and development, determinants of performance evaluation, labor market behavior of youth, worker motivation, and collective bargaining in public employment. These studies were financed by various governmental agencies, corporate and union contributions, and University resources. Research in the international area included a study of personal value systems of managers in four countries: Japan, Korea, India, and the Philippines; a series of studies on wage-price mechanisms in Canadian manufacturing; and a study of the wage structure in three Mexican factories. These projects have not only produced significant results, but have provided valuable education and training for about 60 graduate student research assistants during the past two years.

Research findings have been reported in monographs published by the IRC and in various professional journals. These bulletins and article reprints have been given wide distribution by way of the IRC mailing list of approximately 9,000 persons from industry, governmental agencies, universities, and unions.

Service activities of the Center included seminar and conference sponsorship, reference services, and Labor Education Service programs. Two conferences for top-level administrators of state and regional Bureaus of Employment Security were conducted during the biennium. Three seminars to disseminate Center research results covered the areas of personal value systems, organizational effectiveness, and manpower planning and forecasting. The IRC also cosponsored a conference with Iota Rho Chi, the professional industrial relations fraternity, to commemorate the tenth anniversary of the fraternity.

In addition to the many student and staff requests received daily, the Industrial Relations Center Reference Room received over 875 requests for extensive reference assistance from off-campus representatives of companies, unions, government agencies, and the general public throughout the world.

Of special significance in connection with research and service activities is the involvement of the IRC in urban affairs. Labor Education Service activities included two special training programs for VISTA (Volunteers in Service to America), the Organized Labor Employment Opportunity Program designed to open training and employment opportunities to disadvantaged youths through trade union channels, three conferences and two short courses on Labor's Role in the War on Poverty for trade unions, and the Labor Community Awareness Project designed to promote understanding by Twin Cities union leaders of the causes and consequences of poverty in this area. The Labor Education Service also was active in the local Urban League's Labor Education Advancement Program; in organizing On the Job Training programs, the Concentrated Employment Program, and Manpower Development and Training Act projects; and in joint projects with the University's Training Center for Community Programs. Other activities of the Industrial Relations Center staff included work with the Twin Cities Opportunities Industrialization Center on studies involving ability configuration of skills and development of weighted application blanks.

The Center program and staff received recognition during the biennium in the form of the 1967 Special Award of the American Personnel and Guidance Association for the continuing Minnesota Studies of Vocational Rehabilitation research program.

Management Information Systems Research Center — Over the past several years, the number of faculty members with interest and competence in computer applications has increased markedly. Under the leadership of Professor Gordon Davis, ably assisted by Professor Gary Dickson and others, the School has attempted to assume nationwide leadership in a new and emerging area of study known as management information systems. The faculty has already adopted a curriculum at the master's and Ph.D. levels.

The funding of a Management Information Systems Research Center, including the purchase of a new Control Data 3200 computer with independent capabilities as well as a direct link to the University's Control Data 6600 computer, has been undertaken jointly by the University and outside interests. An Associates Program has been devised and presented to large-scale business firms known to be spending substantial amounts of money on their own computer systems. At this time, a total of 18 firms have associated themselves with the Center. Each has pledged \$30,000 for support over the next three years. Several other commitments are pending, and special arrangements are being made to develop a close working relationship with Control Data Corporation since its equipment is being used.

Each Associate firm has designated a representative to serve as liaison between the Center and the business organization. The Associate firms will review research now going on, make suggestions about future research ideas and plans, and occasionally contribute their own personnel to work with faculty members and graduate students on cooperative projects at the Center. It is hoped that this venture in partnership will result in major advances in the areas of computer applications and information systems.

Placement Office — During 1966-1967, 241 employer firms and agencies scheduled on-campus interviews through the Office; 3,449 student interviews were arranged; 10 orientation and advising sessions were conducted, with a total of 750 persons in attendance; 450 permanent placements were made; 6,500 permanent vacancy listings were received; and Office services were used by 75 percent of the graduating seniors. During 1967-1968, more than 275 companies arranged for 512 interview schedules and students signed up for 4,253 individual interviews, an increase of 27 percent over the previous year. As a supplement to on-campus interviews, the Placement Office listed many specific job openings in firms that did not arrange interview schedules. Also, contacts with more than 2,000 employers across the nation were made available to students, returning servicemen, and other alumni through the College Placement Annual.

The Placement Office maintains records of salaries accepted by graduates of the School. Data on 1967-1968 accepted salaries indicated that the Business Administration graduate with a master's degree could expect to earn an average of \$898 per month, an increase of 10 percent over the 1966-1967 mean

salary of \$816 per month. Average monthly salaries for graduates with bachelor's degrees rose from \$613 in 1966-1967 to \$650 in 1967-1968.

A reorganization of the Alumni Placement Service has enabled the School to interview most applicants and to present to industry a group of applicants seeking employment rather than a group of students seemingly looking for information. As might be expected, the demand for experienced personnel has increased. To meet this demand a new format for jobs listed was made available to registrants. Also, current lists of available alumni were circulated to firms seeking experienced personnel. All interested alumni have been encouraged to register with the College Placement Council computer placement service, GRAD. During 1967-1968, increased activity within the GRAD system was pinpointed as the major reason for placement of a number of School of Business Administration alumni.

UNIVERSITY OF MINNESOTA TECHNICAL INSTITUTE, CROOKSTON

STANLEY D. SAHLSTROM, *Director*

The University of Minnesota Technical Institute at Crookston was authorized by the 1965 Legislature and opened its doors to the first class in fall 1966. It embodies a new and different concept of college education, offering two-year programs in agriculture, business, and food service management.

The objectives of the college programs at Crookston are to develop in the student a sense of social responsibility, an intellectual curiosity, an appreciation of education as a continuing process, and a better understanding of himself and others, and to prepare him for entrance into occupations at the technical or semiprofessional level in his chosen field.

A total of 187 students enrolled as the Institute's first class in fall 1966; 315 students enrolled in fall 1967. Projected enrollment figures indicate that at least 400 students will be attending classes on a regular basis in fall 1968. The college is coeducational and will be adding new programs as the need for them develops. An advisory committee of leaders in agriculture and business was formed to assist the administrators of the new college.

The Technical Institute is designed to serve the entire state; more than 125 Minnesota cities and towns were represented by one or more registrants in 1967. The greatest concentration of enrollees is drawn from northwestern Minnesota, with central Minnesota and the Twin Cities contributing substantial numbers. A small number of students are from out of state, coming from Montana, North Dakota, Wisconsin, and Alaska. The ratio of men to women is approximately six to one.

The Institute has three major divisions: agriculture, business, and food service management. The Agricultural Division offers programs leading to associate degrees in agricultural business administration, agricultural engineering technology, agricultural production, and agricultural science technology. In the Business Division, the A.B. degree may be earned in the accounting, marketing, executive secretarial, and small business management fields. Food service management was added to the curriculum for the 1967-1968 academic year. The courses are designed to prepare men and women for supervisory positions that require skills and knowledge in food preparation, business, and human relations. General education courses support the curriculums of the divisions. The Institute has employed 48 full-time and part-time faculty, some of whom have become available as a result of the Institute's working relationship with the University of North Dakota at Grand Forks and with Corbett College at Crookston.

Progress in more fully defining "technical education" and in developing specific curriculums to fit this educational purpose has contributed to the growth of the Institute. The programs that have been developed at Crookston take into consideration the role of agriculture as one of the nation's largest and most vital industries. Management and operation of agricultural production units and businesses require informed, imaginative personnel who are well-trained in managerial and business techniques.

The explosion of new knowledge has caused changes in scientific education. Recent graduates from four-year degree programs are now often professional theoretical scientists who have little experience in practical application. This leaves a gap in the area of applied knowledge that is resulting in an increased demand for the "middle manpower" technician. It is this gap that the two-year programs developed at Crookston are attempting to fill. The highly skilled technician is becoming an increasingly important member of the scientific and management team in research, development, production services, and other aspects of agriculture. Many of these technicians will be coming from two-year programs such as those being developed at Crookston. These programs have been developed to extend over two years and have been carefully articulated between the high school and the four-year college programs.

Research on the need for two-year associate degree programs in agriculture and business has identified some 213 job titles in off-farm occupations in addition to those in the business of farming. Studies also indicate that more than half of these positions need employees with at least two years of post-high school education. Employers expect that a 20 percent increase in the number of employees with this kind of training in agricultural supplies, sales, services, and marketing will be needed in the next five years.

Programs of study at the Institute have been organized to meet specific requirements and objectives for preparation of particular kinds of technicians within the two years and 98 credit hours allotted to the associate degrees in agriculture, business, and food management technology. The curriculums have been designed to prepare each type of technician and are grouped in course clusters that include basic science and mathematics courses as a basis for the application of technical courses; technical specialty courses and supporting studies that teach the skills, knowledge, techniques, procedures, materials, processes, apparatus, operations, and services involved in a specific technology; communications courses that teach oral, written, and graphic communications skills; and social studies and related courses that provide the technician with an informal frame of reference in economics, citizenship, and social relationships.

The curriculums that have evolved to this point have been based on the assumption that certain fundamental resources for specific technician preparation are available and operative at the Crookston facility. This has been the motivating force behind the decision to establish two-year programs within the framework of the University's diverse educational offerings. Each technical curriculum provides a unique content involving learning experiences distinguishing it from other specific curriculums, yet shares many characteristics with all of the curriculums at the college. The relationship between laboratory time, class lectures, and demonstration of theoretical principles has been of major concern to the curriculum builders, since a technician's training should involve the proper mix of theory, skills, and techniques, and understanding of applied principles, materials, processes, and services.

Curriculum development at Crookston has involved many problems not ordinarily faced by other colleges of the University. Decisions had to be made on the length of the programs, on the proportions of laboratory, lecture, and demonstration time needed, and on effective coordination of subject matter in groups of concurrent general and specialized courses. The needed balance between technical-supportive content and class-laboratory experiences requires expenditures for laboratory equipment and narrow faculty-student ratios to a much greater extent than normal theory-oriented curriculums. Close liaison between the technical college and industry is especially important to allow curriculums to be planned with the advice and support of potential employers of technicians and to make the curriculums adaptable to the changing competencies needed by technicians.

In order to house the new college on the campus formerly occupied by the Northwest School of Agriculture, a number of remodeling projects were undertaken. The library portion of the Kiehle Building was remodeled to better serve the college population; a new entrance to the building was also constructed. Laboratories and classrooms in Hill Hall were renovated to meet the needs of general education classes. Selvig Hall was remodeled to provide offices for admissions and records, business administration, student

personnel services, and the director. Minor additions were made to dormitories, but housing remains a major need on the campus.

Because the college is agriculturally oriented, a close working relationship exists with the Northwest Experiment Station. The creation of the collegiate agricultural programs pointed up an acute shortage of laboratory equipment. As much additional equipment as possible has been purchased with the funds available. However, there remains a real need for much additional equipment in the agricultural engineering and agricultural technology programs.

The other area of acute shortage is in library materials. The original library was designed for high school classes, and its resources were geared to that level. A large number of volumes are needed to meet the needs of college clientele, and continuing future purchases must be provided for.

The University of Minnesota Technical Institute occupies a unique place in the structure of higher education in Minnesota and looks forward to a rapidly expanded population and to additional service to the state in the years ahead.

SCHOOL OF DENTISTRY

ERWIN M. SCHAFFER, *Dean*

During the biennium the School contributed to long-range, coordinated planning for the health sciences and development of the Health Sciences Center and Council. After years of planning, the various health units of the University will be able to share more efficiently programs, facilities, and faculty. The new conjoint programs being developed will enhance the education of professional students and will foster comprehensive health care in the Center and in community practice.

Within the School of Dentistry, curriculums have been revised, experimental auxiliary programs developed, enrollments increased, research advanced, and educational experiences of students broadened. These developments are designed to achieve two major objectives of the School: to prepare graduates to better serve the community professionally and to participate in the social evolution occurring in this country, and to contribute further to the prevention, reduction, and elimination of oral diseases through research, community programs, public education, and aggressive clinical practice.

Changes in Admission Requirements — The School announced in fall 1966 that although a minimum of two years of liberal arts study was still acceptable for admission to the D.D.S. program, preference would be given to applicants with three or more years of liberal arts preparation beginning fall 1967 and with more emphasis fall 1968 and thereafter. As a result of this change, 55 percent of the students accepted in fall 1967 had three or more years of liberal arts preidental study. The percentage for the 1968 freshman class increased to 76 percent, the highest on record. It was also announced that students beginning their liberal arts study fall 1966 and thereafter must satisfy the requirements of the all-University policy on liberal education to be eligible for the B.S. degree in dentistry.

The School established a P-N policy in fall 1967 but revised the policy in summer 1968 to read, "Only under unusual circumstances will P credits on a P-N basis be accepted for required courses. It is expected that applicants will not exceed the following number of credits in elective courses: 6 credits for 2-year students, 15 credits for 3-year students, and 25 credits for 4-year students."

Changes in Organization — A Division of Human Oral Genetics was created to give increased emphasis to teaching and research in genetics. Further genetic understanding of the 200 oral birth defects may lead to means of reduction or prevention. The Division of Preventive Dentistry was renamed and reorganized to become the Division of Human Ecology. This division, first concerned with the philosophy and concepts of preventive dentistry and the epidemiology of oral disease, has begun an innovative program emphasizing the behavioral and social sciences, communication arts, and participation in

community projects. Its goal is to better prepare students for their expanding role in community health. A program in oral biology was developed, with the plan that this coordinated effort in dental science study will become a department of the Dental School. Once the program is soundly established and adequately staffed, sufficient substance for graduate degrees in oral biology at the M.S. and Ph.D. levels should evolve.

Research—The following significant research activities were conducted during the biennium:

Fluoridation—Several faculty members were influential in testifying for the passage of the compulsory fluoridation bill enacted into law by the 1967 Legislature. Minnesota became the second state to pass mandatory fluoridation; Connecticut passed such a law in 1965. Minnesota's law covers all municipalities, while the law in Connecticut includes only communities of 20,000 population and above.

For some 30 years, research workers in the Department of Biochemistry have been investigating the therapeutic efficacy and safety of the fluorides. The dental benefits derived from optimum intakes of fluoride and the possible therapeutic uses of fluoride in medicine have resulted in extensive basic investigation on fluoride metabolism by Dr. Leon Singer and others. Investigations of the regulation of the body fluid level of fluoride, possible use of fluoride in osteoporosis, and the effect of fluoride on lipid metabolism and atherosclerosis are underway. Many techniques have been developed for the analysis of fluoride and the study of physiological levels of fluoride.

Cleft Palate Studies—Clinical studies have been conducted on hypernasality and speech disorders in patients evaluated in the cleft palate clinic. Although a large number of investigators have been studying cleft palate in experimental animals, very few reports of structural changes during development have appeared. Since a baseline for experimental studies must be established and since detailed study of normal changes is in itself essential, Dr. Burton Shapiro and his co-workers have undertaken electron microscopical and histochemical studies of developing embryonic rodent palatal tissue. They are also studying a variety of tissues that evolve from a common progenitor cell type to obtain insights into the process of differentiation and development and to examine the relationship of these to human disease. To date, these workers have delineated distinct morphologic changes that occur in embryonic oral epithelium from its primitive stage until normal cell death.

Bone Marrow Studies—Research in the physiology research laboratory has been aimed at providing basic information about the physiology of blood circulation in bone. Attempts are being made by Dr. Clyde Wilkes to ascertain the functional characteristics of bone marrow pressure, which is intimately related to systemic blood pressure, anatomical and physiological modalities of bone itself, and the blood flow in muscle adjacent to bone. The information derived from these experiments may be of great value when applied to disciplines within clinical medicine and dentistry as well as other basic health sciences such as pathology and anatomy.

In order to determine the true and normal nature of bone marrow pressure, a method has been designed to elicit the required information while the experimental animal is in a normal, undisturbed, and unanesthetized state. A small pressure-sensitive telemetry device has been developed which, when surgically implanted in an animal's bone marrow, will give useful and accurate information about bone marrow pressure through radio signals. The data may be recorded continuously or intermittently for weeks or months.

Grants and Contracts—The confidence granting agencies have in the School's research capacity is evidenced by the number of research and research training grants received. In 1966-1967, for example, the School received \$513,899 in research and research training support from federal and nonfederal agencies. During the 1966-1968 biennium research capacity was enhanced by the addition of several research investigators and 6,000 net square feet of research space.

The undergraduate student summer research program is growing. Beginning in June, 1968, 26 undergraduate students started research projects with faculty guidance and under the support of special fellowships. This is the largest group since the program began 10 years ago. The research training

program at the Ph.D. level now has 23 trainees and is the largest dental research training program in the country. Research training grants from the Public Health Service support these programs.

Curricular Developments in the Undergraduate D.D.S. Program—The School replaced a course concerned primarily with tooth morphology with a freshman course in oral anatomy and histology covering tooth morphology and the relationship of the teeth to contiguous soft and hard tissues. Instruction in the course has been placed on a more applied and functional basis. A course titled "Oral Biology Fundamental and Applied" was added to the senior curriculum. The course consists of seminar-like discussions on a topic basis of the most current concepts of oral diseases and conditions, with integration of the basic science and clinical aspects of these abnormalities. Several faculty members participate in each two-hour session.

The comprehensive oral health care teaching program, conducted on a limited and preliminary basis during the 1964-1966 biennium, was implemented during 1966-1968 as a regular clinical activity for all senior students. For decades, students were assigned a patient to render a specific clinical service rather than to treat all oral maladies. In the comprehensive care program, the students render all needed clinical care for the patients assigned to them. Eventually complete families will be assigned to a given student for needed dental care. Although comprehensive care is the preferred and logical method of teaching clinical management, the program is difficult to achieve in a large clinic setting. It is a credit to the students and faculty that the program has been so successful.

New courses developed by the recently renamed and reorganized Division of Human Ecology have been designed to improve the students' communication skills; to develop awareness and understanding of psychological, social, and cultural factors affecting individual and public attitudes toward health behavior; to emphasize the necessity of communicating preventive dental health information in a meaningful and motivating manner; to improve the students' ability to read and understand scientific literature; and to increase awareness of the dentist's role in the community from both a health and a political standpoint. Two elective courses deserve special description: The dental health resource program gives students experience in assisting elementary school teachers to plan and implement dental health education in the classroom and helps them gain skill in communicating dental health concepts effectively in one-to-one group settings with both adults and students and in presenting dental health concepts in ways best suited to the interests, needs, and comprehension levels of specific groups. The second course, the rural dental program, was developed as an attempt to alleviate dental manpower distribution inequities. Senior students are selected to spend a week-long study visit in rural communities in Minnesota to become acquainted with the elements of rural practice. The students, under the tutelage of local dentists temporarily appointed as part of the Dental School staff, gain private office experience and the opportunity to communicate and develop rapport with the community.

The hospital dental program has been expanded and revised to give undergraduate students the opportunity to observe and assist dental staff in community hospitals. A new intern program has also been established and the residency program increased.

Dental Assisting and Dental Hygiene—The dental assisting program has been increased from nine to eleven months to give the trainees more practical clinical experience. The program, which now begins in July, allows the summer months to be devoted to classroom work so that students have more time to learn assisting skills in the clinics during the regular academic year.

More dental hygienists and dental assistants must be trained if existing and future demands are to be met. One of the roadblocks to expanding training programs is the serious shortage of educators in these fields. In response to this shortage, teacher training programs in dental hygiene and dental assisting have been developed at the University, to be administered through University College. An M.S. program in dental hygiene will be initiated in the future.

Experimental Orthodontic Technician Training Program—This experimental project, supported by a Public Health Service grant, is designed to determine what clinical procedures normally provided by the orthodontist can be taught to technicians or assistants without loss of quality. If the project demonstrates that these technicians can provide efficient, quality services, training and employment of such auxiliary personnel could increase the supply of economical, high quality orthodontic services available to the public.

Experimental Pedodontic Auxiliary Program—The purpose of this experimental project is to ascertain what tasks now being performed by dentists dealing with children can be delegated to dental auxiliaries without loss of quality. The ultimate goal is to establish a prototype system for training pedodontic assistants who would contribute to an effort to provide more economical, high quality comprehensive child dental care to the public.

Special Conference—In October, 1967, School of Dentistry faculty planned and sponsored a "Curriculum Workshop on Undergraduate and Graduate Education Concerning Dental Treatment for the Handicapped." The major objective of the workshop was to determine the scope, content, and method of training required to make the undergraduate and graduate dentist socially and clinically capable of handling the handicapped patient. Guidelines were developed for use by dental schools in implementing programs in this area.

Physical Plant Additions—The fourth floor of Owre Hall was extended to the north wall to utilize the upper half of the two-story third-floor dental clinic, providing 6,000 net square feet of additional space for research laboratories. The addition necessitated a new ceiling for the third floor clinic that enhanced its lighting and acoustics. This construction project was supported in part by a grant from the Public Health Service.

Needs and Plans—The School has continued to add new programs and to increase enrollments without compensating expansion of physical facilities. Owre Hall was built for a three-year D.D.S. curriculum; now it is four years. The entering freshman class was 80; now it is 115. A new building is needed if satisfactory reception areas and office and teaching space are to be provided, if new programs and modes of rendering dental care are to be developed, and if increased enrollments are to be accommodated.

New faculty positions are needed now and for the future to reduce heavy teaching loads, improve student-teacher ratios, compensate for enrollment increases, and permit the development of new programs. Civil service help is also grossly inadequate. Most critical needs are for secretaries, dental assistants, clerks, custodial workers, and laboratory technicians. As the dental educational program becomes more diversified and complex, greater efficiency is mandatory. New personnel positions are essential if the School is to offer the quality of clinical care that will attract and retain sufficient patients for educational needs.

The School of Dentistry supports plans to develop integrated facilities and programs for the health sciences. Because the dentist of tomorrow must be trained to be a physician of the oral cavity, dental education is and must continue to be woven into the fabric of the health sciences. There are 800 different diseases that affect the oral cavity and 200 different types of birth defects in and about the mouth. It is clear that dentistry is a biomedical science and that dental education must be increasingly based on biological principles.

Plans are to push ahead in the areas of research and research training, biologically based clinical teaching programs, new patterns of oral health care and increased utilization of auxiliary personnel, advancement of hospital dental programs, expansion of continuing educational opportunities, and community service.

UNIVERSITY OF MINNESOTA, DULUTH

RAYMOND W. DARLAND, *Provost*

On July 1, 1967, the University of Minnesota, Duluth, celebrated its twentieth birthday since its establishment by the Minnesota Legislature. On that

occasion, Provost Raymond W. Darland cited the development of UMD as "an excellent example of what can happen in higher education when dedicated legislators, area citizens, and generous donors combine their efforts in support of the Regents and administrators of the University."

UMD has expanded since the days of the Duluth State Normal School (1902-1921) and the Duluth State Teachers College (1921-1947) and now offers 1,200 courses in 34 major fields of study, plus 18 preprofessional programs and Air Force ROTC. Three undergraduate degrees and 11 master's degrees are available. Enrollment at UMD has increased more than 250 percent, from 1,432 in 1947 to 4,937 in fall 1967. Summer Session attendance was at an all-time high during the biennium: 2,597 in 1966 and 2,756 in 1967.

Planning — Planning for future physical and academic growth was the aim of two committees appointed during the biennium: the Long Range Planning Committee on Purpose and Scope and the Long Range Planning Committee on Physical Facilities. A plan for 1980 and beyond is being developed, covering the number, kind, and location of new buildings; additions to undergraduate and graduate curriculums; and programs that will enrich UMD's relationship to the University, higher education, and the state. The administration has been working closely with the Northern Minnesota Council for Medical Education to promote the UMD campus as a site for the second medical school in Minnesota. The Council, formed by interested physicians in the region, has prepared brochures, a prospectus, and other materials to make known the advantages Duluth offers.

Curricular Progress — New master's programs in botany, zoology, physics, and educational administration were approved during the biennium. Honors seminars for freshmen were begun in spring 1967 and for sophomores in winter 1968; five departments have honors programs for upper division students. A Pass-No Credit grading system was initiated for certain courses in spring 1968 following extensive student-faculty discussions. Closed-circuit television was used during 1967-1968 to teach courses in anthropology, journalism, and psychology from tapes produced on the Twin Cities campus; a television studio capable of handling two-camera live shows or taping sessions with hook-ups to six viewing areas will be completed by fall 1968. In 1966-1967, 50 students participated in the new micro-teaching program; the next year, the program increased ten-fold and included not only student teachers but also students in speech and group dynamics.

Research — Faculty research continued at a high level during 1966-1968. Research included projects on Lake Superior plant life in relation to water quality, on the earth's atmosphere, on the Duluth Model Cities Program, on the education of Chippewa Indian children, and on relationships between guidance programs and presumed outcomes.

Student Participation — In the academic year 1967-1968, students pressed for a greater voice in policy making. Hearings and committee meetings were held on incidental fees, student housing, student behavior, supervision of student organizations, and other nonacademic matters. Students served on 22 faculty-student standing and special committees, a marked increase over previous years.

Speakers and Convocations — Speakers who appeared at UMD during the biennium included Sol Levine, Senator Wayne Morse, Alan Reitman, David T. Bazelon, Dr. Harold Taylor, James Meredith, the Reverend James Groppi, Dick Gregory, and Harry Reasoner. The Oxford University debate team, Peter Arnott and his marionettes, the Preservation Hall Jazz Band, and the University of Finland's gymnastic team were among those appearing at convocations.

Activities — A new 3,800 seat stadium was formally dedicated in October, 1966, and named Griggs Field after former Regent Richard L. Griggs. The new \$200,000 Marshall W. Alworth Planetarium was dedicated in June, 1967. Two new student facilities were dedicated in January, 1968: the Bullpub, a lunch and study room, and the Rafters, a study room that can be used for group meetings, dances, lunching, and studying.

In December, 1966, more than 50 teams participated in the first UMD Invitational High School Debate Tournament. The first Patrons and Subscrib-

ers Dinner was held in April, 1967, at Tweed Gallery. Five thousand area residents attended a Campus Open House in March, 1968, and viewed special display areas and new facilities. Among the groups holding meetings on the UMD campus during the biennium were the American Ornithologists Union, the Minnesota Association for Supervision and Curriculum Development, and the Minnesota-Dakotas National Student Association.

In March, 1966, Mr. and Mrs. Jeno F. Paulucci presented UMD with a twin-engine Lockheed Super Ventura airplane. In June, 1968, former Regent Richard L. Griggs and officers of the Duluth *Herald-News* and area radio stations announced a \$69,150 contribution to build a press box and additional stadium facilities at Griggs Field.

In May, 1968, it was announced that the UMD Alumni Association would become autonomous as of July, 1968. It will continue to be a part of the University alumni program, but will maintain its own office at UMD and will have its own dues structure and alumni director.

COLLEGE OF EDUCATION

ROBERT J. KELLER, *Dean*

For the College of Education, the 1966-1968 biennium was characterized by a rapid, substantial expansion of programs in a context of severely limited resources. The ability of the College to achieve such an expansion must be credited to the energies of its faculty and to the University's support of faculty efforts. To improve the College's response to the needs of the communities it serves, all possible human, financial, and physical resources have been thoroughly exploited; further qualitative and quantitative improvements must be preceded by considerably expanded facilities and personnel.

Patterns and trends started in earlier years became more pronounced during the biennium in the areas of enrollment, involvement in cooperative projects with other educational institutions and agencies, faculty recruitment and appointment, consolidation of program and structure within the College, and efforts to prevent the loss of outstanding faculty members whose services were sought elsewhere.

Some of the changes noted in the 1966-1968 biennium reflect new opportunities made available or accessible by outside sources. A grant of \$207,000 from the National Institutes of Health, matched by \$217,000 in endowment funds of the Institute of Child Development, enabled that unit to complete plans for a two-story addition to the Child Development Building. The College also benefited from expanded federal funds for graduate fellowships and research projects and from numerous governmental and foundation grants for teacher education, curriculum development, and educational research.

Full benefits of these opportunities could not be realized, however, because of shortages of space and critically needed personnel. At a time when demands are increasing for teachers, counselors, administrators, research workers, and other specialized educational personnel, the College of Education has been forced to curtail expansion of its activities because it lacks essential staff, classrooms, laboratories, and office space to support and maintain its programs. Staff and resources for cooperative programs with the community are often inadequate, and space needs are so critical that the College has virtually no discretion to allow departments to expand or even modify programs. The present climate of undergraduate teacher education, educational research and development activity, educational services, and specialized advanced programs is such that increased flexibility in use of space is required, a flexibility essentially absent under current conditions of heavy space utilization. A ceiling for undergraduate enrollments has already been set for fall 1969 and many graduate programs currently enforce rigid limitations because of overloaded graduate advisers and course offerings.

Organization and Administration—The Policy and Planning Committee devoted much of its attention to the development of a College structure that would consolidate several of the existing departments into broader divisions and to the creation of College-wide councils and a major functions and programs committee. Plans have been adopted by the faculty for establishment

of councils on teacher education and graduate education and research, a Dean's Administrative Committee, and eight divisions that will plan, coordinate, and implement activities previously administered by 35 departmental or program units. Each proposed divisional faculty is currently planning its organizational features and will subject the proposals to careful study.

The Minnesota Center for Curriculum Studies was established during the biennium as a result of action by the Regents in the spring of 1966, with the first permanent director appointed in July, 1967. The Bureau of Institutional Research was moved off campus and has subsequently operated independently of the Bureau of Educational Research. The Minnesota Research Coordination Unit for Occupational Education, a unit established and supported originally on temporary funds from the U.S. Office of Education, was continued during this biennium by an additional 18-month grant.

A major organizational change involved the creation of the newly merged Marshall-University High School, approved by the University Board of Regents and the Minneapolis Board of Education in the winter of 1968. Dr. Almon G. Hoye has been appointed assistant professor and principal of Marshall-University High School, scheduled to open in September, 1968. The possibility of merging the Psycho-Educational Clinic and the Child Study Clinic into a new unit, tentatively identified as the Center for Psychological Services, has been under study through much of the biennium.

Enrollment—Development of the College into an upper division and graduate unit was greatly accelerated during the biennium, the shift largely attributable to changes in admission requirements made in the previous biennium. Comparison of enrollment patterns for 1959-1960 and 1967-1968 reveals a definite trend away from undergraduate enrollment, with direct implications for program and staffing.

Over the eight-year period, the total enrollment increased by 685 students, from 3,440 to 4,125. Of the 1967-1968 total, however, only 4.2 percent (175 students) were freshmen and sophomores, a dramatic decrease from the 1959-1960 figure of 21.5 percent (740 students). Enrollment of junior and senior students increased about one third, moving from 52.3 percent (1,800 students) in 1959-1960 to 59.3 percent (2,450 students) in 1967-1968. The number of adult special enrollees remained nearly stationary, increasing from 300 in 1959-1960 to 350 in 1967-1968. Graduate enrollment nearly doubled, increasing from 17.5 percent (600 students) in 1959-1960 to 28 percent (1,150 students) in 1967-1968.

Total enrollment in the College of Education continues to grow by approximately 20 percent each eight to ten years. But the composition of the student body has changed in that 96 percent of the students are enrolled in upper division and graduate programs. Instructional programs for such students cannot be handled as economically as can those for freshmen and sophomores. A smaller teacher-student ratio is required and specialized programs require specialized equipment.

The vast increase in graduate enrollment over the last eight years has taxed the time and talents of the faculty, but addition of faculty cannot always solve this problem. Graduate students often enroll for advanced study because of the special expertise of the faculty or because the entire educational establishment increasingly demands knowledgeable, sophisticated practitioners. Demands for specialized advanced programs are likely to mount in areas inadequately served by graduate education in the past. Specially trained personnel are needed for work with the disadvantaged, for the junior college movement, and for educational and training programs in industry. The impact of federal educational programs still remains to be analyzed accurately. Emerging patterns of cooperative relationships among the many agencies in the educational enterprise may have profound effects on all aspects of education, but most surely will affect upper division and graduate programs.

Under these conditions, questions arise concerning the desirability of restricting undergraduate and graduate enrollments in relation to availability of space, facilities, and staff time. The load of master's advisers in certain fields is excessive, ranging to a high of 75 advisees or more. The load of doctoral candidates is oppressive, especially for advisers who bring to completion five or more such students in a single year and carry a backlog of 25 or more. These conditions prevail in elementary education, certain secondary

education fields, higher education, and some specialties in both educational administration and educational psychology.

Curriculum — Numerous programmatic changes were made during the 1966-1968 biennium to take account of new developments, to expand offerings, or to reorganize existing courses to serve modified functions or clientele. Experimental programs were introduced and a few existing programs were consolidated or dropped.

Changes in Graduate Programs — The doctorate in education was introduced as a suitable capstone for professional study. The Ed.D. degree is administered by the Graduate School and thus far has been limited to the field of educational administration, though other fields are examining the suitability of the program for their own areas.

Graduate fellowships administered by the U.S. Office of Education have helped to support sixth year and doctoral programs in a variety of fields. A specialized research emphasis has been added to prepare research workers, often along interdisciplinary lines, in educational administration, vocational-technical education, special education, and educational psychology. Postdoctoral programs have been added in child psychology.

Extensive federal and state funding has contributed to progress in the areas of administration of special education, training of clinical teachers for learning disabled children, emphasis on perception in work with vision-impaired students, and work with the mentally retarded at elementary and secondary levels. The Special Education Learning Center, supported by federal funds, will combine the resources of the Departments of Special Education and Speech Science, Pathology, and Audiology with those of the University of Wisconsin Instructional Materials Unit. This Center will provide ready access to research findings and instructional materials, serving students, faculty, and visitors and encouraging the development of associate centers such as those already established in the Minnesota State Department of Education and the St. Paul Public School system.

Changes in Undergraduate Programs — Changes at the undergraduate level include a new model program in industrial teacher education; provision for specialization in vocational horticulture at the high school level; experimental offerings in music, including a high school musicians project that makes effective use of the Minneapolis Symphony and the MacPhail Center for the Performing Arts; video-taped materials for student teachers in several fields; a new undergraduate major in geology for prospective secondary school teachers; and a program of advanced work in typing and shorthand that relates these skills to modern technological developments and professional implications for teaching and learning.

The Department of Elementary Education replaced the nursery-kindergarten-primary curriculum with separate but coordinated kindergarten endorsement and nursery school preparation programs. Two curricula designed for teachers who had completed two-year training courses were dropped, as was a junior high endorsement for elementary teachers. The preservice programs of both elementary and secondary education became significantly more laboratory-oriented, with more emphasis on demonstration teaching and increased use of junior year classroom observation participation and of micro-episode teaching. The latter was incorporated directly into methods courses in reading, science, and social studies.

More attention was given at all levels of undergraduate teacher preparation to direct clinical experience in the public schools, particularly in inner city schools and with minority groups. The restructuring of the Department of Student Teaching into the Department of Clinical Experiences will accelerate this development and will also involve students from other colleges and universities within the area. Programs at the graduate level also made use of practicum experiences and internships, particularly in the fields of educational administration, school psychology, counseling and guidance, and higher education.

Within secondary education, special offerings in distributive, business, and mathematics education were designated as fields separate from curriculum and instruction, under which they were listed previously. Increased offerings were made available in the sociology of education, modern foreign language

education, learning and cognition, statistics, social psychology, computer technology, and group counseling.

In the School of Physical Education, major programs in physical education for men and in recreation and park administration were reorganized. An effort was made to emphasize health education and to separate it from other specialties. Nonprofessional programs in physical education were expanded, with more than a 40 percent increase in the number of activities offered and a 400 percent increase in the number offered on a coeducational basis.

Cooperative Efforts with the Community—The College's programs and activities during the biennium were characterized by increased involvement with the educational problems and efforts of the community. The College of Education cooperated with non-University agencies on more than 70 ongoing projects in 1967-1968 alone.

Activities customarily shared with the schools include observation-demonstration in four adjacent Minneapolis Elementary Demonstration Schools, student teaching, internships, individual research projects involving faculty or graduate students, and youth activity assignments. During 1967-1968, more than 400 prospective elementary teachers worked six to nine months with 32 community agencies, many church-sponsored activities and Scout troops in the metropolitan Twin Cities area, and several park boards in suburban communities.

Current cooperative projects include a broad series of activities involving inner city schools. The Cooperative School Rehabilitation Center is an experimental and demonstration project aimed at developing a cooperative school rehabilitation program for the less able retarded not presently served adequately in existing school programs. The DeFoe Project of the Community-University Health Care Clinic is a cooperative effort by the College of Medical Sciences, the College of Education's Psycho-Educational Clinic, and the Minneapolis Public Schools to diagnose and treat health and learning difficulties in disadvantaged children. The Carnegie Pilot Program for Student Teaching in English employs experienced Minneapolis teachers as College of Education faculty to serve as supervisors of student teaching and instructors of related undergraduate methods courses. Related to this project is a specially designed seminar that focuses upon specific problems of the inner city school and on resources available from governmental and community agencies.

The merger of Marshall and University High Schools is perhaps the most formalized cooperative effort between the College and the Minneapolis Public School system. Under serious study by both parent institutions for several years, this new school, a public junior-senior high school, is administered by a semi-autonomous policy board. Support is provided jointly by the Minneapolis Public School system and the University, and each appoints half of the board members. This cooperative program should provide leadership to public and private high schools in curriculum development, teacher education, research, and field study in the urban school situation.

The College of Education has also taken leadership in developing a proposal for the training of teacher trainers (Triple T Project) under the federal Education Professions Development Act. This project involves a consortium of public and private colleges, public schools, the State Department of Education, and community personnel in identification and training of major staff members whose prior preparation lacked emphasis on problems of the urban schools, minority groups, and direct involvement with the community. A pilot project completed in summer 1968 strongly validated the general purpose and procedure of the proposal. Projects of this sort are likely to grow in the years ahead since economic and social problems are so often approached through the schools.

Staff—Shortages of well-qualified staff members in most educational specialties meant that a number of newly established positions had to be filled temporarily while the College engaged in a nationwide search for permanent staff members. The 1966-1968 biennium introduced a period in which positions were offered and accepted one or more years in advance of actual appointment. Despite difficulties in staffing, the College improved its personnel situation during the biennium. Most departments added at least one new professional staff member. The loss of 20 faculty members through retirements and

terminations was more than offset by 44 new appointments, including replacements, at the rank of assistant professor or higher.

Research — Research has become a normal function of all departments in the College of Education, although certain units have specialized in this area. Among the research activities of departments during the biennium were a cost-benefit study of the relationship between farm management education and farm success; a revision of the Strong Interest Inventory for farmers; curriculum development studies in English, social studies, modern foreign languages, and computer-assisted instruction; establishment of a Self-Instructional Science Demonstration Laboratory and the Minnesota Research Coordination Unit in Occupational Education; studies on selection of students for area vocational-technical programs and on manpower development and training programs; Project Junior College; and an investigation of teacher salary schedules in metropolitan school systems.

A nationwide first-grade reading project was completed during the biennium, over 30 surveys were conducted for local school systems, and contracts were received for statewide studies in Minnesota, Missouri, and South Dakota. The statewide Minnesota survey completed during the biennium is the most comprehensive study of this type ever done in the state. Research projects in other areas were concerned with development of a system of counselor supervision and of counselor education program materials and with perinatal factors as related to school learning problems, language learning by preschool deaf children, and the problems of emotionally disturbed children.

Minnesota Center for Curriculum Studies — Established in 1966, the Center began in 1967 to facilitate and coordinate faculty effort to improve precollege and college education. Funds were provided through the Center to support three major precollege curriculum development efforts: Project Social Studies, Project English, and the MINNEMAST Project. Support was also provided to initiate an in-school laboratory for the experimental analysis of instruction, a cooperative venture with the Minneapolis Public Schools.

The Small Grants Program, begun in spring 1967, is the most important college-level program administered by the Center. The first series of grants, supported by \$22,000 obtained by the All-University Council on Liberal Education, were awarded to sixteen faculty members from all parts of the University; the second series, supported by Center funds totaling \$14,000, were awarded to fourteen faculty members. Grant-supported projects have emphasized three kinds of programs: improvement of instruction in established courses, particularly those of an introductory nature; experimentation with new models for undergraduate instruction; and stimulation and assessment of innovative instructional materials and methods. Through a proposal developed by the Center, the Hill Family Foundation granted \$170,000 to be used over a five-year period to match University funds in support of the Small Grants Program. By this means, the Small Grants Program will be accelerated to a steady rate of approximately \$80,000 per year.

The Center organized a seminar during spring quarter 1968 to provide a forum for presentation and discussion of faculty efforts to improve the quality of the undergraduate experience. The seminar, perhaps in a different format, will be a regular activity of the Center.

Bureau of Institutional Research — The General Education Unit of the Bureau completed two major research projects during the biennium: the "Exam Practices Study: A Survey of Classroom Testing in Undergraduate Courses at the University of Minnesota" and the "Student Finances Study." The Inter-Institutional Television Feasibility Study with which the Bureau was associated, both in overall management and project evaluation, was also completed during this period, as was additional study for the TV College.

The Bureau continued to prepare annual enrollment surveys for the 1966-1967 and 1967-1968 academic years in cooperation with the Association of Minnesota Colleges, assumed responsibility for annual completion and updating of faculty information forms, and became involved in the second phase of a study on academic progress of student athletes and nonathletes. Projects initiated during this biennium included studies examining characteristics of students who do and do not graduate, a College of Education faculty load study, and an analysis of registration problems confronting students.

The Administrative Unit of the Bureau worked during the biennium to develop a ten-year staff and instruction data base for the University; to compile and coordinate compilation of University reports to federal and state agencies; to develop an evaluation program for the Pass/No Credit grade option program; to revise the student evaluation of instruction instrument and analysis procedures; to develop cooperative staff load and effort studies with the Colleges of Veterinary Medicine and Agriculture, Forestry, and Home Economics; and to develop a format for the faculty personnel file portion of an integrated information center in cooperation with the University Committee on Data Processing.

Institute of Child Development — The strong emphasis on research among both faculty and students of the Institute resulted in publication of more than 70 papers and presentation of 94 papers at professional meetings, colloquia, and seminars during the biennium. Support for Institute research was supplied by the Army Medical Research and Development Command, the U.S. Office of Education, the National Institute of Child Health and Human Development, and the University Graduate School Research Fund. Thirteen research grants, totaling \$159,622, were awarded to Institute staff members in 1966-1967 and nine grants, totaling \$113,928, were awarded in 1967-1968.

The second and third annual Minnesota Symposia on Child Psychology were held in 1967 and 1968. Six nationally recognized child psychologists appeared in each symposium. In April, 1968, the Institute sponsored a conference on developmental psychopathology that included as participants twelve visiting authorities on clinical and abnormal psychology.

College Services — The College provided a variety of services to the community and to students during the biennium. Faculty members served on state and local boards and in consultative capacities. Many students provided a dependable source of volunteer help for youth activity projects of community agencies. In conjunction with services supplied to students, the workload of both the Student Personnel Office and the Bureau of Recommendations increased during the biennium as these units attempted to meet student needs.

Student Personnel Office — As the College of Education shifted to emphasis on upper division work, it established pre-education curricula in the College of Liberal Arts. With nearly 2,000 pre-education students transferring to the College of Education during the past biennium, large numbers needed information and program assistance.

Student Personnel Office counselors report 19,631 individual contacts with students during the biennium, 5,246 of which were counseling interviews. Staff members with preparation in group counseling led student groups in academic improvement and human relations training programs. Two studies evaluated the effect of group counseling on academic performance. The favorable outcomes of the evaluations, the interest of students, and the encouragement from the Counselor Education Department are expected to lead to further development in group work.

The work of the Scholastic Standing Committee also increased substantially with the College's change to upper division enrollment. During 1966-1967, when a large number of juniors and seniors were enrolled as freshmen and sophomores in the College, 3,095 items were submitted by petition to the Committee. In the first two quarters of 1967-1968, when a larger proportion of students had completed lower division work in other colleges, the number of petitioned items increased by 65 percent over the number submitted during the same period the previous year. Changes in admission policy and in grading practices and help given to students who experience academic difficulty are expected to result in a slightly reduced workload in the area of academic probation.

Bureau of Recommendations — The Bureau, which serves as a placement facility for College of Education graduates and for graduates of other divisions of the University who are prepared for careers in educational institutions, placed teachers in 46 states and 17 foreign countries during the biennium. Approximately one third of the individuals who used Bureau services were current College of Education seniors, two fifths were alumni seeking employment or promotions in public schools, and the remainder were interested in college and university appointments. More than four fifths of new graduates accepted assignments in Minnesota.

Conferences and Institutes — The College of Education, frequently in cooperation with the General Extension Division and/or professional organizations and agencies, sponsored a large number of conferences and institutes during the past biennium. These included a seminar series on the role of agricultural education in rural transformation and economic development; symposia on the self-instructional science demonstration laboratory; the high school musicians project; simulation workshops for school administrators; collective bargaining workshops for superintendents and school board members; annual Schoolmen's Days, book fairs, and institutes on public school law; a symposium for counselor-educators; conferences and institutes on mental retardation and special education; and a variety of teacher education conferences.

Numerous outstanding lecturers were brought to campus, with certain sessions open to students and sometimes to the general public. Especially noteworthy was the three-day visit to the campus by Swiss professor Jean Piaget, noted child psychologist, who addressed some 6,500 persons in his two public lectures.

Problems and Needs — The major problem of the College of Education is the increasingly severe shortage of space and facilities. The College is deeply concerned about programs endangered by the inadequate space available. Since the College's building request to the 1967 Legislature was not funded, it has been presented again as a major building need of the University for the 1969 Legislative session. An initial presentation was made to the Legislative Interim Building Commission for a two-story building and tower complex to house classrooms, offices, and laboratories for elementary education, secondary education, and programs in educational psychology, and related CLA activities in speech science, pathology, and audiology. Space is also sought for the Minnesota Center for Curriculum Studies and a central location for coordination of the expanding number of cooperative projects with surrounding schools and colleges.

The addition to the Child Development Building will improve the space situation in that unit, but it required demolition of the temporary unit housing the Department of Trade and Industrial Education. That Department was moved to space in Peik Hall freed by the merger of Marshall and University High Schools, but much of the space in that building had to be reserved for operation of the new institution. The Bureau of Institutional Research, Project English, and the Bureau of Recommendations have been moved off campus, largely in rented space, to conserve major buildings for the instructional program.

In-service courses offered in late afternoon and Saturday sessions for off-campus teachers are frequently unable to add sections of needed classes, even when adequate instructors can be secured, because classrooms are no longer available or because existing classrooms artificially establish upper limits to the size of classes. These conditions often prevent students from obtaining required courses in this College and in other colleges of the University.

In addition to space problems, the College has a substantial number of fields in which teaching and advisory loads are dangerously high, threatening the quality of programs and services. New position allocations to the College have ameliorated pressures somewhat, but shortages of well qualified and available staff accentuate the problem when established positions cannot be filled on a permanent basis.

Despite these difficulties, the general situation in the College of Education is considerably better than it has been in recent years. Effective progress has been made in staff procurement, development and revision of programs, establishment of firm ties to the educational community, and attraction of outside funds to supplement University budgets.

The faculty has displayed enormous energy and ingenuity in fully developing the College's available resources but the facilities and personnel situations must be improved if the College is to make further significant progress.

GENERAL COLLEGE

A. L. VAUGHAN, *Dean*

A principle fundamental in the General College is to meet the needs of individuals. The College's liberal admissions policy, free-choice curriculum, comprehensive testing program, centralized student personnel office, and emphasis on effective instruction continue to increase in utility and relevance as the University attempts to give increased attention to student and community needs.

Community Programs — During the 1966-1968 biennium, the General College was engaged in several community programs designed to relieve problems of the socially, economically, and educationally handicapped. An Upward Bound program on the Minneapolis campus, under the direction of two members of the General College faculty, has already achieved impressive results: of the 40 high school graduates enrolled during 1966-1967, 23 matriculated in college; in the 1967-1968 group, 88 percent have been accepted by the colleges of their choice (including one at Harvard). This record, the innovative nature of the program, and the dedication and skill of faculty and counselors brought national attention and a Washington citation for excellence to the University Upward Bound Project.

Project New Careers was launched during the 1967-1968 academic year. In this project adults from the poverty sector of the Twin Cities enroll in a program combining University courses and supervised on-the-job work experience. With the cooperation of the Minneapolis Public Schools, the Minneapolis Police Department, and a number of social service agencies, participants in the project prepare for employment as aides to teachers, police officers, and social workers. Most participants do not meet formal academic admission requirements of the four-year colleges of the University, but through New Careers and the General College they can begin work for a certificate or the associate in arts degree and go on to a baccalaureate or graduate degree.

Project HELP (Higher Education for Low-income People) is a General College agency designed to help New Careers adults adjust to student life and to help them overcome the handicaps of inadequate educational backgrounds and underdeveloped academic skills. Originally intended for approximately 80 mothers receiving aid for dependent children, the HELP Center has become a core agency serving New Careerists as well as students in other community programs. With a staff of faculty members, student personnel workers, and a social worker, the Center offers counseling, academic advising, scholarship assistance, group orientation, vocational guidance, training in effective study, tutoring, and other services.

Occupational Education — If full development of the individual is the goal of education, occupational education cannot be neglected. Occupational surveys reveal that the community urgently needs technicians and para-professionals, but technical-vocational programs are difficult to establish. Equipment is costly, qualified instructors are hard to find, and the campus cannot always keep pace with the rate of change in the field. In spite of limited resources in funds, faculty, and space, the General College worked to broaden the scope of its occupational education programs during the biennium. Existing programs such as dental assisting and marketing were expanded, a program of instruction in the field of data processing was begun, and new sequences were created for prospective medical and legal secretaries. The College also turned to other units of the University for the faculty expertise and classroom equipment needed in cooperative training programs for therapeutic recreation aides (with the College of Education) and for ornamental horticulture technicians (with the School of Forestry).

New sequences involving inter-institutional cooperation and accreditation of off-campus instruction were initiated to coordinate and utilize post-high school educational resources available in the Twin Cities. A program for electronics technicians is now offered in conjunction with the Northwestern Electronics Institute and credit is granted toward an associate in arts degree in law enforcement for work completed at the Minneapolis Police Academy. The faculty currently is exploring other ventures of this kind.

Curriculum Developments—The general education portion of the College's curriculum has also been undergoing intensive development. New courses have been introduced, many divisions are experimenting with team teaching and independent study, and several faculty members are studying methods of overcoming the handicaps imposed by heavy enrollments and large classes.

The Division of Natural Science was awarded a grant that enabled it to install facilities for multimedia tutorial instruction in biology. Enrollment pressures, inadequate laboratory equipment, high costs, the shortage of science teachers, and the heterogeneous nature of the student body present problems in General College science instruction; the new facility is designed to relieve the situation. The booth-tape-headset installation, with a visual component in the form of movies, videotapes, and slides, is a multimedia, self-teaching facility that has great flexibility and a wide variety of uses. Such equipment has been used previously for an experimental oral laboratory approach to written English. The materials needed for the new machines in the biology laboratory are being developed by a faculty team.

Another innovation during the biennium was the introduction of "package" programs or area studies. In spring 1968, the faculty approved an experimental 16-credit integrated course on poverty in an affluent society that included work in literature, composition, speech, and social studies. Students and instructors found that the central emphasis gave reality and significance, as well as unity, to the course. Similar though less extensive projects are being launched in courses dealing with Latin American culture, Scandinavian culture, and minority group culture.

The college teaching internship program begun during the biennium offers prospective teachers experience in roll taking, record keeping, paper grading, lesson planning, examination construction, and course design, with actual classroom teaching supervised by an experienced faculty member, recorded on video-tape, and evaluated by students and colleagues. In the program, teaching problems peculiar to one subject field can be discussed by interns working in that field, while more common concerns are handled at general meetings. The content and pattern of work for the M.A. or Ph.D. degree remain completely under the control of the intern's subject-matter department, while his class-related experiences are structured through the General College. Approximately fifty students are enrolled each year in this cooperative venture of the General College, the College of Education, and the Graduate School. It is hoped that successful completion of the internship will eventually be recorded on each intern's transcript in the form of graduate credits.

During spring quarter 1968, General College faculty members visited other universities to study college teacher training programs and to bring back suggestions for improving the University program. Their reports, as well as reports of curricular innovations, studies of student characteristics and performance, and research in instructional techniques, will be published in one of the General College faculty publications. The newest of these, *The General College Studies*, was established during the 1966-1968 biennium to contribute research findings and reports to the Educational Resources Information Center (ERIC) and to the academic community.

Activities—Three Minnesota Junior College Faculty Conferences were held at the University in a cooperative effort by the General College, the Minnesota State Junior College System, and the General Extension Division. These University-junior college conferences, which were unstructured as well as unprecedented, brought nationally known junior college leaders to the campus and provided opportunities for discussion of junior college functions, students, and faculty. Funded by a grant from the Hill Family Foundation, the conferences were attended by approximately one third of all junior college instructors in Minnesota. General College faculty members served as chairmen of the planning committees for the three sessions.

The College honored one of its founders, Dr. Malcolm Shaw MacLean, at the annual meeting of the General College Alumni Association in April, 1968. Dr. MacLean also received the University's Outstanding Achievement Award on that occasion.

GENERAL EXTENSION DIVISION

WILLARD L. THOMPSON, *Dean*

The General Extension Division offers continuing education and educational services to adults as workers, citizens, and students. Numerous program and departmental changes were made during the biennium to increase the effectiveness of the Division as a bridge between the University and the community. In some cases, the Division provided full support for new programs and developments. Others were made possible by shared funding with various schools and colleges of the University. Federal, state, and private funding made their first major impact on Division programs during the biennium, with various federal departments, state bodies, and private foundations providing partial support for a variety of new programs.

The Division continued to extend its degree course offerings during the biennium, with special emphasis on graduate-level work. Several degrees granted by colleges of the University may now be completed entirely by course work taken through General Extension. Fourteen of the 16 colleges and schools of the University (all but Law and Dentistry) offer degree credit courses through the Division; all 16 of them are involved in courses or conferences of some kind through General Extension.

A total of 128,652 adults were registered in courses and conferences during the biennium, 75,159 in periodic courses such as evening classes and independent study and 53,493 in intensive format conferences, institutes, and workshops. The total number of registrations increased 29 percent over that of the previous biennium, with a 10 percent increase in periodic course registration and a 71 percent increase in intensive format course registration. The registration totals do not include the 280,000 persons who attended the Division's circulating art exhibits or those reached through the Division's educational service departments.

Growth in the Division during the biennium, in terms of heightened specialization of service to a greater number of individuals, was reflected in added administrative units and complexity of operation. Early in 1967, departments involved in or supportive of continuing professional education were made the direct responsibility of Austin G. Anderson, to whose title of director of Continuing Legal Education was added that of assistant dean. Included in this group were the Departments of Conferences and Institutes and Parent and Family Life Education and of continuing education in medicine, law, engineering and science, business, pharmacy, dentistry, and, at its inception in fall 1967, social work. In the spring of 1968, departments involved in or supportive of formal instruction were made the direct responsibility of associate dean Donald Z. Woods. Included were the Departments of Evening Classes, Special Courses, Continuing Education for Women, Independent Study, and Counseling. Further groupings may be made as the effectiveness of the initial endeavors is demonstrated. It seems apparent that one or two additional appointments at the associate or assistant dean levels are needed.

Other major changes included the transfer of the Department of Mortuary Science from the General Extension Division to the College of Medical Sciences at the end of the biennium and a redesignation of the Correspondence Study Department as the Department of Independent Study. The latter change gives recognition to the right of highly motivated or experienced students to earn credit without being tied to traditional course methods and illustrates the efforts that are being made to provide alternatives to the traditional approach.

The efforts of the General Extension Division were recognized during the biennium not only by increased public interest, but also by awards from organizations. The National University Extension Association presented its Creative Programming Award for 1967 to the Division for the Neighborhood Seminars program and a KUOM radio series, "Old Tales and New," received its twelfth national award from the Institute for Educational Recordings.

Expansion of Division programs is expected to accelerate as the value of continuing education is discovered by more people and as increasing demands are made of the University in the area of community service. University faculty and staff have responded enthusiastically to community demands, but

care must be taken that the University continue to function primarily as an institution of higher education rather than as a social welfare agency. All community needs cannot be met by a university; its purpose is to train those who will deal with the problems of society and to engage in research that will produce more effective techniques for solution of the problems. The General Extension Division will continue to serve the community with programs that emphasize its primary role as part of the University.

Continuing Professional Education

Department of Conferences and Institutes — Program generalists and specialists in many fields provided conference service for all parts of the University during the biennium. Specialists in pharmacy, dentistry, and social work were added to the Division staff and an arrangement of several years' standing with the Law School was formalized by the joint appointment of Richard J. Clendenen as director of the Program in Delinquency Control. The appointment of Cyril M. Milbrath as resident director of conferences, institutes, and special projects at Duluth resulted in vastly increased conference service to Northeastern Minnesota, establishment of cooperative working arrangements with government offices and voluntary associations, and a community economic development project in the Ely area.

To aid analysis of priority needs, a questionnaire was sent to University department heads in fall 1966, asking that they identify areas in which they and the Department of Conferences and Institutes could work together. The response resulted in some of the outstanding courses offered during the biennium, with greatly increased assistance in planning and instruction from staff members recommended in replies to the questionnaire.

During the biennium, 30,098 persons attended 432 courses offered by the Department, as compared to 21,475 persons and 317 courses in the 1964-1966 biennium; enrollments increased by 42 percent, courses by 36 percent. (Figures do not include activities of the Departments of Continuing Business or Legal Education.)

CONFERENCES AND INSTITUTES
NOVEMBER 13, 1936, TO JUNE 30, 1968

	7-1-66 to 6-30-67	7-1-67 to 6-30-68	7-1-66 to 6-30-68	11-13-36 to 6-30-68
Number of Registrants	13,935	16,218	30,153	232,225
From Minnesota	10,431	12,506	22,937	179,209
From Other States	3,294	3,398	6,692	49,725
From Foreign Countries	210	314	524	3,291
Male Registrants	10,359	12,092	22,451	158,944
Female Registrants	3,576	4,126	7,702	73,281
Number of Faculty	2,440	2,369	4,809	58,176
Number of Courses	198	235	433	3,723
Course Days	595 $\frac{3}{4}$	715 $\frac{1}{2}$	1,311 $\frac{1}{4}$	17,448 $\frac{1}{2}$
Course Hours	3,146 $\frac{3}{4}$	3,966 $\frac{1}{2}$	7,113 $\frac{1}{4}$	99,137 $\frac{1}{2}$

Residential programs are limited by facilities available to the Department. These programs are most effective when the total operation can be undertaken in one building, but the required space often is not available on the campus. Also, where chairs, a blackboard, and a screen sufficed a few years ago, conference tables and more advanced audio-visuals are now demanded, plus special equipment for many of the highly technical conferences now being offered. Absence of dock and elevator equipment at Nolte Center complicates arrangements for such conferences and the Extension Center at Duluth is not equipped, either inside or outside, as a conference center. The University pioneered the continuation center idea in 1936, but expanded facilities are now needed to handle the increase in program volume that has taken place through the years.

COURSE REGISTRATION—DEPARTMENT OF CONFERENCES AND INSTITUTES*

Type	1966-1967				1967-1968				Cumulative 1936-1968			
	No. of Courses	No. Reg.	% of Total Reg.	Avg. Reg. per Course	No. of Courses	No. Reg.	% of Total Reg.	Avg. Reg. per Course	No. of Courses	No. Reg.	% of Total Reg.	Avg. Reg. per Course
Medical	17	1,122	8.0	66	17	1,294	7.9	77	554	30,306	13.0	55
Educational	19	2,522	18.0	133	55	3,951	24.3	72	457	34,483	14.8	75
Technological	36	2,700	19.3	75	44	4,030	24.8	92	299	33,646	14.4	113
State-Municipal	25	1,805	12.9	72	19	1,833	11.3	93	374	26,894	11.5	72
Public Health & Hospital Service	8	630	4.5	79	5	425	2.6	85	392	20,175	8.6	65
Commercial	16	793	5.6	50	23	936	5.7	41	274	17,166	7.3	63
Social Welfare	5	562	4.0	112	13	1,020	6.2	78	276	16,803	7.2	61
Nursing	10	532	4.0	53	11	920	5.6	84	225	14,817	6.3	66
Civil & Cultural	19	1,440	10.3	76	6	351	2.1	57	224	13,808	5.9	61
Dental	27	615	4.4	23	22	445	2.7	20	465	8,827	3.8	19
Labor	8	425	3.0	53	10	341	2.1	34	117	7,794	3.3	67
Legal*	—	—	—	—	—	—	—	—	43	3,068	1.4	71
Pharmacy	2	283	2.0	142	10	672	4.1	67	39	2,478	1.0	64
Miscellaneous	6	506	3.6	84	—	—	—	—	74	1,990	.8	27
TOTALS	198	13,935	100.0	70	235	16,218	100.0	69	3,723	232,225	100.0	63

*Does not include activities of Department of Continuing Legal Education or Continuing Business Education.

Department of Continuing Pharmacy Education — This Department originated in July, 1966; William J. Hodapp was appointed director. During the biennium, the Department organized interprofessional meetings such as the Dentistry/Pharmacy Seminar and offered one- and two-day courses and a series of five out-state programs. A series of closed circuit television programs, produced with the help of the Department of Radio and Television, was shown at several places in Minnesota. More than 300 health professionals, including 75 percent of the state's pharmacists, participated in the programs. A series of articles authored by members of the College of Pharmacy faculty appeared in the *Minnesota Pharmacist* as part of another project of the Department. Out-state resource people are needed to develop regionalized educational programs in pharmacy, making contacts, determining needs, communicating in two directions, and assisting in program development and production throughout the state.

Department of Continuing Education in Dentistry — Dr. Robert D. Jeronimus was appointed director of this Department, which was created early in the biennium. In addition to serving all disciplines in dentistry, the Department offers courses to dental hygienists and dental assistants. Plans for the coming biennium include a symposium at Brainerd to measure out-state response and a regional conference for directors of continuing dental education.

Department of Continuing Legal Education — The Department presented a number of courses during the biennium directed toward solution of specific problems. The Criminal Justice Course was offered in cooperation with the Office of the Public Defender. The first and second Annual Summer Schools for Lawyers presented in-depth studies in legal subjects. Two institutes on Minnesota Municipal Law and Procedure were given in cooperation with sections of the League of Minnesota Municipalities and the Minnesota Bar Association. With the help of the Department of Radio and Television, six videotaped lecture presentations were made on Minnesota civil trial and appellate practice and shown at Duluth, Moorhead, Montevideo, Rochester, and Minneapolis. A course for legal secretaries was attended by 229 secretaries and 22 courses were presented to 4,841 lawyers. The Minnesota State Bar Association continued to provide the Department with partial financial support and full participatory support during the biennium.

Department of Continuing Education in Engineering and Science — The Department made progress during the biennium toward the goals stated in its first biennial report two years ago. Identification of the technical audience is resulting in program development to meet present needs; projection of and programming for needs five years hence is the current goal. Several joint programs with professional societies were held during the biennium and a Master of Science in Mechanical Engineering degree program was developed to be sent to Rochester by closed circuit television from the Department of Mechanical Engineering. Intensive one- and two-day special technology seminars became an annual summer offering through the Department of Conferences and Institutes. Development of an independent study program combining correspondence study and personal and telephone lectures has also progressed. A new endeavor, on-site course development, involves identification of a group of industrial personnel with a common interest within a single firm and payment by the firm of the cost of course development; in some cases, the firm may even provide a competent teacher. The developed course may then be made available to other industries. A Committee on Relations with Industry named in the Institute of Technology in spring 1968 is expected to provide helpful information to the Department in the portion of its report relating to continuing education.

Department of Continuing Business Education — This Department offers self-contained, rigorous seminars that are application-oriented but based on empirically tested, sound principles. Lectures, case method, role playing, and small group discussion are used; participants are required to do homework. During the biennium, 43 courses drew 1,104 participants. An Executive Certificate Program is being planned for the future, to include all major disciplines of the business curriculum. Establishment of a management research and development service is planned to aid local firms in determining their manage-

ment education needs. Personal visits with management of local firms are expected to help establish the philosophy of need for continuing business education and provide guidance as to the kinds of programs needed. Development of an active Continuing Business Education Alumni group is expected to provide both program planning help and participants for future programs.

Department of Continuing Education in Social Work—William Hoffman was named director of this Department, created in September, 1967, in recognition of the critical manpower shortage in the field of social work and in response to pressures from social welfare agencies and individuals to expand and coordinate social work education. In the Department's first year, workshops on family counseling, understanding client motivation, administrative supervision, casework with children in school, senior citizens program direction, group work agency administration, and family planning were held throughout the state. An Extension Certificate program was approved and enrolled students and progress was made toward acceptance and recognition of certificate holders by the agencies. Plans include administration by the director of a proposed Head Start Supplementary Training Program, initiation of organized social work training programs in outlying areas of the state, and conferences and courses in areas such as social work and the law, foster parents, mental health, social workers in correctional institutions, alcoholism, and after-care treatment for patients released from mental hospitals.

Department of Parent and Family Life Education—Sex Education Institutes and Institutes for Leaders in Parent and Family Life Education were held in several cities in the state, with attendance during the biennium totaling 2,914. A course in parenthood was given in the Twin Cities area and nearly 250 lectures were arranged during the biennium.

Community-Related (Communiversy) Programs

Certain programs are specifically community-oriented, in terms of career training, volunteer activity, or direct service to the community. Initial and refresher training for careers and for special assignments related to careers and instruction of volunteers in civic service and public affairs are carried on by many departments of the General Extension Division. Service or information functions of departments often antedated the related training function; in many instances, outside funding introduced the training function or brought new emphasis to it.

Municipal Reference Bureau—The Bureau began an in-service training program for local government employees during the biennium, with funding from Title I of the Higher Education Act. Training programs were also begun in cooperation with the State Department of Health and with vocational education funding. Three suburban police departments were offered a course in community and human relations problems. Establishment of a Metropolitan Section in the League of Minnesota Municipalities resulted in closer ties between the Bureau and the League: the Section's executive secretary, Dean Lund, was also named assistant director of the Bureau. Relations with the new State Office of Local and Urban Affairs are being worked out on a contract basis; the Bureau will provide service and develop research materials. A study of annexation and incorporation standards completed during the biennium was made possible by federal funding and a study of college level training for careers in fire prevention and protection was funded by a state legislative appropriation.

The Bureau and the League of Minnesota Municipalities work together to provide needed services to the community. Membership in the League is held by 686 municipalities; during the biennium, 7,122 of their inquiries were answered. Schools and short courses were attended by 7,156 municipal employees, state and regional meetings by 5,055. Field service people made 918 municipal visits and consulted with 1,793 officials.

Plans for the Bureau-League indicate more emphasis on training and greater use of federal funds. The State Office of Local and Urban Affairs has contracted for technical assistance to municipalities and counties in labor relations, position classifications, salary plans, personnel ordinances, and joint

recruiting. Two full-time consultants will be hired. If mandatory certification of water and sewer operators becomes law in the 1969 legislative session, the Bureau-League will expand the training courses in this area begun in 1967. As a result of a fire service study, a Fire Service Education and Research Information Center has been authorized and will be established within the Bureau when funds are available. A training course will also be developed for command and staff fire service personnel in the metropolitan area in cooperation with the Office of Special Programs of the Agricultural Extension Service.

Minnesota Management Development Program — This program, now under the direction of Stoddard G. Cortelyou, was established jointly by the General Extension Division and the Public Administration Center in fall 1967. Funded under Title I of the Higher Education Act, its focus is enhancement of the managerial capacities of key officials in state government. A Governor's Advisory Committee on Management Training was appointed.

The program is aimed at three levels of state executive and supervisory personnel, with each course offered during each University quarter. Human Relations and Administration, conducted for supervisors selected by department heads, consisted of 25 course hours taught by a School of Business Administration instructor; 73 persons completed the course. The Executive Management Course, a 10-session program plus one full-day session with a management development expert, was completed by 80 state executives just below department-head level. At the highest level, the Governor and 30 department heads attended a two-day mid-winter seminar consisting of four three-hour sessions, each led by an eminent lecturer; the program was repeated during the spring quarter. In the coming biennium, advanced courses will be added for supervisory and executive level personnel and long-range curriculum development will be continued.

Civil Defense Education Program — This program is totally supported by federal funds. In its fourth and fifth years of operation, the Minnesota program continued to lead in the numbers of courses offered and persons attending; with 52 universities conducting courses across the nation, over 4 percent of the total were held in Minnesota. In January, 1968, the professional advisory service was established to give advice and assistance to architectural and engineering firms wanting to incorporate radioactive fallout protection in the design process. The director assisted in establishment, in April, 1967, of the University emergency plan, the first federally recognized plan in the nation. The full-time civil defense coordinator and the plan are 50 percent federally supported.

Training Center for Community Programs — Brought under the administration of the General Extension Division in fall 1967, this program is directed by Arthur M. Harkins. Principal objectives are to increase understanding of poverty in the community, to encourage communication between the urban community and the University, to help the poor realize their economic and social potential and learn how to plan and implement their own programs, to act as a catalyst for new programs that can become part of agency and institutional programs, and to help train professional and subprofessional staff to work in poverty areas.

Funding for the Center is almost entirely federal. Its work is both research and action oriented, with projects commonly designed around both. Studies in progress during the biennium included research on the effects of a city school system on teacher aides; a comparison of the rural poor, rural affluent, and urban poor; and an analysis of social-economic and attitudinal data on urban and rural Indians of Minnesota, Wisconsin, and Illinois. Programs centered on action included a leadership training program for board members of community action groups; vocational counseling, testing, and educational guidance for low-income persons seeking to enter the University; sensitivity training of employment service personnel working with the poor; and training of Pilot Center staff.

New Careers Program — This program, directed by Mrs. Esther Wattenberg, was begun in August, 1967. Funded entirely by the federal government, the program is administered by the Hennepin County Office of Economic Op-

portunity, which contracts with the University to provide the educational component of the program. Goals of the program are to help low-income people enter the job market in human service occupations; to help human service agencies deliver their services more meaningfully by allowing low-income neighborhood aides to help middle class professionals relate to minority groups; and to provide a work-study program acceptable to participants, agencies, and educational institutions involved, so that an ascending ladder of advancement will be available to the New Careerist.

Cooperating units of the University include the Training Center, the Department of Evening Classes, and the General College. In the community, nine education, welfare, and community service agencies participated during the first year. The 207 enrollees worked half-time in the agencies and attended school on a part-time basis. 170 of them in General College or Evening Classes and the remainder in the Adult Basic Education Program of the Minneapolis schools. Participants were paid in full for their work, 90 percent from federal funds, 10 percent from agency funds. In the second year of the program, support will be provided equally by the two sources; in the third year, the student becomes a permanent staff member of the agency. Costs of education are paid entirely by federal funds. The future of the program depends on continued funding. Development of new courses will continue and a certification program is being formulated. Analyses of sheltered versus nonsheltered classes, increased tutorial services, and revised field work criteria are planned, as is an experimental program using New Careerists as teaching assistants in education courses for teachers and students of inner city schools.

Law Enforcement Education Study — Donald Z. Woods directed this study, undertaken at the request of the state Legislature. The nationwide study resulted in a recommendation for a four-track system, to include a four-year baccalaureate degree program, a two-year associate degree program, a certificate program, and a sequence of institutes and workshops. The program, located in Central Administration at present, will be supported by grants from the Office of Law Enforcement Assistance of the Department of Justice and the Ford Foundation.

World Affairs Center — The Center provides forums for discussion of world affairs and answers questions of concerned citizens. It is assisted in its work by a Board of Directors with representatives from 30 member voluntary associations and 11 affiliated colleges and universities in Minnesota.

Conferences, seminars, and lecture series administered during the biennium included a three-state assembly on nuclear weapons; a five-week lecture series in Rochester on forces of change in the Soviet bloc; a foreign policy conference for education; an around-the-world program with news correspondents; a seminar on United States policies in the United Nations; a symposium on foreign policy for high school social studies teachers; conferences on nonintervention, disarmament, Chinese power, and future foreign policy, and on education as related to the international flow of manpower; and a seminar on U.S. policy toward South Africa. Publications included the monthly *Activities Report, China: Sources of Information in Minnesota*, and the *Directory of Minnesota Organizations in World Affairs*.

The Center's greatest need is for a full-time person to work with schools, teachers, and students to make the Center's resources available on a larger scale.

Program of Continuing Education in Urban Affairs — This Program, created in fall 1966 and funded primarily under Title I of the Higher Education Act, is directed by William C. Rogers, who also directs the World Affairs Center and the State Organization Service. It draws on the resources of the University and the community to improve the educational level of adults in urban affairs through all channels of citizen education. Conferences were held during the biennium on beautification, British urban affairs, state legislatures in American politics, keeping the middle-class family in Minneapolis, and urban rivers; Public Affairs Training Institutes for the Aging were held in St. Paul, Rochester, and Itasca State Park; and a lecture series on "Great Cities of the World" was offered. In cooperation with the 35-member Minneapolis Council of Community Councils, the Program offered courses in community education and group leadership of neighborhood organizations, provided clerical services

to the Council, and edited the *Urban Affairs Newsletter*. The newsletter, begun in 1967, is sent to more than 900 citizens with demonstrated interest in urban affairs and to a coalition of four urban church denominations that distributes 3,000 copies.

If funding continues, plans include two lecture series on color and culture in America, one devoted to the Negro's America and the other to the Indian's America. Four Legislative Issues meetings will be held in Minneapolis neighborhoods on topics the 1969 Legislature will be asked to consider and act upon.

State Organization Service — In addition to providing clerical and administrative service to its members, voluntary adult education groups, the Service handled the grants during the biennium that made possible the Programs in Continuing Education in Urban Affairs and Public Affairs for the Aging. The Service also assisted other units of the University in maintaining and using mailing lists and with programming. In order to continue to provide service to voluntary groups, which do not have large budgets, the Service needs additional staff, equipment, and space.

General and Special Instruction

The largest group of persons taking courses in General Extension is served by departments and units offering study opportunities in both credit and noncredit courses in all disciplines.

Department of Evening Classes — The Department, which administers evening class programs on all campuses of the University and at all Extension centers, continued to offer courses leading to degrees in several areas, increased the number and scope of Extension certificate programs, and broadened graduate credit course offerings by 27.9 percent over the previous biennium. A new system of joint registration in Extension classes and the Graduate School was developed, providing better guarantees of credit use by Extension graduate students and allowing slightly more work in Extension. Salary increases for evening instructors in fall 1966 eased staffing pressures and allowed expansion of curricula.

Course enrollments in evening courses throughout the state numbered 104,031 for the biennium, an increase of 14.8 percent over the 90,270 enrollments in the 1964-1966 biennium. The actual number of people taking courses did not increase as much. There were 47,438 unduplicated registrations in 1964-1966 and 50,886 in 1966-1968, a 7.3 percent increase. The average number of courses taken moved from 1.9 to 2.3 per person.

Theodore L. Campbell has been appointed acting director of the Department to replace Albert M. Fulton, whose retirement is effective June 30, 1968.

EVENING CLASSES—1964-1968

	1964-1966	1966-1968	% Increase or Decrease
Enrollments			
Minneapolis Campus (includes Short Courses, 1964-1968, and Television College, 1964-1967)	69,054	74,081	7.3
MacPhail Center	—	5,269	—
St. Paul Center	8,008	7,379	-7.9
Northwest Suburban Center (Robbinsdale)	4,583	5,837	27.4
Duluth and Area	8,186	10,027	22.5
Morris	439	548	24.8
Crookston (1966-1967 only)	—	57	—
Rochester (1967-1968 only)	—	433	—
TOTALS	90,270	103,631	14.8
Courses			
Undergraduate	1,210	1,454	20.2
Graduate	359	459	27.9
TOTALS	1,569	1,913	21.9
Class Sections			
Instructors	1,320	1,464	10.9
Individuals Registered	47,438	50,886	7.3

MacPhail Center for the Performing Arts — Created on July 1, 1966, and directed by William G. MacPhail, this major addition to the facilities and resources of the University and the General Extension Division resulted from the gift to the University of the MacPhail College of Music. The property, building, and equipment were accepted in March, 1966, and the academic programs were transferred in September of that year. The MacPhail Center retained the preparatory and continuing education programs while the degree programs became part of the Department of Music. The General Extension Division has charge of maintaining and developing Center programs and of adding extension programs outside of the performing arts. Evening classes were held beginning in fall 1966. Enrollments totaled 2,252 during 1966-1967 and 3,417 during 1967-1968. The downtown registration office in the Northwestern National Bank Building was closed with the acquisition of the Center.

Northwest Suburban Extension Center — Administered directly out of the Twin Cities Evening Classes office, the Center is made possible through the Robbinsdale School District, which contributes the use of the Robbinsdale Senior High School building and the services of part of its staff. During the biennium, 5,837 enrollments were made, an increase of 27.4 percent over the 4,538 made in the 1964-1966 biennium.

Duluth Evening Classes — This program is geared to the course offerings of the University of Minnesota, Duluth, and the majority of instructors are from that faculty. Courses available on the UMD campus and in communities throughout northeastern Minnesota can now lead to baccalaureate degrees and offer graduate work in several fields. During the biennium, course enrollments totaled 10,027, compared with 8,186 in the previous biennium, an increase of 22.5 percent. In the academic year 1967-1968, 89 faculty members taught 214 courses to 2,316 students. The Evening Classes office was moved, in fall 1967, from its downtown location to the Laboratory School Building on the Duluth campus. There it shares quarters with the director of Conferences and Institutes and handles registration procedures for the Labor Education Services coordinator.

Morris General Extension Office — This Office, coordinated by Arnold Henjum, has thus far confined its operation to evening classes. Course enrollments totaled 548 during 1966-1968, an increase of 24.8 percent over the 439 of the previous biennium. Future offerings will include graduate work, beginning with library science and audio-visual education, and a variety of workshops and special courses.

Crookston Evening Program — This program, coordinated by Robert G. Smith, is an Institute-wide program only part of which is connected with the General Extension Division. The evening program served nearly 300 people during the biennium.

Rochester Extension Center — This Center, directed by Wilbur L. Wakefield, was established on October 1, 1966, to give direction to existing University programs offered in southeastern Minnesota, to provide additional educational services, and to determine present and future needs for University services in the Rochester area. Although a total Extension program is contemplated, major effort during the biennium centered around credit and non-credit class offerings at upper division and graduate levels. A survey to determine the educational interests and needs of the 40 largest business and professional groups in the area has been completed and should assist in program planning.

During the academic year 1967-1968, 15 engineering courses, 12 of them for graduate credit, were taught by closed-circuit television to 118 students. Twenty-one courses in education, library science, business administration, economics, child psychology, and home economics enrolled 512 students. Continuing education courses in business, law, pharmacy, public affairs, music, and electrical engineering enrolled 814 adults. Most courses were taught by University faculty, but increased use of faculty from the Rochester area is being studied.

The director assisted the Rochester Junior College in federally supported studies of the College's programs and the feasibility of additional programs in the health sciences, data processing, nursing, education, and technology;

the use of videotaped supplemental instruction in chemistry and microbiology courses for students in the health sciences; and methods of improving student leadership. Research was also conducted on school finance and staffing, cost analysis, and in-service education for teachers and administrators in conjunction with the Southern Minnesota Education Research and Development Council.

Plans of the Rochester Center depend on availability of funding from the state Legislature. A University-wide committee studying how the University might meet the needs of the Rochester community will submit its report in time for careful consideration by the University, the community, and those concerned in state government.

Department of Special Courses and Off-Campus Classes—This Department is responsible for developing and presenting courses that require special administrative concern because they involve structural or clientele characteristics different from those of regularly scheduled classes. Programs during the biennium included noncredit neighborhood seminars; noncredit evening seminars in the social sciences and humanities for business and professional people; noncredit residential seminars given out-state as weekend retreats for alumni; high school enrichment lecture series in the classics; off-campus credit classes in agriculture and home economics for people in agribusiness; and closed circuit television lecture series for Rochester business and professional people. During the biennium, 311 courses involving 422 faculty members were presented in 78 Minnesota communities to 9,705 individuals; this is approximately double the number of people reached by similar programs during the previous biennium.

Continuing Education for Women Program—Emphases during the biennium were on improvement of existing courses and creation of new programs to reach additional women. Major program innovations were the addition of short courses in study skills and career orientation, enrolling 156, and of summer courses. Sixteen seminars, providing interdisciplinary in-depth study, were offered to 368 women in the Twin Cities and Duluth, compared to 12 seminars serving 242 women during 1964-1966. Seminars are a year in length and may be taken with or without credit. "Woman's Day on the Campus" was initiated at Duluth and Minneapolis during the biennium, bringing and introducing women to the campus and the faculty. A quarterly newsletter was begun in January, 1968. Future needs are for short conferences on career choices and channels for education, refresher courses, special topics courses for specific career needs, and short courses for the nonspecialist.

Labor Education Service—Activities during 1966-1968 consisted of schools, short courses, conferences, speeches and consultations, research, and publications. The Union Leadership Academy two-year curriculum had 517 participants. Short courses in decision-making and other techniques served 265 unionists. Conferences on collective bargaining, public affairs, effective communications, and decision-making drew over 1,300 union leaders. Two VISTA training programs, sponsored by the Minneapolis Central Labor Union, prepared almost 100 volunteers for assignment in urban ghettos. A profile study of the labor movement, a trade union directory, and a handbook on workmen's compensation and rehabilitation of the industrially injured worker were published. The Service worked with trade union groups in the Twin Cities on Organized Labor's Employment Opportunities Program to strengthen labor's response to employment needs of the poor. The staff consulted with unions on educational program development and presented programs throughout the state and nation and in Canada and Israel for schools and colleges, labor and management groups, and legislative bodies.

Future objectives center around needs for increased research and continued efforts toward solution of urban crises. In Minnesota, four of the six fastest growing unions are organizations of employees in the public service, yet little systematic analysis of collective bargaining problems in the public sector is available; research, upon which training can be based, is imperative. In the private sector, the 1946-to-1965 decline in the labor movement has been followed by a resurgence in the current period. Little is known of the causes and their implications for labor relations practice and policy. Research is needed on the human consequences, the effects on bargaining relationships, and other aspects of the new technology.

Department of Independent Study — Formerly the Correspondence Study Department, this Department was renamed in mid-biennium. The change reflects attempts to extend instruction through newer media and to reduce, where educationally justifiable, the quantity of writing required of students and also describes more accurately the students who finish the courses. Programmed tapes, special telephone communication, and slides are media that hold promise for effective instruction. An experiment in telephone office hours showed faculty enthusiasm and student interest; it is expected to be available soon to all Minnesota students. The community classroom program, begun in 1967-1968 and taken to 18 groups in the state, combined independent study with long distance telephone lectures and discussions between professors and students. The professor also visited the class in person at least once. Attempts to improve the educational process on the basis of academic merit or occupational experience of the student involved Credit by Examination only, with students studying the course independently, or Honors Alternative privileges, where by prearrangement students sent in only a few lessons before taking the examination. The Tuition Assistance Fund, a unique program that makes courses available to inmates of Minnesota correctional institutions, was renamed the F. Lloyd Hansen Fund during the biennium in honor of its founder.

More than 220 courses were offered during the biennium, with active enrollments of 15,979 in 1967-1968; of that number, 7,479 were new enrollments involving 6,229 individuals. Registrations were accepted from 50 states, the District of Columbia, and 51 foreign countries; 65 percent originated in Minnesota, 15 percent came through a contract with the U.S. Armed Forces Institute, and 8 percent were for high school level occupational preparation, college admission, make-up, or advanced courses.

Department of Counseling — A counselor and a program adviser in this Department serve all of the general instruction departments. During 1966-1968, 5,224 interviews were held with 4,192 individuals. In the second year of the biennium, the number of clients increased 19 percent over the first year; the number of interviews increased 32 percent. Psychological tests were administered to 230 students. Program folders and current balance sheets are maintained on about 2,000 active degree candidates and 1,000 certificate candidates.

Research projects nearing completion include a study of vocational interests and job attainments of students completing the basic engineering certificate and a study of the relationship between two English placement test scores and grades in freshman composition or communication. An occupational information library was established and a Student Personnel Advisory Committee was created to upgrade and coordinate guidance activities in the Division.

While counseling may seem a luxury in a relatively self-supporting unit, the part-time student, to whom education has to be a secondary consideration, needs guidance and support even more than the full-time day students. The future of the Department of Counseling will be limited only by the resources allocated to it. Graduate student assistants are needed on the Twin Cities campus staff. Duluth and Rochester have been tentatively served by the Department and are requesting more aid. A guidance seminar given during 1968 for adult women demonstrated the demand; added sections should be scheduled and a similar seminar for young career women developed. Group counseling sessions could serve many groups, particularly men considering mid-career changes, young people with poor academic records, returning veterans, and minority group students. Lack of staff prohibits most of these possibilities.

Mortuary Science Department — The Board of Regents, on March 8, 1968, approved the transfer of the administrative responsibility for this Department from the General Extension Division to the College of Medical Sciences as of July 1, 1968. It also approved establishment of the degree of Bachelor of Science with a major in mortuary science and discontinuance of the degree of Associate in Mortuary Science. Students in the program as of July 1, 1968, will be permitted to opt either the associate or baccalaureate degree. There were 407 students in the program in 1966-1967 and 357 students in 1967-1968.

The Arts

Instruction and service in the arts were long ago singled out for special attention in the General Extension Division. Increases in outside funding made some impact in this area during the biennium, although not as much as in professional and career-directed instruction or community-related programs.

Drama Advisory Service — In addition to responding to requests for help in all areas of theatrical activity, the Service emphasized action during the biennium, seeking areas of need and developing appropriate programs. A federally funded program of advanced study in creative dramatics was given for 30 elementary teachers from 15 states. The feasibility of establishing a center for the performing arts at Grand Rapids was studied and is now under consideration. The Southwestern Minnesota Cultural Opportunities Resource Center was established under Title III of the Elementary and Secondary Education Act. Administered by schoolmen in Marshall and staffed by several units of General Extension, the five-month project involved 9,840 students in 20 schools, 400 teachers, and more than 30,000 adults. Programs were designed to encourage area-wide development of self-sustained cultural activities and included courses in creative dramatics for teachers, touring productions of "The Importance of Being Ernest" in 19 high schools and of the Moppet Players' "The ABC's" in elementary schools, visits to creative dramatics classes by the director of "The ABC's," and direction of a play by a Marshall resident to demonstrate community theatre structure.

Among plans for the immediate future is a pilot project to be conducted in cooperation with the Minnesota State High School League to upgrade the level of secondary school theatrical instruction and production. The project will begin in Glenwood. Creative dramatics for elementary teachers will be offered in Minneapolis.

The resignation of the Service's director, Gordon S. Howard, is effective June 30, 1968. Dale D. Huffington will replace him.

Department of Continuing Education in Art — The Department continued its efforts to increase the audience for the visual arts during the biennium with expansion of the course program, substantial expansion of the circulating exhibition program, and initiation of a program of regional amateur exhibitions. Twenty-seven courses in the visual arts — studio, crafts, history, appreciation — were held throughout the state, registering 521 persons. All six art departments on the University's four campuses supplied teachers; county extension offices initiated five of the courses. The circulating exhibition program presented a variety of media, including photography, cast sculpture, and printmaking, on free-standing display units permitting them to be shown in almost any location. Total bookings in the biennium numbered 64, with estimated attendance of 280,000 persons.

The Department's contribution to the Southwestern Minnesota Cultural Opportunities Resource Center included an in-service art workshop for 120 elementary teachers; a seminar in art appreciation for 42 adults; three touring exhibits, scheduled for 21 shows in seven communities; and three art shows at the Marshall-Lyon County Library. The Southwest Minnesota Art Exhibition, held at Redwood Falls, attracted 200 amateur artists and 350 works. More than 1,000 persons attended. If added staff and funds can be found, annual exhibitions such as this can be held throughout the state.

Department of Continuing Music Education — The Department functions in close association with the MacPhail Center and the Department of Music. Thirty-one instructors at the MacPhail Center have been approved to teach applied music for major or elective credit, to teach evening classes, and to serve as clinicians for instrumental institutes. About 1,500 lessons in applied music, dance, speech, and children's theatre are given each week by the Center faculty.

The MacPhail Center Orchestra, under the direction of Anthony Gilombardo, was established in fall 1966. Comprised of junior and senior high school students, it gave several public concerts and toured southern Minnesota during the biennium. A concerto and operatic aria workshop series was held for advanced students, providing them with an opportunity for public per-

formance. Instrumental institutes conducted by leading teachers and performers were held at the Center and in Rochester, Aitkin, and Morris. The Center was also involved in summer music programs offered through the Summer Session, held a clarinetists' workshop and piano workshops, and presented piano trio recitals. Music in the program of the Southwestern Minnesota Cultural Opportunities Resource Center included chamber music ensemble performances for young people and adults, workshops for teachers, and clinics for high school instrumental performance.

Future plans at the MacPhail Center include a preschool children's class in music and art appreciation, group piano classes, creative dramatics for children, and musicianship classes that will be the first curricular items in a program for precollege music majors. Instrumental institutes are planned for the public schools under a grant from Title I of the Elementary and Secondary Education Act. Student and faculty handbooks and a Center newsletter will be begun in fall 1968.

The Media

The General Extension Division has two major departments that provide instructional services via the media to the community and to other parts of the Division and the University.

Department of Radio and Television — This Department is responsible for radio station KUOM, broadcast television, and closed-circuit television.

KUOM program policy was re-examined during the biennium in relation to the effect of television on audience habits, changes in commercial radio programming, the growth of FM broadcasting, and the development of stations specializing in fine arts and good music. Program planning proceeded, as a result, in three major directions: Current public affairs programming was strengthened, as was programming of musical materials not readily available from other stations. A full-time position of news editor was created and in-depth news programs were expanded to provide one of the most complete radio news services in the area. News of campus and community events was doubled. For example, KUOM broadcast the entire inauguration ceremony of President Moos and all events were fed by direct line and simultaneously broadcast by KUMD-FM, the University's Duluth station. Thirteen Minnesota stations requested tapes of the ceremony itself, 25 stations responded to an offer of two short programs on the inauguration, and a videotape recording of the ceremony was carried by educational stations in the Twin Cities, Duluth, Appleton, and Fargo-Moorhead.

An area of continued emphasis during the biennium was the classroom lecture, coupled with syllabi and other materials. Requests for such programs showed a high level of audience interest. Among notable programs of the biennium were "The Language That Saves," a program on modern American poetry that will be heard nationwide in fall 1968 through the National Educational Radio Network, and a program on the American Indian that was broadcast in South Dakota, Wisconsin, and Michigan as well as in Minnesota. The Minnesota School of the Air sold 1,194 teachers' manuals in 1966-1967 and 1,671 in 1967-1968, representing an estimated audience of 85,950 in-school listeners from kindergarten through junior high. Director Betty Girling received from Governor Harold LeVander the first annual Heritage Award of the State Conservation Department for her 25 years of conservation broadcasts.

A major activity during 1967-1968 was the quest for an FM frequency, to provide a day and night outlet, permit higher technical quality, and make possible broadcasts to special interest groups by use of subchannels. Legal and engineering complications have slowed the process, but conferences are being held with representatives from the Duluth and Morris campuses, with a state-wide service as the objective.

The University Television Hour was broadcast on KTCA five evenings a week from 9 to 10 p.m.; in addition, 81½ hours were purchased on the Appleton station, 130½ at Duluth, and one at Fargo-Moorhead. Programs were planned in the General Extension Division and produced in KTCA studios by KTCA staff. The year 1966-1967 concluded the University Television College experiment, which indicated that although people learn from television,

reports of learning experiences are good, and completion rates are high, the number of students willing to pay fees is disproportionately small for the expense involved.

During summer 1968, the Department produced a series based on an experimental course offered by the School of Social Work. Titled "The Urban Crisis: The Nature and Origin of Civil Disorder," the course used techniques and findings of the Kerner Commission to assess conditions in the Twin Cities. The Department's new mobile unit taped class discussions and hearings; field work and special interviews were filmed by the motion picture production division of the Audio-Visual Education Service.

The Department has University-wide responsibility for closed-circuit television. On the Twin Cities campus, 38 courses enrolled 30,078 students during 1966-1967; 43 courses enrolled 37,932 students during 1967-1968. In 1966-1967, 21 courses enrolled 312 students at Rochester; in 1967-1968, 18 courses drew 397 enrollments. Facilities installed at Duluth and Morris handled five courses from the Twin Cities during the biennium. New directions in closed-circuit use included production of materials to be played back on small machines in classrooms; use of televised instruction to reach people in widely scattered locations who want continuing education in pharmacy, law, and engineering; and production in Eddy Hall studios of a course in mathematical concepts, financed by the Hill Family Foundation and developed and used by Fergus Falls Junior College, Willmar State Community College, Rochester Junior College, and the University of Minnesota, Morris.

Plans for the Performing Arts Center, which will be part of the 1969 legislative request, include two floors for the Department. Many hours of staff time have been spent discussing plans with architects and representatives of departments sharing the building, which will be among the country's best facilities for educational work in radio and television.

Department of Audio-Visual Extension — This Department provides consultation and in-service education, assists in analyzing instructional functions, and circulates audio-visual materials. Major effort during the biennium was devoted to the implementation of an information retrieval system to handle circulation demands and accounts receivable. A new system of maintenance records was adopted and an expanded preview service was introduced.

Twelve out-state workshops attracted 1,537 persons, schools and businesses were visited, and state-wide conferences were held. Publications included 10 issues of the newly expanded *Audiovisual Journal* and the *World Affairs Film Guide*. Future plans include development of a computer-based continuing education program for school administrators, continued research in the use of instructional materials and technology, and addition of resources to permit expansion.

AUDIO-VISUAL EXTENSION—1964-1968

	1964-1966	1966-1968	% Increase or Decrease
Communities Served	6,206	3,100	-50.1
Visual Programs Furnished	146,223	171,561	+17.3
Prints in Library, estimated (65-66/67-68)	12,998	12,859	- 1.1
Titles in Library, estimated (65-66/67-68)	7,353	7,029	- 4.4
Tape Dubbings Made	2,894	5,500	+90.1
Tape Masters in Library (65-66/67-68)	1,346	2,350	+74.7
Shipments and Receipts (no figure for 64-66)	—	343,260	—

Internal Services

Office of Research — Research efforts involving market analysis and program evaluation were continued during the biennium. Studies were made

of characteristics of evening and special class students, of certificate and degree completions through Extension, and of students in Independent Study programs. Evaluations of a workshop on modular scheduling and a training program for social work associates were completed. The effectiveness of closed circuit television in a pharmacy continuing education program was compared with results of programmed instruction. A registration form was designed and is being tested for possible standardization for conversion to computer processing. The director also assisted other departments of the Division with preparation of questionnaires, program evaluations, and grant applications.

Divisional Relations Department—The Department continued during the biennium to work toward unification of the diverse promotional programs of the Division and to assist departments with preparation of publications, displays, and other educational promotion. New developments included acceptance of a common symbol to be used on all printed promotion and of a uniform design for Extension bulletin covers; initiation of a monthly calendar of events and newsletter, a photo file, and a publications production notebook; compilation of Twin Cities media lists; production of the first General Extension Information bulletin; and development of specialized direct mail promotions and Divisional traveling displays. In 1966-1967, 235 jobs were completed for departments of the Division; 271 jobs were completed during 1967-1968. Future plans include a feasibility study on computerization of all Division mailing lists, creation of a mailing center and hiring of an expert in direct mail methods to administer it, development of a handbook on Division programs and courses for use by school counselors and others, and further use of cold type composition methods and keylining.

GRADUATE SCHOOL

BRYCE CRAWFORD, JR., *Dean*

Enrollment and Degrees Granted—The total enrollment of 10,631 students in 1967-1968 was 2 percent above the 10,417 enrolled during 1966-1967 (see Table I). Master's degrees awarded during the biennium totaled 2,605, 21 percent more than the 2,151 awarded in the previous biennium. The number of Ph.D. degrees awarded increased by 16 percent, from 759 to 883 (see Table II). The total number of master's degrees awarded by the Graduate School

TABLE I—GRADUATE SCHOOL STUDENTS IN RESIDENCE
1966-1967 AND 1967-1968

Classification	1966-1967			1967-1968		
	Men	Women	Total	Men	Women	Total
Fall, Winter, and/or Spring	4,375	1,245	5,620	4,990	1,461	6,451
Summer Session only	1,071	810	1,881	804	637	1,441
Fall, Winter, Spring, and Summer Session	1,661	549	2,210	1,433	575	2,008
Mayo Graduate School of Medicine	685	21	706	711	20	731
TOTALS	7,792	2,625	10,417	7,938	2,693	10,631
Totals, Academic Year (exclusive of Mayo)	6,036	1,794	7,830	6,423	2,036	8,459
Total Individuals in Two Summer Terms (exclusive of Mayo)	2,732	1,359	4,091	2,237	1,212	3,449

BIENNIAL REPORT

in its history reached 26,069; the total number of Ph.D. degrees reached 7,391. Geographic distribution of students remained essentially the same as in the previous biennium, with 57 percent from Minnesota, 9 percent from surrounding states, 24 percent from the rest of the country, and 13 percent from abroad (see Table III).

TABLE II—GRADUATE DEGREES SOUGHT AND OBTAINED
1966-1967

	No Degree Sought	Master's Degrees		Ph.D. Degrees		Total Degrees	
		Sought	Obtained	Sought	Obtained	Sought	Obtained
Agricultural Science	11	278	85	199	29	477	114
Biological Science	14	92	16	44	6	136	22
Education	196	1,867 ^a	339 ^b	631	95	2,498	434
Duluth	7	203	26	—	—	203	26
Rochester	—	1	—	—	—	1	—
Language, Literature, Arts	65	719	106	287	25	1,006	131
Duluth	—	1	2	—	—	1	2
Medical Science	41	690	57	189	41	879	98
Rochester	14	667	42	9	1	676	43
Physical Science	27	946	245	564	99	1,510	344
Social Science	42	1,671	334	502	59	2,173	393
Duluth	—	1	1	—	—	1	1
Other	7	208	51	209	41	417	92
Rochester	1	14	1	—	—	14	1
Twin Cities Total	403	6,471	1,233	2,625	395	9,096	1,628
Duluth Total	7	205	29	—	—	205	29
Rochester Total	15	682	43	9	1	691	44
GRAND TOTAL	425	7,358	1,305	2,634	396	9,992	1,701

1967-1968

	No Degree Sought	Master's Degrees		Ph.D. Degrees		Total Degrees	
		Sought	Obtained	Sought	Obtained	Sought	Obtained
Agricultural Science	8	283	66	201	48	484	114
Biological Science	9	88	16	53	9	141	25
Education	176	1,795 ^c	338 ^d	655	117	2,450	455
Duluth	12	172	43	—	—	172	43
Rochester	—	1	—	—	—	1	—
Language, Literature, Arts	26	773	123	302	43	1,075	166
Duluth	—	16	1	—	—	16	1
Medical Science	35	748	69	174	35	922	104
Rochester	—	718	44	9	4	727	48
Physical Science	24	921	213	633	119	1,554	332
Duluth	—	4	1	—	—	4	1
Social Science	22	1,774	342	556	79	2,330	421
Duluth	—	13	3	—	—	13	3
Other	8	224	41	195	33	419	74
Rochester	—	3	—	—	—	3	—
Twin Cities Total	308	6,606	1,208	2,769	483	9,375	1,691
Duluth Total	12	205	48	—	—	205	48
Rochester Total	—	722	44	9	4	731	48
GRAND TOTAL	320	7,533	1,300	2,778	487	10,311	1,787

^a Included are 59 students seeking the certificate of Specialist in Education.

^b Included are 20 students who received the certificate of Specialist in Education.

^c Included are 44 students seeking the certificate of Specialist in Education.

^d Included are 12 students who received the certificate of Specialist in Education.

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TABLE III—GEOGRAPHIC ORIGIN OF GRADUATE STUDENTS
1966-1967

	Minnesota	Surrounding States	Other States	Foreign Countries	Total
Agricultural Science	176	48	129	135	488
Biological Science	71	19	40	20	150
Education	1,929	250	408	167	2,694
Duluth	195	10	3	1	210
Rochester	1	—	—	—	1
Language, Literature, Arts	570	113	324	64	1,071
Duluth	1	—	—	—	1
Medical Science	422	82	248	168	920
Rochester	217	51	270	154	690
Physical Science	703	110	368	356	1,537
Social Science	1,289	184	460	282	2,215
Duluth	1	—	—	—	1
Other	172	37	157	58	424
Rochester	5	1	6	3	15
Twin Cities Total	5,332	843	2,134	1,190	9,499
Duluth Total	198	10	3	1	212
Rochester Total	221	52	276	157	706
GRAND TOTAL	5,751	905	2,413	1,348	10,417

1967-1968

	Minnesota	Surrounding States	Other States	Foreign Countries	Total
Agricultural Science	210	52	117	113	492
Biological Science	70	20	41	19	150
Education	1,876	221	427	102	2,626
Duluth	162	10	9	3	184
Rochester	1	—	—	—	1
Language, Literature, Arts	606	105	312	78	1,101
Duluth	15	1	—	—	16
Medical Science	428	93	255	181	957
Rochester	222	52	284	169	727
Physical Science	673	117	405	383	1,578
Duluth	3	1	—	—	4
Social Science	1,353	193	513	293	2,352
Duluth	13	—	—	—	13
Other	171	42	158	56	427
Rochester	2	—	1	—	3
Twin Cities Total	5,387	843	2,228	1,225	9,683
Duluth Total	193	12	9	3	217
Rochester Total	225	52	285	169	731
GRAND TOTAL	5,805	977	2,522	1,397	10,631

Educational Program Development—During the biennium, master's degrees with majors in recreation and park administration, Italian, linguistics, laboratory medicine, Arabic, mathematics education, English as a second language, and Sanskrit were established on the Twin Cities campus. Ph.D. degrees with majors in Chinese, Japanese, history of medicine and biological sciences, and astrophysics were approved, as well as master's and Ph.D. degrees with majors in biology, computer and information sciences, plant physiology, animal science, and Germanic philology. A specialist certificate in library science teaching and a joint degree, the Master of Public Administration and Juris Doctor, were also approved. The faculty of the College of Education agreed to offer the Doctor of Education degree in addition to the Ph.D. degree, to be administered by the Graduate School. The Board of Regents approved the new degree, and a major in educational administration was established. Seven majors for the master's degree were approved

for the University of Minnesota, Duluth. These include analytical chemistry, physics, zoology, botany (Plan A), art, educational administration, and biology (Plan B), and represent a doubling of the graduate majors offered at the Duluth campus.

Two programs developed during the 1964-1966 biennium were put into effect. A master's program in mechanical engineering is now offered at Rochester, through the General Extension Division, by closed circuit television. Students' study plans are reviewed and approved by the appropriate graduate group committee as with other master's programs. A system of joint registration in the Graduate School and the General Extension Division has also been implemented. A student admitted to the Graduate School may now register for approved graduate courses offered by the General Extension Division and apply up to twelve credits of such courses to his graduate program. Procedures for departmental and group committee approval of courses to be offered have also been developed.

In May, 1967, the Graduate School approved awarding of a certificate of Candidate in Philosophy to Ph.D. students who have passed the preliminary oral examination. A number of universities are awarding such certificates, which give formal recognition to a most significant step toward the Ph.D. degree—the mastery of the subject matter of the field of study. The Graduate School issued the first certificates in January, 1968; to date, approximately 2,000 have been awarded to candidates. The number of Ph.D. candidates as of spring quarter 1968 was 1,250, compared to 1,221 in spring quarter 1967.

Graduate Fellowships—The biennium was a period of change and expansion for the Graduate Fellowship Office. The National Science Foundation Cooperative Graduate Fellowships were terminated, but the number of Traineeships increased, for a net gain of 24 NSF grants for the biennium. National Defense Education Act awards for preparation of college teachers in the liberal arts increased from 86 grants in 1964-1966 to 180 grants in 1966-1968. In the fellowship programs supporting the sciences there was a slight increase in the number of NSF Traineeships, a marked decline in the number of NASA Traineeships (the program is being phased out), and little change in the number of NIH Predoctoral Fellowships. (See Table IV.)

Late in the biennium the drastic effects of the curtailment of funds to many U.S. government agencies became clear: for 1968-1969 there will be no new NASA Traineeships and the number of new NDEA Title IV Fellowships will be cut in half. The humanities and social science departments will be especially hard-hit, since NDEA Fellowships were their major source of

TABLE IV—GRADUATE FELLOWSHIPS AND GRANTS
AWARDED IN 1966-1967 AND 1967-1968

	1966-1967	1967-1968
Funds Controlled by Outside Sources:		
National Science Foundation		
Graduate	18	15
Traineeships	69	87
Summer	18	18
Science Faculty (pre- and postdoctoral)	3	2
National Defense Education Act		
Title IV (new 3-year awards)	95	85
Title VI	7	11
Title V (c)	17	31
National Aeronautics and Space Administration		
Traineeships (new 3-year awards)	15	9
National Institutes of Health Predoctoral Fellowships	30	28
Fulbright-Hays Grants	5	6
Woodrow Wilson Fellowships	5	7
Danforth Fellowships	3	3
University Controlled Funds:		
Graduate School Fellowships	38	38
Graduate School Special Grants	30	23
Tuition Awards	90	90
Foreign Student Tuition Grants	90	90
McKnight Theatre Fellowships—new awards	8	10

fellowship support. The virtual elimination of the Woodrow Wilson Fellowship program (a decrease from 1,300 grants nationally in 1967-1968 to 100 for 1968-1969) will cost the University its normal quota of 5 to 7 Woodrow Wilson Fellows and will be an even greater national loss. Prospects for 1969-1970 are no brighter.

Minor changes occurred in the number of fellowships supported by non-federal sources. Those awarded by the Graduate School remained at the level of the 1964-1966 biennium despite the increased Graduate School enrollment and the higher costs of education. Additional fellowship support is sorely needed.

A study was made during the biennium of all fellowships available to graduate students. Many are industrially supported grants awarded by departments or colleges and a complete listing would require a canvass of the University's 175 departments. Table V gives the data for 1966-1967. Though the fellowship operation is a substantial one, only 76 (less than 7 percent) of the 1,200 awards are open to all graduate students; of these 76, 30 are modest grants under \$500, largely for dissertation completion purposes. With the tremendous demand for highly qualified professionals in all fields, fellowship support is essential both for recruitment and for reduction of time spent pursuing graduate degrees. Needs far outrun present resources.

TABLE V—SUMMARY OF FELLOWSHIPS
1966-1967

	Number	Dollar Value
FEDERAL		
Administered by colleges, departments	635	\$2,059,400
Administered by Graduate School	372	1,032,886
Total	1,007	\$3,092,286
NONFEDERAL		
Industrial—administered by departments	36	\$ 77,718
Nonindustrial—administered by departments	156	237,326
Administered by Graduate School	76	73,600
Total	268	\$ 388,644
TOTAL FELLOWSHIPS	1,275	\$3,480,930
TUITION AWARDS		
Graduate School	90	\$ 54,000
Foreign Students	75	67,500
Total	165	\$ 121,500

In addition to administering various fellowship programs with their many different requirements and rules, the Fellowship Office staff continued to counsel and advise many more graduate students than it was able to assist financially. Substantially increased support for able graduate students is a primary need.

Honorary Fellowships—During the biennium, 30 visiting scholars were awarded honorary fellowships. The United States was represented by 10 fellows, Africa by 1, Asia by 4, Australia by 1, Europe by 12, and South America by 2. Their areas of study included 20 fields of specialization in the Graduate School.

Special Programs—There are a number of special areas and programs under the Graduate School's administration.

Hormel Institute—A Graduate School research unit with laboratories located in Austin, Minnesota, the Institute continued and expanded its study of the chemical and biological properties of lipids. More than 90 percent of the research activities during the biennium were conducted in a coordinated program involving 30 research projects. There was also a gradual shift to-

ward studies of lipid synthesis and metabolism of molecular and cellular biology. An addition to the main Institute laboratory building was constructed for a research program relating to the lipids of microorganisms. A research project not included in the lipids program is the development of a miniature pig to be used as an experimental animal in medical and nutritional investigations.

The Institute now has about 100 employees and a yearly budget of about one million dollars. Basic support is provided by the Hormel Foundation, but most of the support in recent years has been obtained from federal and other agencies. The Institute celebrated the 25th anniversary of its founding with a program held in November, 1967.

Water Resources Research Center—Budgets for the biennium were \$154,000 for fiscal year 1967 and \$210,000 for fiscal year 1968. The Center financed 14 research projects involving 11 faculty members during 1967-1968 with funds from the U.S. Department of the Interior. These research projects were concerned with pothole drainage and groundwater resources, movement of water through soils, overfertilization of lakes and streams, surface water runoff, water law in Minnesota, and water quality management. In addition, about 80 students used equipment and supplies purchased wholly or in part by the Center and about 45 students received employment as research assistants through the Center's program. Since the Center was established, 18 new courses bearing on water resources have been developed and 11 new faculty members with an active interest in water resources have joined the University staff.

Mayo Graduate School of Medicine—Educational programs for graduate study in the School continued and exploration expanded into additional levels of education during the biennium. Elective programs now serve some 120 medical students each year from more than 80 medical schools in the United States and Canada. Twelve senior students from the College of Medical Sciences completed their six months of comprehensive clinical work in Rochester under the former curriculum during the 1966-1967 academic year. Under the new curriculum of the medical school, students will spend their senior year in special areas such as medicine, surgery, or pediatrics. These areas will attract seniors from Minneapolis to Rochester for three months each as part of their one-year specialized course. Feasibility of educational programs in allied health sciences is being studied to determine whether the School can help to meet growing public needs in these areas.

During the biennium the total number of Mayo fellows in clinical residency or basic sciences programs reached a record number of 781. The faculty appointed through the Mayo Graduate School also reached a record high of 455. The annual number of graduate degrees granted by the University to fellows of the Mayo Foundation for work done entirely or in part in Rochester totaled 46: 42 M.S. degrees and 4 Ph.D. degrees. Fellowship stipends were increased at the end of 1967; total stipend expenditure in 1966 was \$2.5 million, in 1967 \$2.9 million, and in 1968 \$4.2 million. Grants in support of educational programs totaled \$867,119 in 1967 and \$851,647 in 1968.

In February, 1968, Dr. Raymond D. Pruitt became director of the School and director of education for the Mayo Foundation.

Environmental Health Research and Training Center—The Center functions under a planning grant from the Public Health Service that supports a director and a secretary and provides funds for office operations and facility modification. An advisory committee assists the director in defining areas of operation. During the biennium, several project proposals were generated in various departments of the University incorporating aspects relevant to public health. "Environmental Sensors and Chronic Disease," a proposal involving \$580,341 for the support of the Center over a period of three years, was submitted. Funding over this period was to support 30 man-years of graduate student predoctoral and postdoctoral fellows and 8 man-years of faculty in addition to the administrative staff, consultants, and supplies necessary for the project. The director of the Center served as a radioactive waste disposal consultant to the World Health Organization during the biennium.

Graduate School Research Funds—A summary of the allocations made from research funds administered by the Graduate School appears in Table VI. These funds support exploration of new areas of research, pilot studies

TABLE VI—GRADUATE SCHOOL RESEARCH FUNDS

	Appropriation		Number of Grants Made	
	1966-1967	1967-1968	1966-1967	1967-1968
General Research	\$130,065	\$140,000	56	53
Overhead Reserve Research	\$175,000	\$200,000	42	32
Medical and Cancer Research	\$120,162	\$140,000	95	79
Minnesota Institute of Research	\$ 40,022	\$ 44,000	18	15
Nonmedical Research	\$ 31,000	\$ 31,000	51	37
National Science Foundation Institutional Grant	\$137,529	\$137,679	17	7
Biomedical Sciences Support Grant (NIH)	\$ 82,547	\$ 90,364	9	16
Rockefeller Foundation, income from investments, and institutional allow- ances from National Aeronautics and Space Administration, National Sci- ence Foundation, National Institutes of Health, and National Defense Edu- cation Act Fellowship Programs	\$258,873	\$274,290	71	75
TOTALS	\$975,198	\$1,057,333	359	314

of research problems, research programs for new faculty, and faculty summer research appointments. Thirty-one of the latter appointments were made in 1967 and 24 in 1968. Projects under this program were supported in the following fields: anthropology, architecture, art, biology (Duluth), business administration, chemical engineering, chemistry, civil engineering, economics, education and educational psychology, English and humanities, genetics, geology and geophysics, German, history, industrial relations, industrial education, journalism, law, linguistics, mechanical engineering, music, pharmaceuticals, philosophy, political science, psychology, public administration, Romance languages, Scandinavian, sociology, and zoology.

Graduate School Research Center—The Center increased its research activities during the biennium and continued to serve faculty members as a source of information and application forms for federal and privately sponsored research and training programs. It also published each fall the annual *Inventory of Faculty Research*, compiled from responses of the faculty. Luther J. Pickrel, who in 1968 was appointed associate dean of the Graduate School with responsibility for the Research Center, undertook a major research project on the impact of federal funds on the University. Discussions continued on plans to reorganize the Center to increase its effectiveness as an information source and study center for research.

The Arts and Letters Advisory Council, one of the two councils advising and staffed by the Research Center, sponsored its annual Guy Stanton Ford Memorial Lecture Series. Lecturers in 1966-1967 were William P. Malm, professor of music literature at the University of Michigan; Rulan Chao Pian, professor of Chinese and Chinese music at Harvard University; and Harold S. Powers, professor of music at the University of Pennsylvania. The lecturer in 1967-1968 was Franz Rosenthal, professor of Near Eastern languages and literatures at Yale University. The Monograph Series sponsored by the Arts and Letters Advisory Council published its third and fourth volumes. The Social Sciences Advisory Council again sponsored two successful spring television series. "Adventures in Research" was produced in 1967 and "Europe in the Mid-Sixties" was produced in 1968.

Administration and Staff—A program of improving procedures was continued during the biennium. Use of the new computer facility has increased and plans for more effective use are in progress. Refined methods for obtaining additional statistics and current information have improved the admissions process and the effectiveness of student quarterly progress reports. A thorough review of registration procedures and student programs and performance is under way. Some areas of the Graduate School were reorganized, with allocation of additional office space that will benefit students and staff. Requests for additional services nevertheless taxed Graduate School staff and facilities to the point that certain services were discontinued.

The seven Graduate Group Committees continued their review and recommendation of student programs, graduate faculty nominations, course and program proposals, and Graduate School policy. The workload for members is a substantial burden since the committees now meet twice each quarter and at least once during the summer to give attention to an increasing volume of business.

During the biennium, Professor Warren E. Ibele was appointed associate dean to assist with general Graduate School administration. Professor M. Harry Lease of Duluth was named assistant dean, with administrative responsibility for graduate developments at the University of Minnesota, Duluth. Increased numbers of graduate students, graduate faculty, and major fields of study at Duluth necessitated improved liaison between the Twin Cities and Duluth campuses. Professor E. W. McDiarmid completed his assignment as chief of party at the University of Concepción, Concepción, Chile, and resumed his position as director of the Graduate School Fellowship Office in June, 1967.

Graduate Student Activities — To facilitate and improve communication among faculty, students, departments, and administration, the Graduate Student Organization (GSO) was formed in 1967-1968. The group, comprised of representatives of each official graduate major, is being organized to serve as a consultative body to the Graduate School. Among areas recommended for GSO study are Graduate School tuition scholarships, increased study space, the incidental fee, and departmental relations. The Graduate School has offered to furnish staff assistance and financial support through the Research Center for such projects as a graduate student handbook. The Association of Student Teaching and Research Assistants (ASTRA), also organized during the biennium, worked with the Graduate School on such matters as part-time academic appointments, residency, salaries, tax-excludable income, and supplementary health insurance.

The Draft — Early in 1968, changes in the draft laws threatened to have a considerable impact on school enrollments as well as on recruitment of junior faculty (teaching assistants and teaching associates) needed in undergraduate teaching. The Graduate School prepared requests for occupational deferment where such requests seemed justified by circumstances. The effects of the new draft regulation will not be fully known before fall quarter and possibly not until winter quarter of the 1968-1969 academic year.

OFFICE OF INTERNATIONAL PROGRAMS

WILLARD W. COCHRANE, *Dean*

Campus-Based International Programs

Within the organization of the University, the Office of International Programs has a dual role. It is a line agency, with direct responsibility for certain international operations, and a staff agency, advising the central administration on questions concerning the University's international dimension. At the request of the University Council on International Programs, the Office devoted major efforts during the biennium to a review and evaluation of international activities of the University and to recommendation of priorities. Criteria by which proposals and recommendations in various areas were evaluated included level of faculty competence, degree of faculty concern, articulation of interests, quality of planning, trends of scholarship, and national needs and goals.

Further development of the University's competence in international programs requires a continued enlargement of interest and activity in the international sphere and a willingness to assign priorities to certain goals and to allocate the resources necessary to attain them. These resources must come from both within and without the University; it cannot rely exclusively on external funding to finance development of international studies.

Enlargement of Interests — Since the basis of an international program is the competence of the faculty, the University must find ways to enhance it on a departmental as well as an individual level. Extension of skills of

existing staff and appointment of new staff with new kinds of international capabilities have been made possible by a \$1,250,000 Ford Foundation grant for the period 1964-1969. But rapid development of programs requires commitment of internal resources and concentration of those resources to attain specific goals.

Development of Centers — An interdisciplinary approach is often required in international program development. Centers provide organizational bases for such programs, focusing efforts of faculty in several fields on central problems. Research carried on through centers provides training for graduate students, stimulates curricular innovations, adds to the body of knowledge available to be taught in the classroom, and attracts new staff members. Ford Foundation funds have been earmarked to support international relations, cross-cultural, and developmental studies and Asian and Latin American studies. Research in these areas has been initiated with the establishment of two centers: the Center for Comparative Studies in Technological Development and Social Change and the Economic Development Center.

Center for Comparative Studies in Technological Development and Social Change — This Center began operation during the biennium under the direction of Robert T. Holt, professor of political science. Its program has followed four major lines of inquiry.

Research on the political basis of economic development has been directed toward establishment of a sound theory of the proper role of government in dealing with problems of economic growth and stability. In this area, there is a need for systematic cross-cultural research on the effects of government activities and for application of combined economic and political science theory to the question. The impact of technology on urban centers is another area receiving major attention, with concentration on new industrial cities in Mexico and India. Close cooperation has developed between the Center, the Experimental City Project, and the Center for Urban and Regional Affairs in attempts to relate the problems of these new urban centers to the crisis in American cities.

Research on the family as a problem-solving unit has been conducted in locations in which individuals are being confronted with major environmental changes: the Moulouya River Valley in Morocco and the new cities in Mexico and India. Efforts are being made to determine how different types of families make rational and creative decisions when faced with new opportunities for mobility, employment, education, and structured cooperation. The processes of technical assistance and foreign aid are the fourth area under study. Research on the relationship between AID and universities regarding rural development contracts is pointing up the areas of misunderstanding that cause such projects to fail as often as they succeed.

Economic Development Center — This Center is the first major cooperative enterprise of economists of the College of Liberal Arts and the Institute of Agriculture. Lee R. Martin, professor of agricultural economics, is acting director. Center research activities involve formulation of economic development policies for developed and underdeveloped countries and for market and nonmarket economies. Applied research is emphasized, but attention is also given to basic problems and issues. The Center does not offer courses or degrees, but provides opportunities for research training to both American and foreign graduate students and serves as a resource for other units of the University.

The Center receives limited support from a Ford Foundation grant for enrichment of campus-based international activities and the remainder from University resources. The Ford grant expires in 1969; additional and more substantial funding from federal, state, and private sources must be secured to firmly establish the viability of the enterprise.

Requirements for Further Development of International Activities — In addition to enlargement of interests, development of centers, and enrichment of the international component of University activities, strong support must also be provided for such areas as faculty development, library resources, work with foreign students, continuing education, and study abroad. A new line of activity at the University is student exchange and study abroad, although existing programs involve a relatively small number of students. A

study committee has recommended that it be made general University policy to make available to any undergraduate or graduate student the opportunity to pursue his study in a culture other than his own.

Overseas International Programs

During the biennium, existing programs in Chile, Brazil, and Argentina were continued and a contract was received from the Agency for International Development for work in Tunisia.

University of Concepción, Concepción, Chile — This program is aimed at upgrading preparation of teaching staff, remodeling organizational structures and academic and business administration, and developing a modern central library. Upgrading of the staff is being implemented by fellowships and study-tours abroad. Changes in organization are being implemented through the efforts of visiting consultants. Minnesota's contribution to development of the library involves preparing the library collection, devising an operating plan, and assisting in the training of personnel.

Achievements of the program include the following:

A common first-year program was inaugurated; during this year students may choose from four sequences of courses, each of which may lead to more than one professional school or vocation. New admission procedures were developed, admitting students to the University as a whole rather than to one of its institutes or professional schools. Among changes in academic procedures were installation of a trimester system and an A, B, C, D "relative" grading system and reduction of the student course load from 25-30 hours to 16-17 hours; as a result of these changes, student failure was reduced from 50 percent to less than 25 percent. Four Institutes of Social Science and Humanities are now in operation. New teaching methods have been introduced to supplement the heavy use of lectures and the language laboratory is now used more effectively.

A centralized library system is gradually replacing the nearly two dozen independent libraries that formerly existed. The administrative organization was revised to establish three major administrative positions with responsibility to the rector in place of the many offices formerly reporting to him. A planning committee and an Office of Organization and Methods were also established. Business administration was improved through establishment of a modern budgetary system, new accounting procedures, and modified methods of handling inventory control, the motor fleet, and auxiliary enterprises.

In November, 1967, the Ford Foundation awarded a \$251,000 two-year supplementary grant to the University of Minnesota for continued work with the University of Concepción.

Agricultural Production Education, Chile — The ultimate goal of this project is to develop a viable, self-sustaining educational system for the transmission of technical information on food production from research centers to food producers. Major attention has been given to organization of a Production Education Section and development of effective working relationships with the staffs of the Research Institute and the several principal Chilean public agencies working with farmers. Field days, crop production demonstrations, technical circulars, and leader training programs and farmer meetings were initiated. Efforts were made to collaborate with the Catholic University to develop a set of courses in extension education.

A comprehensive project work plan was established, providing for concentration of activities on particular production and management problems. The largest single effort was made in connection with the production of corn, an essential feed and food crop imported into Chile in substantial quantities. Technical information indicated, and field trials confirmed, that greatly increased corn yields were feasible. The principal device used to encourage a rapid expansion in corn output was a production contest developed as a cooperative activity of the Research Institute, the National Extension Service, and the National Bank. Nearly 300 growers in the principal corn-producing regions of Chile participated, and many more who did not participate adopted the recommended production practices. Top yields produced by farmers in

the contest exceeded 240 bushels per acre, and the fields of participants were clear demonstrations that the recommended set of improved practices could result in high and profitable production.

By the end of 1966, three of the Chilean staff members of the Production Education Section were sufficiently advanced in their in-service training to be ready for graduate study abroad. These staff members and one member of the faculty of the Catholic University have undertaken graduate programs in the United States.

In 1967, corn production work continued and an intensive pork production project was initiated in the Temuco area. The almost immediate success of this effort resulted in a request by the Ministry of Agriculture to expand the project to all of the principal pork-producing areas of the country. The second and third Chilean pork production specialists were named and assigned to the Minnesota specialist for in-service training. The demonstrated success of the intensively trained specialist as a link between the research worker and the field extension worker influenced the Ministry of Agriculture in plans to reorganize Chilean extension work. Agreement has been reached between the Ministry of Agriculture and the Research Institute on development of a national specialist team to be headquartered at the three principal experiment stations and to work under a director holding a joint appointment in the Research Institute and in the Ministry. The work of the whole extension system will be carried out according to work plans based on commodity programs similar to the present efforts with corn and swine.

New courses developed and taught at the Catholic University and at the University of Concepción allow students to study basic principles of production education and principles and procedures involved in planning and executing technical advisory programs with farmers. These are the first steps toward programs to specialize the training of agricultural engineers to prepare them particularly for careers as field production advisers and production education specialists.

The goals of the first phase of the Minnesota Agricultural Project in Chile have been achieved, but much remains to be done. In April, 1968, the Ford Foundation awarded a two-year supplementary grant of \$675,000 to the University of Minnesota for continued work on this project.

Agricultural Consultant to the Ford Foundation — Through an agreement reached with the Ford Foundation, a University of Minnesota faculty member supervises academic work of Ford-sponsored Argentinian students who are studying agricultural economics in American universities. The task of coordinating the academic programs of 33 men studying at 9 different campuses has grown in scope and requires work both in Argentina and in this country. Involved, among other things, are progress evaluations, assistance with selection of thesis problems (for which the research will be done in Argentina), program planning, and a summer seminar program for the students.

Federal University of Paraná, Paraná, Brazil — Minnesota faculty members have just finished their second year at the Federal University of Paraná where, with Ford Foundation support, they have been attempting to initiate a new educational program in agriculture. The program, designed to introduce a new teacher education function at the University of Paraná, concentrates on the preparation of curriculum materials and training of teachers. It is to be integrated with the educational development plans of the state of Paraná.

In Brazil, training in agriculture has traditionally been oriented largely toward university entrance, with little practical vocational training. Modification of the approach to agricultural training and greater production of trained teachers are essential components of increased agricultural productivity. Teachers are desperately needed in both junior and senior high schools; they could be adequately trained to meet this need in two- and four-year post-high school programs. However, there appears to be a vast gulf between demonstrated need and development of an operating program that satisfies this need. From its onset, this program has been beset with problems ranging from political conflict between state and federal governments and inter-

personal rivalries to a rigid and archaic university system in which day-to-day functioning is determined by laws emanating from a federal council. Progress has been disappointingly slow, but since this line of activity is immensely important, both state and University officials feel that they must persist in their efforts. The University of Minnesota will continue to give assistance and to build upon the limited accomplishments brought forth to date.

Technical Assistance in Tunisia—In April, 1967, the University entered into a five-year contract with the Agency for International Development to assist Tunisia in building effective institutions for agricultural research and to assist the University of Tunis in various disciplines. Services to be provided include assisting the government of Tunisia in establishment of a Bureau of Economic Studies in the Ministry of Agriculture; providing resident and short-term Minnesota staff members to initiate and carry out a program of economic research for the Bureau; training Tunisian agricultural economists and agricultural scientists to staff the Bureau and related agricultural research institutions; and assisting the University of Tunis by providing short-term staff members for assignment in Tunisia and accepting staff and students for training at the University of Minnesota.

High on the priority list for Tunisian agriculture is economic analysis of factors related to wheat production, pricing, and marketing. Of immediate concern are economic feasibility studies of wheat production by regions, analysis of alternative uses of wheat land and of future resource requirements for wheat, studies of factors that affect the level of wheat prices and of the relationship between prices and production, farm management analysis of production on individual farms, and analysis of the impact of wheat imports on wheat production, marketing, and consumption in Tunisia. Long-range plans are concerned with the study of two major areas: agricultural production policy and planning and agricultural market policy and planning. Economic analysis will also be made to estimate the financial productivity of various investments.

Minnesota's involvement with the University of Tunis is directly connected with the future staffing needs of that university. It is anticipated that Minnesota will provide faculty consultants on a short-term basis to supplement existing programs and will accept Tunisian graduate students for training as future faculty members at the University of Tunis.

LAW SCHOOL

WILLIAM B. LOCKHART, *Dean*

Student Body, Faculty, and Facilities—The student body of the Law School remained at roughly the same size as in the previous biennium, with 583 members at the beginning of 1966-1967 and 607 in 1967-1968. The number of applicants continued to rise, but space limitations of the existing physical plant imposed a ceiling of 250 on the entering classes. Limitation will continue until the School is able to move into a larger building. The lack of space will, of course, have the undesirable effect of denying an increasing number of qualified applicants an opportunity for legal training. During the biennium, in order to hold to the limit on entering classes, it was necessary to raise the entrance standards, both as to Law School Admission Test score and grade point average, in each of the years.

Seven young, highly qualified attorneys joined the faculty during the biennium, for a net gain of six. They brought to the Law School a variety of backgrounds and their experience in practice amounted to an aggregate of 33 years, or an average of nearly 5 years of practical experience. Their addition produced a slight increase in the faculty ratio: from 23 to 1 to approximately 21 to 1, which is still far below the University-approved ratio of 12.8 to 1 for professional schools. The size of the faculty has made it necessary to continue to hold individual classes far in excess of the number needed to develop the effective student-teacher dialogue that is so important in the teaching of law. The normal maximum class section has been held at 100 students, though it has been necessary to go over 100 on some occasions. The School was also able

to offer fewer than the desired number of small seminars because of limited faculty.

With the hope that the Law School could halt the loss of promising faculty members that has plagued it over the years, the Law Alumni Association initiated an annual fund drive in 1968. The contributions received were to be used to establish Alumni Chairs in Law by augmenting normal University salaries to make positions more attractive to outstanding leaders in the law teaching profession. It was believed that if several great scholars could be added to those already on the Law School faculty, they would not only strengthen the faculty but would act as a stabilizing influence on younger faculty members who wish to be associated with the leaders in their field. Some of the money raised would be used as professorial awards to augment the salaries of present outstanding faculty members whose talents might otherwise be siphoned off. At this writing, the campaign appears assured of reaching its goal of \$100,000 a year.

Eight members of the faculty completed or were actively at work on case-books in their specialties during the biennium. Numerous monographs were also published.

Long Range Planning and Facility Needs—After a two-year study, the Law faculty adopted a comprehensive report detailing its plans for the decades ahead that was submitted in December, 1967, to President Moos and subsequently by him to the Board of Regents. A Lawyers' Advisory Committee and a University Professors' Advisory Committee assisted the faculty in preparing the report.

The report projects Law School enrollment, educational programs, and programs of research and service to the University and the community for the future. A new building is listed as one of the School's prime and pressing needs to meet its obligations of education, research, and service. A request for planning money has been approved by the administration and the Board of Regents and has been presented to the Legislative Building Commission. It is hoped that the request will be favorably acted upon by the current Legislature.

The report also plans for greatly increased interaction and collaboration between the Law School and other colleges and departments of the University; more varied types of instruction for the law student, with particular emphasis on small classes and individual work; a Center for the Study of Law in Society to stimulate cross-disciplinary research on the legal order as an instrument of social control and to engage in legislative research and drafting; increasing participation by law students in the provision of legal services to the poor to provide important clinical training and experience and to develop a sense of professional responsibility; an expanded program of international legal studies for both American and foreign students and increasing involvement of the faculty in legal problems of developing countries; and an expanding program of continuing legal education and increased participation of the bar in the teaching and research functions of the Law School.

The library, which is the fifth largest law school library in the United States, has continued to be plagued by an impending shortage of space and a limited acquisition budget. This library is the vital "laboratory" of the entire Law School operation and probably its single greatest asset. In the near future, as the law expands rapidly into new areas and needs grow for more and more materials, the Law School library is threatened with physical strangulation. Without additional space, new accessions will become impossible simply because there will be no room for them. If this were permitted to happen, the Law School would be in an impossible position.

During the biennium, it became necessary to convert additional student space in Fraser Hall to faculty offices and to move the Law Review and part of the Legal Aid activities to adjacent buildings. These moves were undesirable because they placed important adjuncts to the regular curriculum physically apart from the Law library. The increase in faculty dictated some increase in staff, which aggravated already crowded conditions. Seminar rooms, invaluable curricular adjuncts for student discussion and colloquy, have had to be sacrificed for faculty and support offices. It has become increasingly obvious that the most pressing need facing the Law School is a larger and more functional building.

Curriculum and Training—The curriculum remained relatively stable during the biennium in the wake of some rather extensive changes in 1965 and 1966. Several new courses and many new seminars, reflecting the ever-expanding aspects of the law, were offered. The change to a program of nearly free electives in the second and third years proved successful and was continued. New areas included psychology and the law, the rights of dissenters in a democratic society, urban problems, government contracts, and international commercial transactions. Emphasis was given to courses that would help a lawyer in the fields of counseling, planning, drafting, and negotiation.

Perhaps the greatest cocurricular advance came as the result of a Minnesota Supreme Court Rule permitting senior law students to appear in court on behalf of indigent persons in certain civil and criminal matters. The Law School actively urged adoption of the Rule and made a series of informational presentations to the Minnesota State Bar Association that resulted in unanimous support from the organized bar. Under the supervision of a practicing attorney in the office of the State Public Defender, whose offices are located in the Law School, nearly one hundred seniors conducted trials in Hennepin and Ramsey counties, appearing both for the defense and for the prosecution. Students also appeared in court on a number of civil issues. Appellate briefs for the State Attorney General and the Public Defender were also prepared. Student interest in this program was most enthusiastic and the clinical experience brought normal classroom studies into sharp focus. The Law School is currently making application for a Ford Foundation grant that would greatly expand present activities to include juvenile court work and family and poverty law.

The first-year required course in legal research (use of the library) was presented partially through the medium of closed circuit television during the biennium. Professor Bruno Greene, director of the library, taped ten 50-minute sessions in which he demonstrated the research tools that students would use throughout their careers. This first use of television instruction in the School proved to be most successful.

The faculty extended its activities in Continuing Legal Education. Lectures and symposiums were given at the University and at other sites in the state on new developments in the law. One series concerning the Uniform Commercial Code, presented by Professor Stanley V. Kinyon, was attended by virtually every member of the Minnesota bar.

COLLEGE OF LIBERAL ARTS

E. W. ZIEBARTH, *Dean*

Responding to the challenges of an expanding role in the community and to a combination of internal pressures, the College of Liberal Arts continued to grow vigorously during the biennium. The growth was not without sacrifice. While some of the stresses stemming from new educational demands were relieved through organizational changes and administrative readjustments, human and material resources of the College were strained severely. Many of the 47 schools, departments, and special programs comprising the College were seriously affected by forced expansion during the two-year period.

Enrollment—Large enrollments continued during the biennium, but estimates of enrollment for fall quarter 1968 indicate that the rate of increase may be falling off somewhat. Enrollments of approximately 16,850 students are projected, although larger numbers of returning students may raise this to a higher figure. Percentage increases in lower division enrollment are dropping because of the raised admission requirements of 1965 and the provision of alternative undergraduate educational opportunities, but the upper division is increasing absolutely and relatively in size. This compounds the growth problem since greater numbers of senior staff are required for courses taught at the upper division level. One factor in the leveling off of lower division enrollments has been the requirement of higher scores on College Aptitude Ratings (50 minimum) for admission. This requirement change, effective fall 1965, was timed to coincide with the opening of junior college facilities in the

Twin Cities. How much College facilities would have been overburdened in the absence of tighter requirements can only be conjectured.

Trends are revealed in the following statistics: In fall 1967, 16,183 students were enrolled in the College, an increase of 2,045, or 14.5 percent, over fall 1965. For the four-year period 1963-1967, enrollment climbed from 11,333 to 16,183, an increase of 5,050 students or 45.4 percent. In other words, CLA enrollment increases in half a decade were double the total student population of the average liberal arts college in the United States. Projected CLA enrollments for fall 1968 are for an increase of approximately 500 to 800 students over fall 1967. While this would be the smallest numerical gain in 10 years, the logistics of providing educational services for a student body of this size are formidable.

The College attempted to meet the enrollment pressure in a variety of ways, in some cases adopting as normal operating procedures instructional techniques that had been considered radical innovations only a few years earlier. Televised course offerings were greatly expanded, large lecture-quiz sections were instituted in departments, language laboratories were utilized more extensively, CLA classes were scheduled on the St. Paul campus, and more courses were scheduled for late afternoon hours. Initiation in fall 1966 of an identical time schedule for classes on East and West Bank campuses resulted in markedly better use of facilities as well as greater convenience.

Despite these successes, sheer numbers remained the greatest single threat to instructional effectiveness. Recognition of this fact prompted a decision to limit College of Liberal Arts enrollment to the 16,700-17,000 level for fall 1969. It is anticipated that this enrollment ceiling will be implemented by means other than a further raising of requirements for undergraduate admission.

Organization and Administration — By 1966, the College had completed the reorganization begun in 1960-1962; two additional years of operation as the functional college envisaged in the reorganization proposals have indicated the viability of the plan. Sound support for College programs has come from all cooperating units in the University.

Internally, a number of major changes were effected by the College, in both organizational structure and curriculum, during 1966-1968. Interdisciplinary programs were restructured by faculty vote; humanities and social science programs were placed under the administrative direction of the associate deans for humanities and social sciences. Major revisions were, or are being, made in the curricula of the two, with strong emphasis on innovation and experimentation. A number of new courses will be offered in these areas in fall 1968 and it is anticipated that senior faculty in these programs will play an increasingly important role in the educative process. (This appears to be a trend in College departments as the enrollment shifts from lower to upper division classes.) Faculty action also was responsible for conversion of the Public Administration Center into the School of Public Affairs effective fall 1968. As involvement of the University in community affairs increased, it became obvious that new mechanisms had to develop; the School of Public Affairs appears to be one answer to these needs.

In order to broaden the College's service base in yet another direction, the CLA Constitution was amended to permit student voting membership in the governing body, the All-College Council.

During the biennium, two departments were restructured to gain instructional effectiveness. The Romance Language Department was separated into two new units: a Department of French and Italian and a Department of Spanish and Portuguese. The East and South Asian Language Department was also divided; new departments are the East Asian Language Department and the South Asian Language Department.

At the biennium's end, the proposed expansion of the St. Paul campus and the role of the College of Liberal Arts in that program still were under study.

Curriculum — A number of major curricular changes were introduced in 1966-1968. Of great significance was the adoption in fall 1967 of the pass-no credit (P-N) program. This program, which evolved primarily out of student interest, enables those enrolled in the College to take up to approximately one fourth of their course work on a grade basis other than the standard A-F scale. The program is designed to encourage students to explore avenues of interest

that may be outside their general areas of competence. Student acceptance of the program is indicated by the fact that there were more than 2,000 P-N registrations during the first year of operation.

An innovation planned during the biennium for introduction in fall 1968 is the independent study program. Again, student interest and initiative were largely responsible. For many years, an informal "credit by examination" procedure had functioned in the University, but faculty participation was limited primarily to the examinations. Under the new program, students may take a wide range of courses on an independent study basis, guided by prepared syllabi; lists of "directed readings" courses are available, enabling students to move into areas of special interest; and courses may be taken for additional credit. In the independent study program, unlike the credit by examination procedure, the courses are made a part of regular registration.

A third innovation during the biennium was the new Bachelor of Social Welfare degree, to be offered by the School of Social Work effective fall 1968. Typifying the College's reaction to changing community needs, this program should help meet the increasing demand for qualified personnel in the field of welfare work.

Results of changes made during the previous biennium also became apparent during 1966-1968. The Bachelor of Fine Arts degree program, in operation for two years, has become a worthwhile and successful addition to CLA offerings. Honors program offerings have been expanded, with a gratifying response from students of high ability. The new CLA distribution requirements, effective in summer 1967, appear to be operating with no major difficulties; however, enrollment pressures have been felt in the foreign language areas. Increased efficiency has also been evident in the operation of the English Proficiency Test, overhauled administratively in 1966.

Publication in 1968 of a new CLA Bulletin—a volume listing some 4,000 separate courses—forcefully brought home two points: that course offerings of the College are rich and varied and that the processing of curricular changes has become a complex and time-consuming administrative process. During the biennium, changes were made in nearly 50 percent—approximately 2,000—of the courses. The task of providing accurate course information for students and those processing registrations is increasingly difficult.

Physical Facilities — No major changes occurred during the biennium and no new buildings, except for a temporary office building, were erected for occupancy by the College. Relief from serious overcrowding could have been expected by 1969 if certain building requests had been granted to the College by the 1967 Legislature, but the requests were not granted. The previously difficult situation has become acute, particularly with regard to West Bank office space. Construction of the Murphy-Vincent Hall links on the East Bank also poses a housing problem, since it involves temporary relocation of a sizable part of the English Department. Again, alleviation of this situation depends on the response of the 1969 Legislature to College building requests.

The perennial problem of classroom space was eased slightly in 1967 with the completion of Anderson Hall on the West Bank campus. However, special purpose space in the College is almost nonexistent. Additional space problems are being created by the construction of a major computer facility on the West Bank.

Research and Training — Research and training continued to be an integral part of College activity during the biennium. Despite cutbacks in federal appropriations, grants from outside sources to College departments and schools totaled over \$6 million during the two-year period. Of this amount, approximately one third was awarded for research and two thirds for training and student aid. Heaviest concentrations of outside funding appear in the programs of psychology, social work, speech and theatre arts, sociology, geography, economics, statistics, and anthropology; few departments, however, are without outside support.

Research-enhancing activities were also continued during the biennium. The Social Sciences Research Facilities Center, established in 1965, will become more effective in fall 1968 when it is linked with the new CDC 3200 computer operation on the West Bank. In addition to providing assistance to research activities, the Center performs a valuable teaching function through

training graduate students in computer operation. Operations of the Statistical Center were widened, with increased usefulness to the College faculty. Two new units were created in 1968: the South Asian Language and Area Studies Center and the Sociology Research Center.

Student Personnel Programming — The continuing problem is that of serving adequately the ever-increasing numbers of students enrolled in the College. New upper division offices located in Folwell Hall and the Social Sciences Building and new lower division freshman offices in Walter Library and TNM, coupled with the Johnston Hall complex, have made it possible to meet student needs in a more personal manner than previously. The Honors Division office, set up during this biennium, is proving effective in serving this category of students. Increases in staff, in addition to the locational improvements noted above, have helped to meet the increased demand for services brought about by an additional 3,000 students.

As noted previously, admission requirements of the College were changed. No basic changes have been made in retention regulations, but a one-year experience with a freshman class that entered under the new admissions policy suggests that proportionately fewer students are being dropped for unsatisfactory performance. The use of P-N grades seems to be having a similar effect. Various phases of student personnel programming are currently under review, and it is expected that a series of policy recommendations will result. It is anticipated that these new policies will permit more effective and efficient service to students in matters of registration and retention. Study is also under way on techniques of using computer programs to diminish the time required to process student records.

The College continues to serve as the major intake point for the majority of students in the University. As a result of several changes in the admissions practices of the College of Education, all students (physical education majors excepted) desiring an education degree must now enter through the College of Liberal Arts.

Faculty and Staff — Despite the manifold pressures of student population growth on College resources, the College was able to retain a high percentage of those faculty members who received offers from other institutions and to attract new faculty members during the biennium. Salary increase monies provided by the 1967 Legislature were primarily responsible for keeping the College in a competitive position in the faculty marketplace. Problems still remain in this area, however. The increase in numbers of teaching staff has not kept pace with enrollment increases. New position funding will be important over the next biennium and beyond.

Needs — Concentration on several areas will be necessary to meet the pressing educational and community service demands that will be made upon the College during the next biennium. New faculty must be found to bring instructional staff numbers more closely in line with student enrollment. New physical facilities must be provided for new faculty and those currently the victims of space shortages. Constant attention must be paid to salary improvements, despite the relative gains of the recent past, to keep the College in a competitive recruiting position. Programmatic developments must also be considered; faculty productivity is lessened and morale suffers when funds are not available to develop new areas of educational activity. Such a high percentage of new resources were allocated to meet the enrollment crisis of the last biennium that scant assistance could be given to worthwhile innovative educational proposals. Lastly, funding must be found for essential civil service staffing and for supplies and expenses. Despite increasing utilization of data processing equipment in the management of student records, a tremendous amount of paperwork is involved. Supply and expense accounts, allocations for which frequently have not taken account of inflation and price-increase factors, have been seriously eroded.

The citizens of Minnesota have treated the University generously and the University has treated the College equitably, but another biennium has passed, the needs grow greater, and the College must replenish its resources if it is to meet the challenges of tomorrow.

UNIVERSITY LIBRARIES

EDWARD B. STANFORD, *Director*

Each biennium the growth of the University, bringing with it ever-increasing demands for stronger library resources, enriched library services, and expanded and improved library facilities, confronts the University Library administration with the need for change—in acquisitions policies, in hours, and in internal organization and procedures. In spite of the significant improvement in the budget for books, periodicals, and binding and the increases in personnel that were achieved, many needs of the Library system could not be met this biennium and will have to be actively pursued in 1968-1970. The 1966-1968 biennium nevertheless was one of notable progress for the University Libraries.

Development of the Collections—On June 30, 1968, the holdings of all libraries in the University totaled 2,691,202 volumes, an increase of 211,105 volumes during the biennium. Current holdings, according to campus locations, include 2,394,349 volumes in Minneapolis; 134,018 volumes in St. Paul; 117,581 volumes at Duluth; 37,530 volumes at Morris; and 7,724 volumes at the new Technical Institute in Crookston. Areas of library development resulting from establishment or expansion of University teaching and research programs include large increases in the collections for East Asian and South Asian studies and Middle Eastern studies and in original source materials relating to immigration from Eastern Europe, books and journals for North European studies, and resources for the history of medicine collection.

Increases in special funding from federal government and private foundation grants made possible this intensified development of collections during the biennium. Under Title II-A of the Higher Education Act, the University received a total of \$15,000 in Basic Library Resources Grants for 1966-1967. For 1967-1968, when Supplemental Grants based heavily on size of enrollment and number of doctoral degree programs became available, the Title II-A funds for all campuses totaled \$172,716. Other federal programs have provided significant allocations for the purchase of library materials during the biennium. These include Medical Library Assistance Grants for the Bio-Medical Library, for pharmacy, and for veterinary medicine; funds from departmental N.D.E.A. grants for subject areas such as South Asia and Northern Europe; and funds received under a U.S.O.E. research grant administered by the Center for Immigration Studies for microfilming foreign language newspapers.

Substantial grants from private sources made possible the development of holdings in other selected disciplines. The collections in medical history were enriched by a special allocation from the Markle Foundation as well as by individual gifts obtained largely through the efforts of Dr. Owen Wangenstein. Grants from the Kress Foundation and the Hill Family Foundation were given to develop resources in art history and the Immigrant Archives. Ford Foundation funds, received through the Office of International Programs, significantly supplemented the budget for developing the Library's East Asian collection. The principal source of funds for strengthening the holdings of the James Ford Bell Library continued to be the J. F. Bell Foundation, supplemented by gifts from the Associates of that library. Contributions also came to the Library in the form of materials (books, periodicals, manuscripts, and archival files). In addition to the many individual donations received for the general collection and the Kerlan Collection, the resources of the Immigrant Archives and the Social Welfare History Archives were greatly enriched by contributions from organizations, associations, and private collectors.

Staff Needs—Because of the substantial increase in accessions, the need for additional staff to handle the increased selection, ordering, and cataloging of library materials became critical during the biennium. Every new item to be added to the Library's collections must be processed, accurately listed, marked, and shelved before it can be located and retrieved for use. Even donations require processing, thus incurring additional expense for personnel, in order to make them available for scholars.

The commitment to staff the new O. Meredith Wilson Library while continuing to operate the Walter Library, together with the demand for extra

library hours to meet student and faculty needs, made the Library's request for new positions during the biennium greater than in any previous comparable period. Efforts of the University administration to obtain staff to operate the Wilson Library met some of the Library's most critical needs. But the need for additional manpower to handle the load caused by accelerated acquisitions, increased patron demand at service desks, new service units established in the Wilson Library, and longer library hours still remains a serious problem.

Changes in Organization and Personnel—In order to permit more efficient management of the expanding University Library system, steps were taken during the biennium to realign a number of its units to delegate broader responsibility for functionally related operations to key library officers. In January, 1968, James Kingsley was appointed assistant director for resources, with responsibility for development and deployment of the Library's collections. At the same time, Paul Berrisford, chief catalog librarian, became assistant director for processing, with responsibility for all processing operations following the initial selection of materials for purchase.

Changes in Library organization included the grouping of the Ames Library of South Asia, the East Asian Library, and the Middle East Library under a Division of Asian Collections and the establishment of separate Divisions for Documents and Interlibrary Loans within the Department of Reference Services and the addition of the Map, Newspaper, and Periodicals Divisions to that Department. To provide a general undergraduate service unit for East Bank students following the opening of the Wilson Library, the College Library, comprised of the former Freshman-Sophomore Library with expanded holdings, was established under the supervisor of departmental libraries. The name of the James Ford Bell Collection was changed to James Ford Bell Library, recognizing its status as a full-fledged library.

From an over-all point of view, staff turnover was not excessive during the biennium, although it continued to increase each year, especially in non-professional grades. In the aggregate, new appointments and terminations in the Library system involves scores of individuals annually, necessitating expenditure of a great amount of supervisory time and effort and continued orientation and training at the expense of other essential work. Also, because there is frequently a gap between a resignation and the location of a replacement, turnover inevitably brings about lapses in continuity wherever vacancies occur.

Library Facilities and Planning—The development that most preoccupied the Library administration and staff during the biennium was the completion of the O. Meredith Wilson Library and the detailed planning of its furnishings, equipment, staffing, organization, and services. By June 30, 1968, the basic construction was essentially finished; installation of furniture and transfer of personnel and collections were scheduled for late summer, to assure full occupancy and operation of the new facility by the beginning of the fall quarter.

The Wilson Library, designed to house the basic social sciences and humanities collections and the Library's central resources, processing, and administrative departments, represents the culmination of proposals that were initially presented in 1960. At a total cost of nearly \$10,500,000 (one third federal and two thirds state funds), this new, fully air-conditioned building contains 245,117 square feet of usable space on seven floors. It has the capacity for approximately 1,500,000 volumes and seating for more than 2,200 patrons. In addition to the general stack collections, it will house the James Ford Bell Library, the University's Asian libraries, a large number of faculty studies, and special rooms for periodicals, newspapers, maps, special collections, and government documents. Space in the Walter Library made available by the move will be occupied by the Chemistry Library, the Music Library, the College Library, the Manuscripts and Archives Division, the East Bank Reserve Room, the Education Library, several special collections, the Technical Information Service, and the supervisor of departmental libraries. Several Minneapolis campus areas previously housing library units will be released for other use. These include rooms in Chemistry and Scott Hall that were formerly occupied by the Chemistry and Music Libraries, Johnston Hall space previously assigned to the Freshman-Sophomore Library and the University Archives,

Blegen Hall space for the West Bank Branch Library, Social Sciences Tower rooms occupied by the Map Library, and several rooms in the Walter Library. Thus, the square footage provided by the new Wilson Library is not all net gain in total library space.

During the biennium new quarters were completed, or were under construction, for several other library units. These include a new library for the College of Veterinary Medicine and the new Entomology Library on the St. Paul campus, phase III of the Duluth campus library, phase I of a library building on the Morris campus, and remodeled space for the new Technical Institute at Crookston.

With the establishment of a central University office for planning, the Library gave systematic consideration in the second year of the biennium to outlining its future needs for improved facilities. Among the projects representing the Library's next most urgent space needs are an Archives Research Center building, increased study space for students, new quarters for the Art Library, a Mathematics Library, expansion of the Wilson Library, new library facilities to serve the Institute of Technology, and a new central library for the St. Paul campus.

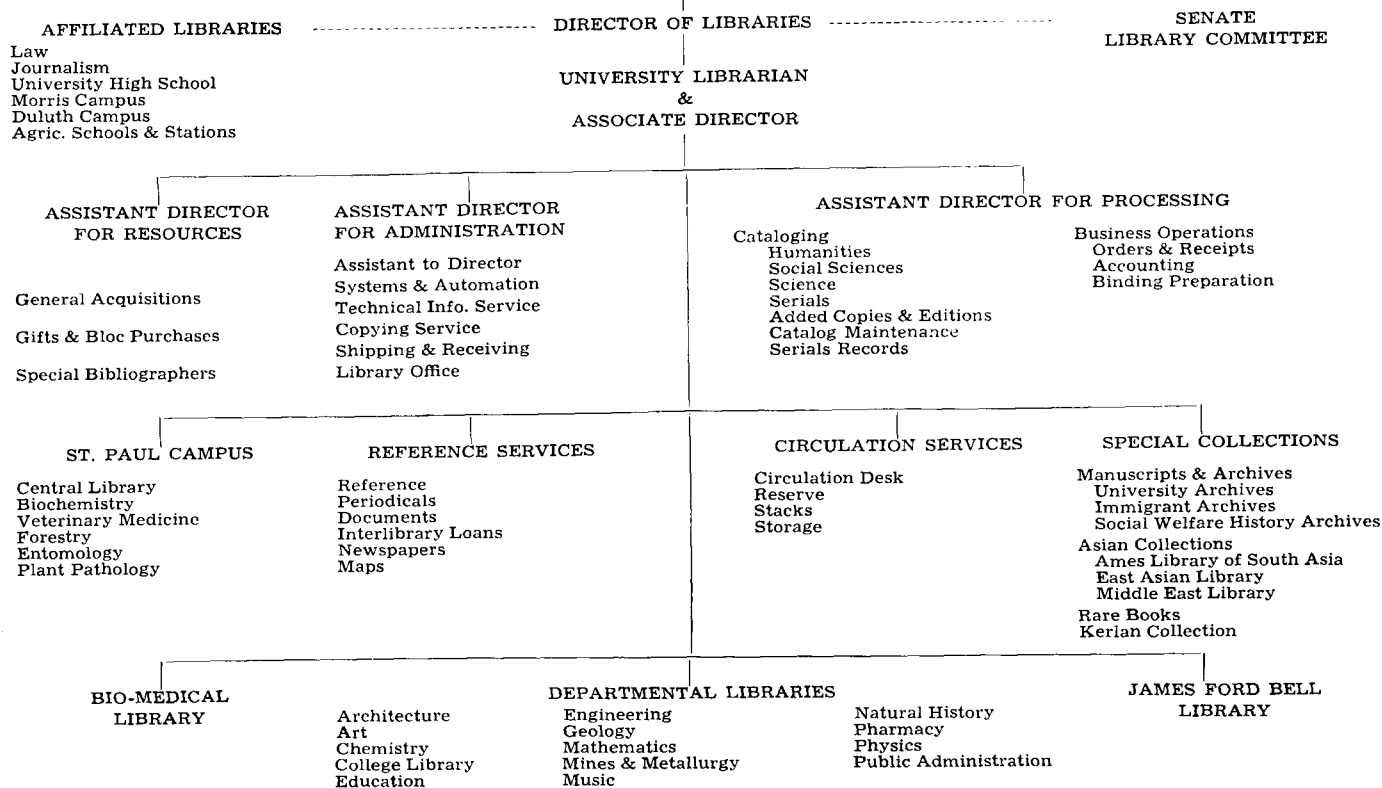
Operational Highlights—During the biennium, use of library resources showed significant increases in several areas. Figures from the central Circulation Department, which are but one index of total library use, show an increase in recorded loans from 231,135 in 1966-1967 to 248,410 in 1967-1968. Turnstile count of the number of patrons using the West Bank Branch Library (a temporary unit serving the West Bank before completion of the Wilson Library) rose from 364,606 to 398,159 during the biennium. Interlibrary loan transactions (lending to and borrowing from other institutions) increased from 12,951 the first year to 14,359 the second year. Requests from Morris for materials from the Minneapolis campus rose from 464 in 1966-1967 to 982 the following year. These statistics reflect only those aspects of library use that are recorded systematically, but are indicative of the increased use of libraries that was experienced throughout the Library system during the biennium. The increased use is largely the result of increased enrollment, expansion of honors and independent study programs, and the greater proportion of students engaged in upper division and graduate-level work.

The number of volumes cataloged by the central Processing Department during 1966-1967 was 54,547. In 1967-1968 the figure rose to 74,699. During the same period, the number of catalog cards prepared rose from 253,325 to 337,829. The Public Union catalog of Twin Cities campus library holdings now contains approximately 3,517,000 cards, arranged by author, title, and subject. In addition to the cards that were added to the Library's own catalogs, 301,100 cards, representing Library of Congress depository entries, were received and filed during the biennium. The central library catalog must currently reflect changes in the location of every item it contains to serve effectively as a finding tool for collections in more than 25 libraries. Each shift of material and transfer of publications to new locations requires locating and changing this basic record. With the redeployment of libraries on the Minneapolis campus, record changes during the biennium placed a tremendous additional work load on the cataloging staff, which also had to maintain normal processing of an ever-accelerated intake of new accessions. Yet during 1967-1968 alone, with only partial and sometimes temporary extra help, this unit completed 22 special cataloging and record-changing projects that had to be finished by the time of the move to the Wilson Library. The Serials Division, the Bio-Medical Library, and the St. Paul Campus Library also completed a major project during the biennium, checking holdings of some 21,000 *Chemical Abstracts* titles in addition to their regular duties.

New and rapidly expanding enterprises in the Library system are the Immigrant Archives, the Social Welfare History Archives, the East Asian Library, the Middle East Library, and the Technical Information Service. While the first two, as archival undertakings, grew rapidly largely through the acquisition of quantities of material by gift, the East Asian Library involved major allocations of special funds for the purchase of basic holdings. Begun in 1965-1966 with expenditures totaling only \$3,004, the East Asian Library spent more than \$80,000 during 1966-1968 for development and staffing. Starting with

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18,000 volumes in 1965, holdings had increased to nearly 43,000 volumes by June 30, 1968.

The Technical Information Service, begun in the second year of the biennium, is part of a program administered by the University with federal funds provided under the State Technical Services Act. Located in the University Library, this service, which draws on the library resources of the Twin Cities area and principally on the library collections at the University, furnishes publications and information to industries in the state in response to their research and development needs. In addition to handling technical reference questions, the director provides industrial users with photocopies of journal articles, conducts literature searches, and operates a clearinghouse referral service to lead inquiries to other sources when needed publications or data are not available in any Twin Cities library.

Developments in Automation—The application of automation to library operations, utilizing electronic data processing techniques, was intensively studied and selectively introduced during the biennium. The Library's systems coordinator worked closely with the central Circulation Department in flow-charting various operational procedures, with a view toward developing a suitable system for an automated charging system. Those involved in the project are convinced that the only system that will meet the needs of University patrons is a fully on-line, "real time" system; a detailed recommendation for the design of such a system is expected to be ready for submission during the next biennium.

An automated system for handling serial publications was installed at the Bio-Medical Library and became operational early in 1968. With funds provided by a Medical Library Assistance Grant, all records, a file of about 8,000 serial entries, were programmed and keypunched to in-put all of the data for computer handling in a MEDLARS-compatible serials system. This system, which now replaces the manual records for receiving, checking, claiming, searching, and binding, provides instantly updated information on inventory holdings for every Bio-Medical periodical title. It also produces print-outs of the complete serials list monthly, with cumulated lists of newly arrived issues every day. This system comprises a pilot operation that, when funds permit, could be applied to the total serials records for the University Library.

Staff Activities—Members of the Library staff gave many talks on bibliographic sources to University classes and to special interest groups and several individuals taught courses or presented lectures to classes in the Library School during the biennium. In addition, staff members made numerous contributions to professional activities nationally by serving as officers of professional associations, by participating on accreditation teams, by presenting papers at symposia and conferences, and by writing articles and reviews for scholarly journals. Several staff members are currently engaged in research projects relating to their personal academic interests, and some have written or edited books during the biennium.

The 1966-1968 biennium was a period of unusual progress, change, and improvement in the University Library system. The dedication of the entire Library staff, often working under pressure of time and with insufficient help, made this record possible. Further improvement in library facilities and services will be sought in the coming biennium, as the demands of expanding University programs and enrollment are translated into specific needs and recommended solutions. The understanding and support of University administration and the Senate Library Committee have been a source of encouragement to the entire Library administration and staff.

COLLEGE OF MEDICAL SCIENCES

ROBERT B. HOWARD, *Dean*

During the 1966-1968 biennium the major units of the College of Medical Sciences have developed programs of increasing cooperation in the areas of teaching, research, and health care services. Joint planning efforts for development and renovation of health sciences facilities have brought Medical

Science units into close contact with the School of Dentistry and the College of Pharmacy and resulted in formation in 1968 of a Council of Health Sciences Deans and Directors. The Council, consisting of the deans and directors of the Schools of Dentistry, Medicine, Nursing, and Public Health, the College of Pharmacy, and University Hospitals, is studying organizational patterns related to the Health Sciences Center; it is anticipated that there will be a change in the administrative structure of these units. Although the dean of the College of Veterinary Medicine has participated in the discussions, that College is not envisioned as a part of the administrative structure of the Health Sciences Center.

With the increased emphasis on the teamwork approach to health care and the role of the hospital as a clinical environment with integrated programs of patient care and health research, several major interdisciplinary programs have evolved. One of these—the Community-University Health Care Center in Minneapolis—involves a variety of health sciences professionals who attempt to treat the socio-psychological ills as well as the medical ailments of the children they serve. The health sciences planning effort is another major program that has involved all units of the Health Sciences Center. In July, 1968, representatives from the University presented plans for development and much needed expansion of health sciences facilities to the Minnesota State Legislative Building Commission. These new facilities will allow for an increase of student enrollment in all health sciences programs from the current 3,200 to 7,200 by 1983. In addition, they provide for a more accessible and modern hospital where highly skilled health teams work together and for continuation and expansion of major health research programs.

Researchers at the Health Sciences Center continue to win international recognition for their outstanding contributions in the field of medical technology and health research. Notable among research endeavors are the transplantation, cardiovascular, oncology, rehabilitation, and environmental health programs. With the influx of new, highly specialized personnel from many health professions and the increased emphasis on interdisciplinary approaches to health problems, the Center promises to maintain its leadership as a major health resource for Minnesota and the Upper Midwest.

Associated Health Programs

Biomedical Data Processing Unit—This Unit, initiated during the biennium, supplies digital computer service to the Health Sciences Center in the form of consultation, instruction, programming assistance, and computer operation. Currently maintained is a Control Data 3300 system that has terminals in many laboratories and will shortly be on-line to the larger University Computer Center Control Data 6600. In order to attract suitable staff, in-house research programs are maintained in biomedical applications of computer sciences and in mathematical biology. The Unit is supported in part by a research facilities resource grant from the National Institutes of Health. Of the 20 staff members, four derive their academic appointments from the Biometry Division of the School of Public Health.

Program in Medical Technology—Administered by the Department of Laboratory Medicine, this Program inaugurated a new curriculum during the biennium that significantly modifies the junior and senior years. The senior year is less heavily devoted to practical experience in the clinical laboratories, with more emphasis on individual and group laboratory experience in separate teaching laboratories. Additional faculty in the Program are urgently needed in the area of chemistry and hematology to meet the needs created by the new curriculum and by expanded enrollment. Consideration is being given to expansion of the Program to include Hennepin County General Hospital and St. Paul-Ramsey Hospital in the next few years, so that these facilities can be utilized as sites for hospital laboratory training. It is anticipated that the Medical Technology Teaching Program will continue to be revised, especially to include specialist training in various laboratory disciplines at the baccalaureate level.

Occupational Therapy Course—In February, 1967, Marvin Lepley was appointed director of the Course. The Occupational Therapy faculty began a curriculum study project in 1967 that included clinical staff and students and resulted in lengthening of the program by one quarter, making it a 4½-year Bachelor of Science program. The Course receives financial support through the Allied Health Professions Grant, and students who qualify during their last two years of study receive financial help through the Rehabilitation Services Administration.

Physical Therapy Course—At the beginning of the biennium a major revision was made in the curriculum, doubling the number of students in the program by providing for two classes in each of the junior and senior years. Under this plan, a second class of third-year students was admitted in March, 1967, with the two classes running concurrently. In future years, new classes of third- and fourth-year students will be admitted at the beginning of the fall quarter and spring quarter, making it possible to graduate 48 students each year instead of 24.

With the increased enrollment of physical therapy students and the necessity of combining lecture sections, it became evident that certain changes were necessary in both course sequence and content. A retreat was planned in April, 1968, for occupational and physical therapy faculties for the purpose of studying both curricula in detail and identifying common educational objectives that combined courses would serve to implement. Prior to the retreat, both groups met to identify knowledges, skills, and attitudes that the newly graduated occupational or physical therapist should possess and the role that the therapist should play in the comprehensive health care of patients today. Many recommendations were made and will be implemented within the next year.

Video-tape equipment has been rented from the Audio-Visual Department for use by occupational and physical therapy instructors. This type of instructional tool was enthusiastically accepted and students quickly adapted to its use.

Division of the History of Medicine—Dr. Leonard G. Wilson was appointed head of this Division effective July, 1967. During the biennium, Dr. Wilson added two positions to his staff: a curator of historical collections of the Biomedical Library and a research associate. Primary research for the biennium was funded by the National Science Foundation and consisted of a biographical study of Sir Charles Lyell. An application has been filed with the U.S. Public Health Service for a training grant in graduate study in the history of biology and medicine; it is anticipated that this grant will be approved and funded.

Department of Mortuary Science—Although this Department currently is under the administration of the General Extension Division, action was taken by the Board of Regents during the biennium to transfer the Department to the College of Medical Sciences. This action followed a recommendation by an all-University committee that a baccalaureate program in mortuary science be developed.

Medical School

In the last two years the functions of the offices of the College of Medical Sciences and Medical Student Affairs have become increasingly distinctive. The associate dean and assistant dean in the office of Medical Student Affairs have assumed full responsibility not only for student affairs but for curriculum development of the Medical School and related matters.

The 1967 and 1968 Medical School recognition programs honoring the senior classes in medicine featured addresses delivered by men who have retired from their positions at the Medical School and who are internationally esteemed. In 1967 Dr. Owen Wangenstein, Regents' professor of surgery and retiring chairman of the Department, spoke on a theme entitled "What of Tomorrow?" In 1968 Dr. Harold S. Diehl, dean emeritus of the Medical School and deputy executive vice president of the American Cancer Society, gave an address entitled "Opportunity Unlimited." The occasion marked the tenth

anniversary of his retirement from the deanship of the School and the fiftieth of his graduation from it.

Administrative Changes and Staffing Problems — During the 1966-1968 biennium, four new department heads and two new division heads were appointed in the Medical School. A careful review of the support of the Medical School faculty from regular instructional funds revealed it to be grossly substandard, lagging far behind similar support for the state medical schools of Washington, Colorado, Iowa, Michigan, Wisconsin, and even Mississippi. Only 26 percent of present faculty positions are supported by regular funds. To bring the level of support up to a reasonable standard would require the funding of more than 200 positions.

Curriculum Development — During the past two years, the Medical School has undertaken a thorough review of the four-year medical curriculum leading to the M.D. degree. Although the Educational Policy Committee of the Medical School Executive Faculty carried major responsibility for developing a new undergraduate medical education program, many faculty members and student committees and spokesmen were active participants in discussions. It is anticipated that the new curriculum will be presented to the Executive Faculty in November of 1968 and will begin operation in the fall of 1969. One major portion of the revised curriculum, the elective-track program of the senior medical year, has been incorporated into the 1968-1969 fourth-year curriculum. This system permits the advanced medical student who has made a tentative or firm career decision to pursue the basic science and clinical courses most appropriate as background for his selected career field. One of the five or six elective tracks will provide an opportunity for early introduction of medical students to the University's developing family practice program. Discussions and plans throughout the curriculum review have been related to current developments in American medical education programs and methods, developing trends in medical care and practice, and the express need for physicians, especially family practice physicians, in the state of Minnesota.

In October, 1967, the Subcommittee on Family Practice and Community Health of the Educational Policy Committee issued a report outlining the need for a "new type of physician—a family physician—the product of a unique training program." Dr. Benjamin Fuller, assistant professor in the Department of Medicine, was named to head this program; he currently is recruiting staff. It is anticipated that by fall 1969 the program will be able to begin "family practice training" of a few medical students. The program will emphasize a high degree of expertise in disease prevention and health maintenance, diagnosis and management of common diseases (not to be equated with trivial or simple diseases), and interdisciplinary coordinative activity. For the family practice physician, availability to the patient will be essential, and availability to him of such health resources as hospitals, individual professionals, and agencies will be necessary for maintenance of his role. This innovative program promises to encourage qualified medical students to enter the speciality and thus alleviate a critical shortage of family practice physicians.

Facilities Planning — Since 1965, the University has carried out an active long-range planning program for the development of physical facilities for the health sciences. The committee responsible for over-all planning has included two major subcommittees primarily concerned with Medical School programs: the clinical medicine and basic sciences subcommittees. These two units worked with the Educational Policy Committee of the Medical School to review and draft findings and recommendations on curriculum and on facilities needed to implement it. Requests for much-needed space for the basic and clinical sciences were incorporated into the over-all health sciences planning effort presented to the State Legislative Building Commission. The criteria used in the development of these total needs are approximately equivalent to support afforded comparable state medical schools by their state legislatures.

Significant Departmental Activities — Under the pressure of wider referrals from all clinical services and the need to establish greater coordination of routine psychological service, the *Division of Clinical Psychology* established a Psychometric Laboratory during the biennium. This Laboratory was

established basically as a hospital function under the director of University Hospitals.

Research continued in the *Department of Biochemistry* on projects that have been funded over a number of years, including fluoridation studies. A new course to give biochemistry majors a knowledge of specialized tissues was added, and the medical technology course initiated in the last biennium was expanded to two quarters in conjunction with the general curriculum change for the Medical Technology Program.

During the past two years, the *Department of Continuation Medical Education* has continued its major short course activity for physicians. Fifteen courses were offered in 1966-1967, with 1,017 physicians attending; the 15 courses in 1967-1968 were attended by 1,035 physicians. The director has been involved extensively in development of plans for programs and relationships for the Northlands Regional Medical Program. Funding from this source will make possible a great expansion of the postgraduate education activities of the College. An assistant director of CME was added to the staff in December, 1967, to assist in program planning for the Regional Medical Program involvement of the College of Medical Sciences.

Members of the *Department of Laboratory Medicine* published a total of 140 papers during the biennium and three books are scheduled to be published soon. Research projects inaugurated and completed within the biennium included a study of the response of skeletal and cardiac muscle cells that will assist physicians in finding enzymatic defects in red cells in certain cases of anemia and research on tissue-typing techniques that will assist in organ transplantation. In keeping with the general curriculum revision of the Medical School, the course for medical students in laboratory medicine was combined with two courses offered in the sophomore and junior years by the Departments of Medicine and Pediatrics to form an integrated clinical science teaching program that includes both lectures and laboratory sessions. The graduate training program for physicians in clinical pathology also was altered, with the orientation portions of the program condensed to permit this part to be completed in one year.

Within the next five to ten years, a doubling of the present space allotment will be required to provide for the expanding use of laboratory analysis in diagnosis and management of patients at University Hospitals. Ordering of laboratory analysis on patients has increased by approximately 10 percent per year over the last decade. New services also are urgently required to provide for new clinical needs, such as those of the programs in transplantation surgery.

At the beginning of the biennium, Dr. Richard Ebert succeeded Dr. Cecil Watson as chairman of the *Department of Medicine*. Changes in the organization of the Department during the past two years included establishment of the Division of Family Practice and of formal department sections at University Hospitals. The sections, which include cardiology, chest disease, gastroenterology, hematology, infectious disease and allergy, metabolism and endocrinology, oncology, renal disease, and rheumatology, will permit further development of subspecialties of medicine, both in teaching and in research. A major research project in the Department is a study of the effect of diet on blood cholesterol and on the incidence of coronary arteriosclerosis, financed by a five-year, \$3,000,000 grant to Dr. Ivan Frantz from the National Heart Institute.

A number of faculty members in the *Department of Microbiology* published scientific data in the fields of immunology, genetics, virology, microbial physiology and metabolism, and developmental biology. Visiting lecturers during the biennium included outstanding medical personnel from health centers in this country as well as in Europe and the Far East. Major research grants were received from the National Science Foundation and the U.S. Public Health Service. Approximately 1,500 square feet of space were added to the Department, permitting expansion of several research facilities and addition of an instrument room.

Dr. John J. Sciarra was appointed head of the *Department of Obstetrics and Gynecology* effective July 1, 1968. During the biennium two major physical areas of the Department were completely renovated and reoccupied; additional plans for renovation and expansion are now under consideration. Two

postgraduate courses, one dealing with obstetrical topics and the other with gynecological malignancies, were sponsored by the Department during the biennium.

The *Department of Ophthalmology* continued to provide a major facility for treatment of patients with ophthalmological diseases and ailments. The Minnesota Lions Club began a fund-raising campaign during the biennium toward the building of a Children's Eye Clinic to be administered by the Department. Additional faculty are needed in the Department to teach the increased number of medical students and residents and to serve the tremendously increased number of patients treated in the outpatient clinic.

Dr. Michael M. Paparella became chairman of the *Department of Otolaryngology* during the biennium, succeeding Dr. Lawrence B. Boies, Sr. The Department's Medical Fellowship Program, the first year of which has been in general surgery, was recently expanded and modified to make it a five-year program. It is anticipated that soon six residents will be accepted each year rather than the five currently accepted. Research projects and laboratories were established during the biennium in the areas of biochemistry of the ear, nose, and throat; temporal bone pathology and histopathology; and experimental animal surgery for diseases of deafness and other diseases of the ear, nose, and throat and of the head and neck region.

Two major investigators in the *Department of Pathology* received funds for a number of projects related to their medical specialties. Dr. Lee Wattenberg was financed by the American Medical Association Education and Research Foundation Committee for Research on Tobacco and Health, by the American Cancer Society, and by the U.S. Public Health Service for programs related to the study of cancer. Dr. Franz Halberg was named U.S. coordinator of work in problems of biological rhythms in the human eco-system for a United States-Japan cooperative program and for the International Biologic Program. In 1967, the Department sponsored a Basic Science of Cancer Course at which several outstanding researchers in the field gave papers on the problems of cancer.

Both the Community-University Health Care Center and the Community Comprehensive Health Care Clinic are projects administered by the *Department of Pediatrics* and represent innovative and effective approaches to comprehensive health care for low-income families. The latter program, designed to intervene in the cycle of poverty, ill health, and unemployment in a neighborhood in North Minneapolis, was developed in conjunction with the Hennepin County General Hospital. Like the Community-University Health Care Center, the Community Comprehensive Health Clinic is a multidisciplinary community health center oriented toward maximum community participation in meeting health needs. Health education is offered, as well as preventive and curative services, in an attempt to stimulate a change in family and community knowledge and behavior relating to prevention of disease and informed use of available health resources. Funded by the U.S. Public Health Service, this program has major responsibility for effective delivery of continuing medical care to an underprivileged segment of the population and will serve as an educational area for physicians and other health personnel. Programs are being developed that will utilize this resource in the training of public health nurses securing master's degrees in the School of Public Health.

The Department has made important contributions to medical research, a substantial segment of which concerns the field of immunology, with studies conducted by the group associated with Dr. Robert A. Good, American Legion Memorial Heart Research professor of pediatrics.

The *Department of Physical Medicine and Rehabilitation* has continued its Regional Rehabilitation Research and Training Center in cooperation with the Kenny Rehabilitation Institute, stressing the interdisciplinary approach to rehabilitation that seeks to provide patients with optimal capacity for living in their social environment. During the biennium the Program of Research in Rehabilitation continued in the areas of physiological, biophysical, and clinical problems of patients; rehabilitation techniques and equipment; psychological vocational systems research; and education research. Much emphasis was placed on interdisciplinary research on multifactorial problems encountered in rehabilitation; the complex problems of severe chronic disabilities have multiple components that require a systematic study over a number of years.

The critical shortage of personnel continues to interfere with the full activation of several of the proposed research studies.

The Kenny Rehabilitation Institute-American Rehabilitation Foundation component of the University's Rehabilitation Training Center recently addressed itself to a problem basic to the field of the rehabilitation of the disabled: the shortage of adequately trained professional rehabilitation manpower. The KRI-ARF program consistently has stressed continuing education and other methods of enhancing effectiveness and productivity of rehabilitation manpower.

A section on clinical pharmacology was established in the *Department of Pharmacology* during the biennium. The section is made up of four staff members holding joint appointments in one of the clinical departments (medicine, pediatrics, psychiatry, and anesthesiology) and in pharmacology. This development has been recognized at a national level and has been strengthened by grants from the Pharmaceutical Manufacturers Association Foundation and the National Institutes of Health. A number of publications have originated in the Department, including the book *Take as Directed*, which describes the actions of drugs in terms understandable to the educated layman. Other faculty publications have also been of fundamental importance in the field of drug metabolism. Major grants received by the Department included a \$2,258,905 grant to support a program directed toward a better understanding of drug action and a \$1,500,000 grant for research training at pre- and postdoctoral levels in pharmacology.

Major grants from the Atomic Energy Commission, various private and commercial foundations, the National Institutes of Health, and the U.S. Public Health Service were received by the *Department of Physiology* for research projects involving such things as cardiovascular and intestinal function and effects of chemicals on body systems. Dr. Eugene Grim succeeded Dr. Maurice Visscher, Regents' professor of physiology, as head of the Department in July, 1968.

The *Department of Psychiatry and Neurology* undertook two major organizational changes related to patient care during the biennium. A clinical drug research program that involves a small-scale testing of new drugs for their effects on mental illness was implemented and a special unit that employs new psychotherapeutic approaches to patients with especially difficult problems was designated. Developments at affiliated hospitals are leading to more effective training of medical students, residents, nurses, and psychiatric social workers.

Dr. Donald W. Hastings, head of the Department for 22 years, announced his intended resignation as department head in May, 1967; he continues to serve pending selection of his successor. Dr. Reynold Jensen left his position as director of the Division of Child Psychiatry in July, 1968; Dr. John Duffy was named acting director of the Division.

During the biennium, approximately 150 publications, including two books, originated in the Division of Neurology. Areas covered included neuropathology, neuropediatrics, clinical and basic neurophysiology, neurochemistry, speech pathology, neuropsychology, electromyography, and multiple sclerosis and other neurological diseases. Federal support continued from over 30 research and training grants. Four major grants supported programs involving the Neurological Research Center and cerebral vascular disease, neurology training, graduate training in cerebral vascular disease, and neurogenic bladder studies. A Cerebral Vascular Disease Workshop for executives of regional medical programs was sponsored by the Department and held in Brainerd during the biennium.

The administrative structure of the *Department of Radiology* was changed during the biennium with the formation of three separate divisions: Nuclear Medicine, Diagnostic Radiology, and Therapeutic Radiology. New equipment, the purchase of which was funded by the National Institutes of Health, will include a linear accelerator, a treatment simulator, and a transverse axial tomogram. Equipping of a new room for neuroradiology, in the planning stages for two or three years, is also anticipated. The new equipment and new facilities will enable the Department to expand its program of research and patient care. At the end of the biennium, Dr. G. J. D'Angio resigned as director of the Division of Therapeutic Radiology; no successor has yet been named.

The *Department of Surgery* came under the leadership of Dr. John Najarian in July, 1967. Significant changes in teaching, research, and service programs were instituted during the biennium to meet the increasing needs of the state for highly trained surgeons and surgical specialists. In the area of teaching, the entire third-year surgical clerkship program was revamped and a highly successful course in the surgical research laboratories, emphasizing surgical operating room techniques, was organized and developed. A program of direct affiliation and integration of the surgical programs with the Minneapolis Veterans Administration Hospital and Mount Sinai Hospital was established in July, 1968, to meet the clinical materials needs for an increasing number of medical students. The success of the affiliations has been made possible by the cooperation of Dr. Edward Humphrey at the Veterans Administration Hospital and Dr. M. Michael Eisenberg at Mount Sinai Hospital. With the advent of a \$100,000 grant from the National Institutes of Health, an active research program in gastrointestinal physiology will begin in September, 1968, at Mount Sinai Hospital.

The field of tissue transplantation has been expanded with the establishment of an active renal dialysis program headed by Dr. Carl Kjellstrand. More than 120 renal transplants have been completed since the program began; the transplant team, directed by Dr. Najarian, carried out 30 of the transplants in the last year. In addition, Dr. Richard Lillehei has continued his work in pancreatic transplantation; four pancreatic transplants were performed during the past year. The liver transplantation program, begun in 1968 with a successful liver transplant to an 18-month-old child, is a further extension of transplantation. Initiation of similar programs in heart and lung transplantation is anticipated within the next six months.

Dr. Charles F. McKhann, appointed professor of surgery and chief of surgical oncology during the biennium, is developing a program of clinical research in cancer biology that should be second to none in a department of surgery throughout the country.

The Divisions of Neurosurgery, Orthopedic Surgery, and Urology continued, with a traditional standard of excellence, their research and teaching programs. Dr. C. Donald Creevy, who headed the Division of Urology for 25 years, retired during the biennium; a successor is being sought. The program in orthopedic surgery was expanded under the leadership of Dr. John Moe and is now directly affiliated with Fairview and St. Mary's Hospitals in an expanded orthopedic program. An NIH training grant in orthopedics is anticipated.

The Department maintained its high level of activities in teaching and research during the biennium, but increasing budgetary cuts on the federal level are producing an increasing need for private and state funds to maintain the Department's record of excellence.

School of Nursing

Changes in Admission Requirements—The major change made in the School of Nursing's admission requirements during the biennium will require registered nurses wishing to enter the baccalaureate program to complete 45 credits of liberal arts study prior to applying for admission to the School. As a result of this new requirement, a greatly reduced number of registered nurse students have qualified for admission as sophomores in fall 1968; students admitted under previous requirements must complete the nursing program by June, 1971. Although no marked change has occurred in admission requirements for prenursing applicants for the baccalaureate program, the increase in the number of applicants has gradually raised the level of achievement required for admission.

Concomitant with revision and extension of length of the graduate curriculum, an additional requirement of graduation from a nursing program accredited by the National League for Nursing has been established. While individual consideration is given to applicants who do not meet this requirement, an undergraduate major in nursing is considered essential as a foundation for graduate study, and the applicant must present evidence of adequate foundation for advanced study of nursing.

Curriculum Developments—The program in practical nursing was discontinued after the graduation of the 1966-1967 class to enable the Nursing School faculty to devote all of their resources to baccalaureate and graduate programs. Experience with the baccalaureate curriculum initiated in 1962, from which the first class graduated in 1965, has enabled the faculty to identify areas of the program that could benefit from modification; work on this is to be begun during the summer of 1968. The graduate offerings of the School have been revised and extended. The Master of Nursing Administration program, the Master of Education program in nursing education, and the two five-quarter clinical programs in psychiatric and medical-surgical nursing have been discontinued. Students entering in fall 1967 began a six-quarter, two academic-year program in which they may elect to major in psychiatric or medical-surgical nursing. During the second year of the program students may elect to prepare for teaching or clinical leadership. Associated with this program have been plans for an interdisciplinary health seminar involving faculty and students in a variety of health services disciplines.

With the change in admission requirements for registered nurse baccalaureate students, special nursing courses for this group will be eliminated. When necessary, sectioning of courses will provide for different prior experience. This change should improve educational opportunities for registered nurses as well as decrease the complexity of teaching and scheduling in the School.

Organizational Changes—The Constitution and Bylaws of the College of Medical Sciences provide that the development of the School of Nursing be formulated by the director and faculty of the School. A temporary revision in organizational structure initiated in 1967 provided for establishment of three divisions within the School and appointment of a chairman for each. The divisions, which replaced program subdivisions, are the Division of Curriculum and Instruction, the Division of Research, and the Division of Educational and Student Services. In May, 1967, an ad hoc Constitution Committee was established to draft Constitution and Bylaws for the School that could constitute Article IV of the College of Medical Sciences Constitution and Bylaws. This draft was presented to the School of Nursing faculty in June, 1968. When accepted, it will be submitted to the General Faculty of the College, and, if ratified by the group, to the Regents for final approval.

Significant Research—A project initiated during the biennium that is particularly worthy of mention involves a study of the extent to which program objectives, behaviorally stated, are attained and retained by graduates of the School of Nursing.

Facilities and Academic Needs of the School—While there has been a substantial increase in faculty positions in recent years, the deficit status in which the School of Nursing operated in an earlier period is still reflected in a higher student-faculty ratio than exists in many comparable schools. This situation is compounded by the School's limited physical facilities and by acute faculty shortages in the nursing profession generally, making it difficult for incumbent faculty to achieve satisfaction in their work and even more difficult to attract competent new faculty members. Plans to initiate a more fruitful research program and to expand graduate enrollment will make imperative the establishment of additional faculty positions if the School of Nursing is to maintain its prestige nationally.

School of Public Health

During the biennium the School served students from 44 states and from 36 foreign countries. Almost 90 percent of the funds handled through the School are derived from the federal government, which provides support for training activities and research and stipends for students registered in the School. For this reason, a higher proportion of nonresidents are registered in the School than in most other units of the University.

Enrollment—The total enrollment, which, as shown in the following table, had grown rapidly during the past two decades, declined somewhat during

the biennium for two major reasons. First, there was an absolute decline in new students with the advent of new schools of public health. Second, an increasing proportion of students working in programs of the School have been registering in the Graduate School as candidates for the Master of Science degree rather than in the School of Public Health as candidates for the Master of Public Health degree.

SCHOOL OF PUBLIC HEALTH GRADUATE ENROLLMENT
(Fall Quarter)

	1947	1957	1967
Biostatisticians	2	17	37
Dentists	—	1	2
Environmental Health Specialists	9	28	73
Epidemiologists	—	—	4
Health Educators	11	9	11
Hospital Administrators	30	49	80
Nutritionists	—	—	7
Physicians	15	8	7
Public Health Nurses	11	24	37
Veterinarians	1	5	3
Others	2	—	—
TOTALS	81	141	261

Curriculum Changes— The most significant curricular change during the biennium was the extension of the period of study required in the Master of Public Health and Master of Science programs. The period has been gradually lengthened from a regular academic year of nine months to a minimum of 11 months for physicians, dentists, veterinarians, nutritionists, and environmental health students; 14 months for those in health education; and two academic years for those in public health nursing. The program was lengthened in recognition of the increasing amount of subject matter to be included and the availability of federal training funds to cover students over longer periods of time. Of particular significance has been the shift in federal policy that now permits support for two years rather than one, making it possible to envision a master's degree program of more than one year and the possibility of extra study in the post-master area for students who might not continue with a doctoral program. The number of students registered in any academic quarter will thus be increased even when there has been no increase, or even a decline, in the number of new students.

Significant Research— Extensive research programs, as in former years, found support from federal and other outside funds during the biennium. Of particular note were the studies of the relationship between diet and cardiovascular degeneration made by Dr. Ancel Keys and his associates in the Laboratory of Physiological Hygiene. Studies carried on in foreign countries, notably Finland, Greece, Italy, Japan, Netherlands, and Yugoslavia, brought increased international recognition to the Laboratory. The Division of Biometry collaborated in the statistical aspect of a wide variety of projects throughout the College of Medical Sciences. The Division of Epidemiology completed studies of congenital malformations and of human poisoning by silo gases and instituted a cancer incidence study of the Twin Cities metropolitan area. The Division also collaborated with the Norwegian Cancer Society in a study of the epidemiology of cancer of the gastrointestinal tract. The Division of Environmental Health conducted a wide variety of research projects in the areas of limnology, hospital sanitation, water quality management, air pollution, control of radiation hazards, and accident prevention, all under Public Health Service grants. The Division's studies in sterilization, conducted under grants from the National Aeronautics and Space Administration, are fundamental to the problem of interplanetary contamination and quarantine. Research projects in the Division of Hospital Administration included a study of rural health care and an evaluation of sharing of hospital services. A Children's Bureau project providing for development of a reporting system for 57 chil-

dren and youth projects in medical centers throughout the country is already attracting considerable national interest.

Facilities Needs — Although the last few years have been years of progress and development, the School has reached a plateau from which it can rise only as additional space and funds become available. The lack of space is critical, some parts of the School having as little as 75 square feet of office space per person. The School occupies only 40,000 square feet, less than half the present national average for schools of public health, but must serve the second largest enrollment in the nation. Schools such as those at Harvard, Johns Hopkins, Michigan, and Pittsburgh occupy space ranging from 150,000 to 200,000 square feet. The cramped quarters produce serious problems in recruitment and retention of essential staff as well as in the conduct of research programs. Of particular concern are the crowding in the biometry and hospital administration divisions, the lack of expansion in epidemiology and maternal and child health, and the outdated and even dangerous quarters of the Laboratory of Physiological Hygiene. The hazards in the Laboratory have been repeatedly pointed out by the State Fire Marshal; because of the University's failure to provide normal maintenance and repair, the Laboratory has been forced to conduct more and more of its research programs away from the University, as have the Divisions of Maternal and Child Health and Hospital Administration. This situation constitutes a serious handicap to both research and teaching.

Finances — The School and its students have been the beneficiaries of federal support in the form of general research grants, Hill-Rhodes funds for support of schools of public health, and grants for a wide variety of special training projects. As the biennium comes to a close, however, one federal program after another throughout the country is being phased out. In the School of Public Health there has been discontinuance of federal support for accident prevention and mental health projects and notification that the highly successful training project in epidemiology will terminate in June, 1968. Other projects have been continued without new funds to meet normal salary increases or with reduced support. The School will be solvent for the fiscal year 1967-1968, but prospects beyond that time are not encouraging. Since major enrollment is by students from areas other than Minnesota, major responsibility for continuing the School should rest with the federal government. But if federal funds continue to be reduced, the School will have to curtail materially some of its activities or turn to the state for substantial increases. The situation will become particularly noticeable in the biennium beginning in 1970, when, because of retirement, there will be a change in the directorship of the School. Unless substantial new funds are obtained and additional space made available, the University will have serious difficulty finding a suitable replacement in competition with schools that have adequate space to attract staff and to provide for normal growth.

University Hospitals

During the biennium the University Hospitals complex continued to expand services and develop programs to carry out its roles of providing a clinical laboratory for education in the health sciences; providing facilities, equipment, and personnel for the care of patients; conducting research related to health management; and providing leadership in the advancement of health care and improved health care delivery systems.

Emphasis on clinical training in an institutional setting has resulted in expanded affiliations of health science programs with community hospitals as well as expansion and strengthening of ties between University health sciences educational programs and University Hospitals. Joint educational programs developed with the School of Dentistry and the College of Pharmacy during the biennium allow pharmacy and dentistry students to receive instruction and clinical training at the hospital patient unit level.

As the base health care center for the state of Minnesota, University Hospitals continue to provide comprehensive care to patients referred from all Minnesota counties, from neighboring states, and, in cases of highly specialized

care, from more distant states and nations. During a recent three-month period, 87 percent of Hospitals inpatients were referred from Minnesota, with all counties represented; 12 percent from other states; and 1 percent from foreign countries.

Increased attention has been directed to expanding the Hospitals' leadership in development of improved techniques for the delivery of health care. Hospitals administrative and departmental staff currently are participating in the Community-University Health Care Center and in research efforts directed toward improved health care systems. In addition, Hospitals staff members are participating with the School of Public Health in a study of rural health care in Minnesota with the ultimate objective of improving the care in rural areas. "Health of the Nation," an educational program developed and sponsored by the Hospitals to promote recognition of health care problems by all health professionals, is a series of lectures by national leaders in the health care field and is intended to stimulate local thinking regarding the need for innovations in the health care system. Further involvement in community service is anticipated for the Hospitals during the coming year.

Leadership in development of techniques for more efficient Hospitals operation is also anticipated as the University responds to the increasing complexities of institutional-centered care. To provide more effective Hospitals services, a Hospitals department of data processing was formed during the biennium and studies leading to more efficient organization of services and more appropriate use of health professionals at the Hospitals nursing station level were completed. Industrial engineering techniques, where practical in a hospital setting, will be applied to assist in the development of more efficient Hospitals systems.

Major efforts have also been made to improve services offered to both outpatients and inpatients. Despite the critical space shortages faced by most Hospitals departments and the obsolescence of patient examination and treatment stations, departments have undertaken programs to improve patient care, provide facilities for new diagnostic and therapeutic techniques, and effect operating efficiencies to combat rapidly rising hospital costs. Transportation of supplies and equipment has been centralized within one department; pharmacy services have been extended to patient care units through "satellite pharmacies"; and nurse clinicians, highly trained in particular specialties, serve as consultants to staff nurses and supervise care of diabetic and rehabilitation patients and care in the fields of medical-surgical nursing, psychiatric nursing, cardiovascular nursing, and neurology.

In view of the health sciences development program, planning for the future has been an important segment of the activities of the Hospitals. In February, 1968, the University Hospitals supplement to documents outlining future planning for the health sciences was published, containing statements of Hospitals roles, objectives, and projected programs and including specific departmental projections for space and personnel needs during the coming decade. Projections include an increase in Hospitals beds from 850 to 1,013 by 1973. New Hospitals areas will replace obsolete facilities and provide a minimum but essential expansion to accommodate new clinical treatment programs, will triple the amount of space for outpatient care and replace existing obsolete outpatient facilities, and will provide for expansion of Hospitals departments to accommodate larger service loads and new programs.

A review of Hospitals activities during the biennium reveals an increase in inpatient days; the outpatient load remained nearly stationary. The main hospital core, along with Masonic Memorial Hospital, the Variety Club Heart Hospital, and the Children's Rehabilitation Center, recorded 230,065 patient days in 1967, an increase of 3,787 days over the previous year. This inpatient volume as measured by days of hospital care represents the highest level of activity in the history of University Hospitals and has severely taxed facilities designed to serve fewer beds. Outpatient visits totaled 113,265 in 1967, compared with 113,883 in 1966.

The number of Hospitals staff members has increased as more personnel have become necessary to provide care for each patient, a national trend resulting from an increased number of diagnostic and therapeutic techniques and more complex equipment. Also, a greater use of allied health personnel

has developed because of the shortage of physicians. Full-time equivalent Hospitals staff now totals 2,317 employees, as compared with 2,013 in 1966.

University Hospitals activities during the biennium are reflected in the following statistics:

	1966-1967	1967-1968
Inpatient Admissions	15,410	15,775
Average Daily Census	619.93	630.3
Average Length of Stay	14.6	14.5
Total Patient Days of Hospital Care	226,278	230,065
Outpatient Admissions	21,176	19,260
Patient Visits to Outpatient Department	113,883	113,265
Prescriptions Filled by Pharmacy	338,044	418,025
Hospital Laboratories Examinations and Procedures	934,946	1,047,608
Diagnostic Radiology Examination	71,016	83,522
Meals Served (Patient and Cafeteria)	937,089	959,797

DEPARTMENT OF MILITARY SCIENCE

WILLIAM D. BEARD, Colonel, Infantry

The Army ROTC continued to provide students with an opportunity to qualify for a commission in the United States Army Reserve or Regular Army through an integrated program of college-level military instruction.

Curriculum — The military science curriculum remained substantially the same during the biennium, with the two-year Army ROTC program begun in fall 1965 continuing to be a major source of advanced course students. The University was one of 11 of the 259 institutions in the nation offering Army ROTC to be invited to participate in a two-year trial of a new Army ROTC Developmental Curriculum. The purpose of this curriculum is to provide a program that will have academic creditability and acceptance by the institution's faculty and still produce a graduate with a common level of military training. The preprofessional phase of this curriculum (freshman and sophomore years) will consist of courses in world military history and foundations of national power conducted by the Departments of History and Political Science. The professional phase (junior and senior years) will continue in the traditional manner with military subjects necessary to qualify the graduate for a commission.

The scholarship program begun in 1965 was also continued during the biennium. Eight students enrolled in the Army ROTC program were awarded four-year scholarships and three were awarded two-year scholarships. In addition, one student received a scholarship from the Twin Cities Chapter of the Association of the United States Army in fall 1967.

Enrollment — ROTC strength at the end of each academic year was as follows:

Academic Year	Basic Course		Advanced Course		Total
	1st Yr.	2nd Yr.	3rd Yr.	4th Yr.	
1966-1967	78	43	65	35	221
1967-1968	53	43	41	59	196

Enrollment in the advanced course remained constant at 100 although the basic course enrollment decreased. Advanced course enrollment is influenced by the number of students admitted to the two-year program and has a direct relation to the number of ROTC graduates commissioned each year.

A total of 86 students were commissioned during 1966-1968, compared with 69 during 1964-1966.

Year	U.S. Army Reserve	Regular Army	Total
1966-1967	29	3	32
1967-1968	45	9	54

An analysis of the performance of Army ROTC graduates at the officer basic courses conducted at Army Service Schools during the biennium indicated that University of Minnesota graduates were above the national aver-

age for those placing in the upper and middle third of their courses and below the national average for those placing in the lower third.

OFFICER MEMBERS OF THE DEPARTMENT OF MILITARY SCIENCE

Name	Grade	Reported	Departed
William D. Beard	Colonel, USA	Aug. 1965	
Linton C. Beasley	Major, USA	Sept. 1962	July 1966
Charles R. Chase	Major, USA	Aug. 1966	
Daniel R. Zenk	Major, USA	Aug. 1963	Aug. 1966
Herbert N. Meininger	Major, USA	Mar. 1967	
Kent E. Harrison	Major, USA	June 1965	April 1968
James F. Iaconis	Major, USAR	July 1965	June 1968
Karl P. Piotrowski	Major, USA	(to arrive Aug. 1968)	
James P. Kress	Captain, USA	(to arrive Aug. 1968)	

Activities — The Army Flight Training Program was again conducted at the University Flight Facility during the biennium. Two students completed the program during 1966-1967 and one during 1967-1968. The Pershing Rifles, the Scabbard and Blade Society, the Army ROTC Cadet Band, and the "Kadettes" continued to be active in support of the Army ROTC program. The ratings for the Annual General Inspection were again "Satisfactory," the highest rating, with comments on the excellent quality of the program.

UNIVERSITY OF MINNESOTA, MORRIS

RODNEY A. BRIGGS, *Provost*

The 1966-1968 biennium marked a significant period for the University of Minnesota, Morris, as it came fully under the operating budgets of the University for the first time. It was a period of intensive development of academic programming, physical facility improvement, and organizational restructuring.

Enrollment — Continued enrollment increases, with record freshman classes and record total enrollment each year of the biennium, showed a growing awareness and understanding of the opportunities that exist at Morris. UMM continued to attract academically talented students from the entire state during the biennium: the mean high school rank for entering freshmen was at the 83rd percentile, the mean score on the Minnesota Scholastic Aptitude Test (MSAT) was above the 72nd percentile, and the mean American College Test (ACT) composite score was 25.

With 62 percent of the student body originating from beyond a 35-mile commuting radius, the percentage of commuters has dropped steadily. In 1967, 82 percent lived on campus or in housing in the Morris community. The majority of students still come from western Minnesota and nearly two thirds from farms or small rural communities. In fall 1967, there were 71 Minnesota counties (83 percent) and 259 Minnesota high schools represented.

UMM students rank among the highest in the University in terms of collegiate academic achievement and percentage successfully completing baccalaureate programs. In fall 1967, 95 percent of the entering freshmen had graduated in the upper half of their high school classes, 67 percent in the top quarter, and 32 percent in the top tenth. Increments of enrollment increases are dependent upon on-campus construction.

Availability of institutional funds and scholarship contributions and participation in various federal programs enabled the UMM Financial Aids Office to provide one or more forms of financial assistance to approximately 60 percent of the students enrolled during the fall quarter of each academic year. A total of \$26,825 in scholarship funds made available largely through the Dollars for Scholars fund-raising program, the UMM Bookstore Scholarships, the University of Minnesota Memorial Fund, and the Regents Student Aid Fund were awarded to 175 recipients. The All-University Scholarship Program awarded \$27,755 to 89 freshmen, and 21 advanced standing students

received renewal scholarships in the amount of \$7,125. A total of \$92,875 in Educational Opportunity Grant assistance from the U.S. Office of Education was distributed to 270 recipients. Through the National Defense Student Loan Program alone, \$242,095, involving 655 transactions, was borrowed by UMM students during the biennium. In addition, 69 students secured loans through the United Student Aid Loan Fund and other loan funds; approximately 182 federally insured loan applications were certified by the Financial Aids Office for the last half of the biennium. An unduplicated total of 479 students for the first half of the biennium and 465 students for the last half held part-time academic year or full-time summer student employment positions through the UMM College Work-Study Program or the UMM Student Help Budget or both. During the biennium these students earned wages totaling \$516,944.

The Alumni Association of the University of Minnesota, Morris, has been a constituent member of the University of Minnesota Alumni Association since 1964. The number of UMM graduates as of July, 1968, totals 549 and an attempt is being made to form an autonomous alumni association. Alumni may then pay dues and hold membership in either or both associations. The UMM organization voted at its 1968 spring quarter meeting to prepare an appropriate constitution in time for its fall quarter directors meeting. The University of Minnesota Alumni Association supports this plan.

Curriculum — Significant progress has been made in development of academic programs designed to further enhance the learning experience and to individualize the student's progress in college.

The Seminar-Honors Program, based on the assumption that acquisition of knowledge is its own reward, is the product of an experimental Honors Program begun in fall 1965 and of several years of thought and planning by faculty, students, and administrators. In the first three years of the Seminar-Honors Program neither credits nor grades are given, although with the development of two-year honors programs within disciplines, credit is a possibility during the junior year. In the senior year participation for credit is possible. An appropriate entry is made on the University record of those students who successfully complete the work of a seminar or project.

An ad hoc grading committee was appointed in November, 1967, to investigate the need for and feasibility of an alternate grading system. In spring 1968 this committee presented to the faculty a proposal for a pass-no record grading system. This proposal differs in two essential aspects from CLE recommendations: it establishes a pass-no record system rather than a pass-no credit one, although the symbols P and N would be used, and it allows a student to change his registration in a course from A-F to P-N, or the other way around, during the usual two-week cancel-add period. The proposal was approved by the UMM faculty and the Student Scholastic Standing Committee of the Senate and will be in effect winter quarter of 1969.

The UMM program now offers basic preparation for most of the professions, business, teaching, the creative arts, and several specialized occupational areas. With the addition of a major in German this past year, curricular offerings now include 19 academic majors and preprofessional programs in more than 20 areas.

Grants totaling \$11,562 were requested and received from the Hill Family Foundation during 1967-1968 to support an experiment in interinstitutional use of educational television to teach mathematics. Conducted by the University of Minnesota, Morris, in cooperation with Fergus Falls, Rochester, and Willmar State Junior Colleges, the interinstitutional TV project is now a reality. Because of its cooperative nature, the course may represent an educational first in the state of Minnesota.

The University of Minnesota, Morris, completed its second year of intercollegiate athletic competition in the Northern Intercollegiate Conference (NIC), with a faculty member from Morris serving as president during 1967-1968. Sports already competing in conference play are basketball, track, golf, tennis, wrestling, and baseball. Football will see its first year of conference competition in 1969.

Organization — For some time it has been apparent that the University should develop a comprehensive, rational plan to organize its individual campuses. In December 1967, President Moos appointed an ad hoc committee to

study the administrative organization of a separate campus in a multi-campus institution. As a result of the committee's recommendations, Stanley J. Wenberg, vice president for educational relationships and development, was made responsible for coordination and development of the University's out-state campuses. Rodney A. Briggs, dean of the University of Minnesota, Morris, since its establishment in 1960, was named its first provost.

The constitution and by-laws of the University of Minnesota, Morris, approved by the UMM faculty during the last biennium, were approved by the University of Minnesota Board of Regents on February 10, 1967. The document is subject to review by the UMM faculty and by the Board of Regents during 1969.

UMM has been slowly moving to abolish many of its committees and has been able to discard one a year for the past three years. The size of all standing committees has been reduced. Only 13 standing committees remained in 1967-1968, with student representation on nine of them. The faculty, at the General Assembly meeting in May, 1968, approved the recommendation that the president of the Morris Campus Student Government or his representative be invited to attend the meetings of the General Assembly on an experimental basis for the period of the provisional constitution. Also approved was the recommendation that student members of committees of the General Assembly be invited to attend meetings whenever their committees have business before the Assembly, also on an experimental basis during the period of the provisional constitution.

Faculty — Teaching and administrative faculty at Morris number 80, with several foreign countries represented; degrees are held from more than 50 American institutions and a number of foreign institutions. Forty percent of the faculty have their doctoral degrees. The student-teacher ratio during the 1967-1968 academic year was 13.8 to 1.

Faculty publications during the biennium included articles and book reviews in professional and scholarly journals. A pronunciation and diction textbook in French was also accepted for publication. Numerous works of art were created and several original musical compositions were written. A premiere performance of one of the latter was given by the St. Paul Chamber Orchestra in April, 1968.

A number of research projects were inaugurated during the biennium. Many of these were made possible through funds from the Graduate School and the Office of International Programs or through time made available by faculty summer research grants, single quarter leaves, and sabbatical furloughs. Members of the faculty also received outside funds for research from the Weil Foundation, the National Foundation for the Arts and the Humanities, and the National Science Foundation. A \$50,400 grant was received from NSF to begin July 1, 1966, and run for three years. The Research Advisory Committee undertook a study of research attitudes and expectations on the Morris campus and presented to the faculty a position paper on the role of research at UMM in May, 1967.

Facilities — During the past two years, construction of new buildings and changes in the utilization of existing facilities have brought important improvements to the campus. The first unit of the new science complex was occupied in fall 1966 and the second in spring 1968; the third and final unit will be occupied in fall 1968. The first phase of a two-unit library has been completed and will be ready for use by fall 1968. Establishment of a Patrick J. McGinnis Memorial Seminar-Reading Room in the new library was approved. Named in memory of a former UMM teacher and scholar, this room will be furnished to accommodate small study groups of students and faculty.

An addition to the Clayton A. Gay Residence Hall, increasing its capacity by 130 students, was in use for the first time in fall 1967. This facility was funded by a 100 percent loan from the Department of Housing and Urban Development. Plans for an additional 250-bed residence hall have been completed, with a possibility of occupancy by fall 1970. Construction of the new physical education building and the heating plant, authorized by the 1967 Legislature, is expected to begin in fall 1968.

Major gains have been made in the development of facilities, and buildings currently being planned or constructed will assist in providing the facilities necessary to move toward the goal of a 2,000-student campus.

The initial phase of the mall rehabilitation began in summer 1967. New sidewalks were constructed and the grass area of the mall was regraded and resurfaced. A permanent stage created by elevation of one corner of the mall was used for the first time for the 1968 Commencement.

Activities — The offering of numerous cultural events at UMM continued to provide a stimulus to the fine arts program on the campus and to the west central area of Minnesota. During the biennium, cultural programs centralized under the Morris Campus Union Board under the direction of the Student Activities Office included the Artists Course and Celebrity Series, convocations, and the annual Arts and Letters Festival. Also presented were a series of Fine Arts films, art exhibits, dramatic performances, and orchestra and band concerts. During 1966-1967, an annual Literary Awards contest was established to stimulate interest in creative writing. Similar programs are being planned in music and art. Plans for the coming year included an expansion of the convocations program to provide for an in-residence speaker and a program to bring choral and instrumental groups from other campuses to the University of Minnesota, Morris.

The first session of a Rural Bankers School was held on the Morris campus during summer 1967 with approximately 80 bankers attending. The banker-students spend two one-week sessions in residence on the Morris campus in successive years. Upon completion of the second-year course, senior students are awarded certificates of graduation. The School, sponsored by the Bankers Associations of Minnesota, North Dakota, and South Dakota, assists bankers in rural areas by providing skills and understanding for stabilization, improvement, and building of secure rural communities. Faculty members and seminar leaders for the School included nationally prominent bankers and agricultural specialists. The second session will be held during summer 1968.

A "Day on the Morris Campus" was provided for Twin Cities high school counselors during 1967-1968 with approximately 80 counselors taking part. The benefits UMM will derive from this most successful day will become more apparent with future enrollments.

The Southwest and West Central Minnesota Educational Research and Development Council, a nonprofit organization, began in 1966 with 55 member schools. It now has 87 members, including 3 Catholic dioceses and 3 institutions of higher learning. In 1967, funds were obtained under Title III for a planning grant to identify areas of need and suggest methods of action to upgrade education in southwestern and west central Minnesota.

An extensive program of in-service training for administrators and teachers from the schools in the area served by the Council has been implemented to meet the specific needs of the members. Opportunities have been provided for discussion and interaction among personnel from the member schools as well as with educators throughout the country who are noted for their innovative approach to education.

In July, 1967, the Council assumed administrative responsibility for a Title III operational grant that established a number of Supplementary Education Service Centers in west central and southwestern Minnesota.

Needs — There is a most urgent need for a new food service facility on the Morris campus. The existing facility has a maximum seating capacity of less than 400. In fall 1967, the number of residence hall students increased to 535; with the addition of a new 250-bed residence hall serious overcrowding will be evident.

The need for indoor facilities for physical education will be largely met with the completion of the new physical education building in 1968-1969. However, the lack of adequate outdoor teaching stations remains. Major space needs also exist in the areas of performing and creative arts and humanities. First priority will be given to a new humanities building in the request to the next session of the Minnesota Legislature. Fourteen new faculty positions in specific competencies and disciplines are also needed in the next biennium.

DEPARTMENT OF NAVAL SCIENCE

EDWARD O. DIETRICH, *Commander, U.S. Navy*

During the biennium, the Naval ROTC Unit continued to provide a source from which qualified officers may be obtained for the Navy, the Marine Corps, the Naval Reserve, and the Marine Corps Reserve and to maintain command and administrative responsibility for naval personnel attending the University under other college training programs sponsored by the Department of the Navy.

In addition to the four-year Regular and Contract programs, the Department of Naval Science now offers a two-year Contract program. This program is similar to the four-year program except that completion of a Naval Science Institute is substituted for the first two years of naval science courses offered at the University. During the summer between the sophomore and junior years, selected candidates attend one of several institutes offered at certain NROTC universities throughout the nation. Two-year Contract students from the University attend the Naval Science Institute offered at Purdue University. This program is also open to graduate and law students, who complete the final two years of the normal Naval Sequence curriculum while working on their graduate degrees.

The annual enrollment in the Regular program is relatively stable. In fall 1966, 40 incoming freshmen enrolled in the Regular program; in fall 1967, 32 enrolled. The total for the biennium was 72, compared with 80 for the last biennium. Contract student enrollment also remained relatively stable. In the fall of each year of the biennium, 33 incoming freshmen enrolled in the four-year Contract program. The total for the biennium was 66, compared with 70 for the last biennium.

NROTC students in the four-year programs have the option at the end of their sophomore year of continuing in the Naval Line Officer sequence or of applying for the Marine Corps program, successful completion of which leads to a commission as second lieutenant. The Supply Corps sequence was discontinued during the biennium, but commissioning in the Supply Corps will continue to be possible by request after completion of the Line Sequence.

The Flight Indoctrination program to motivate NROTC students toward flight training was successfully continued. About 35 hours of flight instruction by private flying schools were again provided to each qualified senior and junior NROTC student.

NROTC graduates of the University during the biennium included:

	1966-1967	1967-1968
Ensign, U.S. Navy	17	20
Ensign, U.S. Navy Reserve	4	6
Second Lieutenant, U.S. Marine Corps	1	2
Second Lieutenant, U.S. Marine Corps Reserve	3	0

The total number of NROTC graduates during the biennium was 53, compared with 64 for the previous biennium. All students who qualified for commissions were ordered to active duty within a month of being graduated and commissioned.

OFFICER MEMBERS OF THE DEPARTMENT OF NAVAL SCIENCE

Name	Grade	Reported	Departed
James M. Marshall	Capt., USN	Sept. 1965	Feb. 1968
Edward O. Dietrich	Cdr., USN	June 1965	
James D. Shubert	Maj., USMC	Sept. 1966	
Leon L. Pierce	LCdr., (Sc), USN	Sept. 1965	June 1967
Clifford H. Totten	LCdr., USNR	Aug. 1966	
Kenneth M. Royalty	Lt., USN	Sept. 1965	Aug. 1967
Donald E. Taylor	Lt., USN	Aug. 1965	June 1968
Steven R. Closson	Lt., USNR	Sept. 1965	
Paul R. Jennings	Lt., USN	Sept. 1967	

COLLEGE OF PHARMACY

LAWRENCE C. WEAVER, *Dean*

Enrollment — Undergraduate enrollment in the College of Pharmacy increased from 228 at the beginning of the 1965-1966 academic year to 257 in 1966-1967 and 292 in 1967-1968. It is still possible to admit all qualified applicants to the College, but present facilities are nearing their capacity as enrollment increases. Student recruiting efforts were expanded during the biennium and a career counseling system that makes use of local pharmacists was developed. Although not completed, the latter program appears to be well accepted by high schools and junior colleges.

Graduate enrollment increased from 30 at the beginning of 1965-1966 to 36 in 1966-1967 and 41 in 1967-1968. An active training program in medicinal chemistry is provided for graduate and postdoctoral students. To meet the rising demand for well-qualified teachers in the pharmaceutical sciences, a graduate student recruitment program involving all four-year colleges in the state has been developed.

Admission Requirements — In order to accommodate applicants from out-state colleges as well as those from the College of Liberal Arts, the College's flexible two-year preprofessional curriculum has been modified to include the basic science courses that are required in the applied professional courses. An introductory calculus course is now required so that the physical-chemical principles of pharmaceuticals can be better understood. The English, general and organic chemistry, mathematics, physics, and biology requirements in the first two years of the total five-year program can now be met in nearly all junior, state, and private colleges and universities in Minnesota.

Career counselors have been contacted and prepharmacy programs reviewed in all Minnesota colleges and universities. The counselors receive College of Pharmacy mailings that supply information useful in advising students interested in pharmacy careers.

Curricular Developments — The increasing demands that the contemporary practice of pharmacy places on graduates have been met through curricular changes in the College. Instruction in the physical sciences has taken on an increasingly biological orientation. Course sequences have also been altered so that all basic science courses precede their applied science counterparts. A tracking system facilitates pursuit of particular career objectives and a clinical component has been added to the senior year course work.

Additions to the curriculum during the biennium included courses in calculus, pathology, veterinary science, biopharmaceutics, drug literature evaluation, social psychology, and clinical pharmacy. In the pharmacy curriculum, the first two years of instruction are devoted to communications, biology, mathematics, physics, general and organic chemistry, economics, and electives. The third year consists of anatomy, physiology, biochemistry, microbiology, quantitative analysis, pathology, and physical pharmacy. During the fourth year, courses in natural products and inorganic and organic medicinal agents build upon the student's basic knowledge of the human body; dosage form technology is taught concurrently. The fifth or clinical year of instruction is devoted to compounding, pharmacology, biopharmaceutics, drug literature evaluation, public health, and clinical pharmacy. A pregraduate study option and a professional practice option are available for specialization during the last two years.

The aim of the changes made during the biennium is to direct the orientation of the curriculum from a "product" focus to a "disease and patient" focus. If the ultimate goal of pharmaceutical services is the safe use of effective drugs by the public, the professional function of the pharmacist must be related to patient welfare. Drug-use control is the primary function of pharmaceutical service, combining the knowledge, understanding, judgment, procedures, skills, controls, and ethics that assure optimal safety in the distribution and use of medication.

Physical Facilities — The College's serious space shortage has been recognized by the University and a request for funds to add a wing to Appleby Hall was planned for presentation to the 1967 Legislature. However, the faculty chose to postpone this request until a study of the inclusion of phar-

macy in the health sciences complex could be completed. As a result of this study, the faculty recommended that the College be moved into the newly defined Health Sciences Center, which would provide the necessary environment for the new clinical pharmacy program. It would also make possible closer cooperation with other health professionals in a variety of programs. Planning funds for a new facility will be sought from the 1969 Legislature.

Considerable renovation will be necessary for the present facility to accommodate expanded programs. Partial funding has been obtained to complete a pharmaceuticals graduate laboratory. Funding to convert additional space into graduate laboratories and office space is also incomplete. A new staff in pharmacognosy has necessitated complete course revision, undergraduate laboratory alterations, and increased shifting of space to accommodate increased research programs. The situation is expected to become extremely difficult before new facilities are completed.

Continuing Education — A research project was initiated in fall 1967 to explore the feasibility of producing closed circuit TV programs for continuing pharmacy education. The project was conducted to determine whether the use of this medium could extend the capabilities of a single lecturer over time and to many sites and make continuing education available to state pharmacists at minimal cost and inconvenience. Eight sites accessible to approximately 75 percent of the pharmacists in the state have been identified and utilized and more than 300 health professionals have seen these programs. Educational institutions throughout the state have served as playback centers for this continuing education project.

There are two areas urgently in need of funding for future service to the state's professionals. Several forms of continuing education, such as programmed instruction courses and televised lectures, should be developed so that pharmacists can expand and improve their professional knowledge; without outside funding, this may well be impossible to accomplish. Also, citizens of the state should know more about professional schools and their educational programs. Many young people are never exposed to the possibilities of a professional education because monies are not available to allow College faculty to visit their areas and provide the necessary information.

During the biennium, the College of Pharmacy initiated a CIC-sponsored Committee on Continuing Pharmacy Education. Three meetings, chaired by a faculty member of the University's College of Pharmacy, were successful in initiating communal programs among seven CIC-member colleges of pharmacy. These programs are dedicated to sharing and conserving the talents of busy experts and to reducing the cost of programs to the prospective audiences.

The College faculty also worked with the Minnesota State Pharmaceutical Association in presenting scholarly articles for 18 consecutive months in *The Minnesota Pharmacist*.

Conferences and Lecturers — Among the conferences organized by faculty members during the biennium were an eight-day Student Leadership Conference sponsored by the Wisconsin Section of the American Pharmaceutical Association, an American Society of Hospital Pharmacists General Institute, a two-day Drug Abuse Conference at the University cosponsored by the Union Board of Governors and the Student Branch of the American Pharmaceutical Association, and a Medicinal Chemistry Symposium-in-Miniature. The University also served as host for the Annual Meeting of the American Society for Pharmacognosy. Visiting lecturers during the biennium included representatives of pharmaceutical laboratories and manufacturers; of departments of chemistry and pharmacy at universities in the United States and in Canada, Australia, Italy, and Germany; and of pharmaceutical associations and foundations.

Community Relations — The Pharmacy Alumni Association organized the Century Mortar Club during the biennium to further its support of the College. With University administration support, the College attempted to obtain the cooperation of graduate pharmacists in establishing an off-campus laboratory (a community pharmacy), but the project was not successful. A College of Pharmacy Advisory Board, comprised of practicing pharmacists

from all areas of pharmaceutical science, was established to make additional expertise available to students and faculty of the College.

The College represented the University with an exhibit at the 1967 Minnesota State Fair. The exhibit was considered to be one of the best that the University has presented and was visited by some 100,000 people.

Research— In most cases, research programs begun in the 1964-1966 biennium continued during 1966-1968. Several programs, such as stereochemical studies of certain narcotic analgesics, were considerably enlarged, and many new programs were initiated. New projects concern the relationship between molecular geometry and biological activity, the design and synthesis of new drugs, investigations of drug receptors, elucidation of the influence of significant structure in mesomorphic phases (liquid crystals) upon unimolecular and bimolecular reactions, study of mass transfer in granular solids systems for possible application to dry solids processing in industry, biological testing of a structurally novel 19-nor-steroid that has been synthesized as an analog of progesterone, studies of the effect of pH upon the activity of a hydrolytic (glycosidase) enzyme in several species of *Digitalis*, and structural modifications of some of the cardiac glycosides. Research projects in the social areas include investigations of factors common in well-functioning pharmacist-hospital relationships, drug information needs of physicians and professional and practical nurses, the feasibility of a centralized intravenous admixture service, the level of pre-Medicare paraceutical service in nursing homes, photo-duplication as a method for obtaining original physicians' orders, drug abuse instruction on college campuses, the level and scope of activity of pharmacy and therapeutics committees, duration and type of hospital medication orders, errors during self-administration of prescribed drugs, choice of source of pharmaceutical services, drug-induced modifications of laboratory test values, and the need for patient profiles.

The College received its first training grant in medicinal chemistry, scheduled to run for at least five years. An Undergraduate Research Scholarship program was established with Melendy funds; four scholarships are now available annually for students interested in graduate work.

Future Needs and Plans— The College of Pharmacy is a pioneer in the development of the clinical pharmacy program, which will be revised, enlarged, and perfected over the next biennium. Future success will greatly depend upon the availability of suitable hospital facilities and an adequately trained clinical staff. Both will necessarily increase the cost of pharmacy education.

The planned move to the Health Sciences Center is most desirable for the College. The kind of environment that will be created is a common need of all health professions if graduates are to fill their expanding roles in health care. It is hoped that funding for the new facility will progress as projected, as the College already faces a critical shortage of space.

Continuing pharmacy education will require much more effort and expenditure in the future. Ideally, other colleges of pharmacy, perhaps nationally, should be involved in the attack on this growing educational problem, and other health professions should be encouraged to join in a cooperative investigation of possible solutions. Much effort could be conserved by both approaches.

UNIVERSITY PRESS

JOHN ERVIN, JR., *Director*

During the 1966-1968 biennium, the University of Minnesota Press showed increases both in the number of works published and in sales income. The Press published 76 works, including 46 clothbound books, 21 paperbound books, and 9 pamphlets. Comparable figures for the 1964-1966 biennium were 36 clothbound books, 3 paperbound books, 20 pamphlets, 1 test, and 1 map, for a total of 61 publications. Sales income totaled \$376,834.55 for the 1966-1967 fiscal year and \$381,629.04 for 1967-1968, or \$758,463.29 for the biennium. The total for the previous biennium was \$614,089.43.

A highlight of the biennium was the launching of Minnesota Paperbacks, a line of paperbound books. The first ten titles were published in fall 1967 and another five titles in spring 1968. Additional titles will be published each spring and fall. All of the titles are drawn from Press publications; some are from the backlist and others are new works published simultaneously in cloth and paper bindings. The purpose of the line is to make available at reasonable prices titles of interest to general readers as well as college and high school students and teachers. Another new series, Minnesota Symposia on Child Psychology, was introduced in February, 1969, with the publication of the first volume, edited by John P. Hill.

Among noteworthy single titles published were *Libel and Academic Freedom: A Lawsuit against Political Extremists*, by Arnold M. Rose; *The Conspiracy against Hitler in the Twilight War*, by Harold C. Deutsch; *Life and Thought in the Early Middle Ages*, edited by Robert S. Hoyt; *The Negro in Federal Employment*, by Samuel Krislov; *T. S. Eliot*, by Leonard Unger; *Studies in Criticism and Aesthetics, 1660-1800*, edited by Howard Anderson and John S. Shea; *The Comparative Anatomy and Histology of the Cerebellum from Myxinooids through Birds*, by Olof Larsell; and *The American Student's Freedom of Expression: A Research Appraisal*, by Edmund G. Williamson and John L. Cowan.

The Press established itself more prominently as a publisher of works in the field of drama with the publication of both plays and dramatic criticism during the biennium. These included *Seven Irish Plays, 1946-1964*, edited by Robert Hogan; *After the Irish Renaissance: A Critical History of the Irish Drama since "The Plough and the Stars,"* by Robert Hogan; and several additional titles in the two continuing series, Minnesota Drama Editions and Playwrights for Tomorrow.

In addition to inaugurating its own paperback line, the Press arranged for publication of paperback editions of some of its books by other publishers. The paperback rights to *Seven Modern American Novelists: An Introduction*, edited by William Van O'Connor, were licensed on a royalty basis to the New American Library and the paperback rights to *The House of Atreus*, adapted by John Lewin from the *Oresteia* of Aeschylus, were licensed on a royalty basis to Bantam Books. Translation rights to a number of publications, including many of the University of Minnesota Pamphlets on American Writers, were licensed to foreign publishers on royalty terms, and book club rights to some titles were leased to commercial book club firms.

Substantial developments took place in the long-term project *The Age of European Expansion*, a 10-volume history series to be published by the Press under the sponsorship of the University's Department of History and the James Ford Bell Collection of the University Library. Boyd C. Shafer, James Wallace professor of history at Macalester College, was named series editor to succeed Herbert Heaton, founding editor. Arrangements were completed with authors for the preparation of several of the individual volumes in the series.

Relations between the Press and its authors have been strengthened by a basic policy change adopted by the Committee on the Press during the biennium. The Press now normally pays royalties beginning with the first copy sold, regardless of whether the book involved is expected to incur a deficit. The new policy has governed contracts negotiated since September, 1967. In other policy changes during the biennium, the Committee on the Press agreed that the Press will not publish certain categories of work, such as children's books, musical compositions, and collections of newspaper columns; that it will only rarely publish poetry, fiction, or memoirs; and that dissertations will be considered for publication only if they have been revised to make their publication in book form suitable.

SUMMER SESSION

WILLARD L. THOMPSON, *Dean*

Enrollments in the Summer Session remained at record levels during the 1966-1968 biennium, although there was a leveling off in the totals for summer 1967.

In summer 1966, total enrollments in the two five-week terms were 25,246, an increase of 6.7 percent above those of 1965. As in all Summer Sessions, some of these students attended both sessions and so were counted twice. The number of unduplicated registrations was 18,453. In 1967, total enrollments were 25,466. The unduplicated registration figure was 18,233.

More than 60 percent of the students enrolled in summer 1967 had been enrolled at the University during the preceding academic year. The percentage of students continuing their studies on a year-round basis is an increasing one. In 1964 it was 55.8 percent, in 1965 it was 56 percent, and in 1966 it was 57.4 percent. During the past 15 years, approximately 20 percent of the regular academic year students have continued their studies in one or both terms of the Summer Session.

With rising enrollments, the availability of classroom space remained a problem despite the addition of classrooms in new buildings, and scheduling of classes during desirable morning hours became increasingly difficult.

The College of Liberal Arts continued to enroll the largest number of students in the summers of both 1966 and 1967. The Graduate School enrolled the second largest number and the College of Education the third. Of the total enrollments reported above, 199 students were registered at the University of Minnesota, Morris, in 1966 and 176 in 1967. Summer Session enrollments on the Duluth campus, also included above, totaled 2,346 students in 1966 and 2,479 in 1967.

Because the Summer Session is basically self-supporting (instructional costs are covered by tuition income), fiscal concerns are of high priority and tuition for the Summer Session is higher than for the regular year. In an effort to reduce this disparity, tuition increases have been resisted; no changes were made in the period from 1962 through 1966. However, in 1967, in order to keep pace with academic salary increments and to permit minimal program expansion, it was necessary to increase tuition by \$3.50 per term.

During the biennium, the Summer Session continued to offer many special programs. In 1966, under the National Defense Education Act, training institutes were held in the fields of geography, English, history, industrial education, modern languages, educational media, and school libraries. The National Science Foundation sponsored institutes for teachers of physics and chemistry and an institute in economics and economic education. In 1967, NDEA summer institutes were offered for school librarians and for teachers of Latin, English, geography, modern foreign languages, industrial arts, reading, and history, and NSF institutes were held in economics and economic education, physics and mathematics for high school teachers, and geology.

Among other programs offered one or both summers were the Committee on Institutional Cooperation Far Eastern Language Institute, the Minnesota Government and Politics Workshop, workshops in home economics and journalism, a variety of workshops for educators and administrators, and special seminars through the Human Learning Center. Field sessions were held in anthropology, geography, and public health, and Minnesota Mining and Manufacturing Company chemistry lectures were presented. Travel courses were offered in European art and foreign studies. In 1966, an institute for elementary teachers of Spanish was held in Mexico.

In 1966 and 1967, the Biology Session at the University's station in Itasca State Park offered two five-week terms of study and research in terrestrial and freshwater biology. A five-week session in forestry was also offered for undergraduate professional forestry students. By 1967, enrollments in both biology sessions had reached capacity.

In 1966, Deutsches Haus and Maison Francaise were conducted on the St. Paul campus for the first time, at Dexter Hall and Meredith Hall respectively. Forty-four students enrolled in Deutsches Haus in 1966 and 45 in 1967; 38 students enrolled in Maison Francaise in 1966 and 43 in 1967. Total enrollments in the two programs were 82 for 1966 and 88 for 1967.

In 1966 and 1967 the University participated in Upward Bound, a program sponsored by the Office of Economic Opportunity for high school students from low-income families in the Twin Cities and surrounding areas.

"Summer Music at Minnesota," in which the Minneapolis Symphony Orchestra is used as a teaching instrument, developed greatly during 1966 and

1967. Music 60, an annual summer music appreciation course introduced in 1966, featured the Minneapolis Symphony Orchestra and guest lecturers. In both 1966 and 1967, a grant from the Hill Family Foundation helped to make possible the High School Musicians Project, which brought 125 outstanding high school musicians to the campus for a four-week period of intensive musical training. An outstanding phase of this project was the repertory sessions in which students became stand-partners with members of the Minneapolis Symphony Orchestra for several rehearsal sessions. Four additional workshops were held in music education: the elementary music education workshop; the secondary music teachers' workshop, funded by the Rockefeller Foundation; the contemporary music workshop, featuring composer Elliot Carter; and the opera workshop. In 1967, the Minneapolis Symphony Orchestra was engaged to do a series of five Friday night concerts designed to attract a new audience; admission for adults was one dollar and children were admitted free. Two of the concerts were presented in the football stadium.

During the biennium, the Summer Session also continued to provide diverse offerings through the Department of Concerts and Lectures, Coffman Memorial Union, the St. Paul Activities Center, the University Gallery, the Museum of Natural History, and the Audio-Visual Education Service. University Theatre productions were presented on the Minnesota Centennial Showboat, in Scott Hall, and, in 1967, in the newly opened Peppermint Tent, featuring children's plays.

In summer 1967, Harold A. Miller was named assistant dean for Summer Session to replace John Geier, who had resigned to accept a position in the School of Dentistry.

With the rapid increases in teaching costs and the pressure to expand offerings as the Summer Session increasingly seeks to serve as a fourth quarter of study, problems of financing on a self-support basis have grown acute. In 1967, the Summer Session Advisory Committee recommended to the central administration that some means be sought to provide greater levels of basic support to the Summer Session. Of greatest concern to committee members are the limitations on salaries paid to Summer Session faculty, the Summer Session's funding of orientation and advising activities that are more properly the responsibility of the regular academic year, and the failure to provide funds for administration of academic departments during the summer terms.

INSTITUTE OF TECHNOLOGY

WARREN B. CHESTON, *Dean*

Enrollment — In the 1966-1968 biennium, student enrollment in the departments and schools of the Institute of Technology remained nearly constant. Undergraduate enrollment was 3,458 in 1966-1967 and 3,446 in 1967-1968. Graduate enrollment was 1,450 in 1966-1967 and 1,445 in 1967-1968. The pattern of undergraduate enrollment has shifted markedly to approximately uniform distribution among the four years of the undergraduate program as normal student attrition is compensated for by transfer of advanced standing students into I.T. from the junior and state colleges. This trend is expected to continue, with an ever-increasing fraction of the total enrollment consisting of transfers from other colleges of the state system. The implications of this trend for the instructional programs of the Institute are currently being studied by the faculty. The leveling of graduate student enrollment is thought to be temporary, associated with the uncertainties produced by the military draft. Also, in some of the larger departments of the Institute, there have been attempts to limit graduate enrollment because of saturation of available research facilities.

Program Changes — During the biennium a graduate program in computer science, based primarily in departments of the Institute, was created. In addition, as a first step toward organizing an integrated undergraduate program in computer science, the Departments of Mathematics and Electrical Engineering introduced computer science options in their undergraduate cur-

ricula. The Civil Engineering Department developed a new program in transportation engineering that recognizes the growing transportation problems arising from population growth and movement to urban and suburban areas. The transportation program emphasizes a systems design and operation approach based heavily on the use of computer techniques.

Organizational Changes — The Department of Astronomy merged with the School of Physics into a School of Physics and Astronomy. This merger will enable the School to provide integrated instructional and research programs in the area of astrophysics. At the same time, a new observatory was established at Marine-on-St. Croix in cooperation with the Space Science Center, and an agreement for joint operation of a major observatory in Hawaii was consummated with the University of California (San Diego). The director of the Minnesota observatories is Professor Neville J. Woolf.

The name of the Numerical Analysis Center was changed to University Computer Center in recognition of the broader service role of the Center in computer science. In February, 1968, the Center was transferred from the Institute of Technology to a new all-University unit, University Computer Services, that has responsibility for the orderly development of a University-wide unified and integrated computer facility for both research and instruction. The Limnological Research Center became a joint responsibility of the Institute of Technology and the College of Biological Sciences in recognition of the significant roles played by both the physical and biological sciences in limnological research.

Long-Range Planning — A Long-Range Planning Committee of the Institute of Technology was formed during the biennium. Needs for physical facilities to house the new and expanding programs of the Institute were identified and a plan to accommodate these needs was formulated. This plan will be under careful scrutiny in the coming years as academic programs develop and as changing patterns of instruction and enrollment emerge.

Research and Special Programs — The research programs of the Institute are many and varied. Only a few of them will be reported here. The total level of outside support continued during the biennium to be in excess of \$10 million annually. The austerity programs of federal agencies supporting research are beginning to have an effect, however, and a decrease in research support in the Institute in the next biennium is expected to result. The magnitude of the decrease is as yet unknown.

School of Physics and Astronomy — The "Emperor" Tandem Van de Graaff of the John H. Williams Laboratory funded by the U.S. Atomic Energy Commission is now in regular operation for study of the interaction of charged particles with nuclear matter. The Linear Accelerator Laboratory is expected to be phased out of existence during the early part of 1969 and the staff of this laboratory merged with that of the Tandem laboratory.

A rapid expansion of research in the area of astrophysics during the biennium was made possible primarily by National Aeronautics and Space Administration grants. A thirty-inch aperture reflecting telescope is now in operation at a new observatory located several miles south of Marine-on-St. Croix. The land for the observatory was donated to the University by Thomond O'Brien, and the observatory will bear the O'Brien family name. The experimental program carried on at the Marine observatory is in the area of infrared emissions from planetary and galactic objects. In cooperation with the University of California (San Diego), the University of Minnesota is establishing a larger telescope facility on the island of Hawaii to supplement the capabilities of the Marine observatory. The University of Hawaii will provide the necessary site, and the laboratory is expected to provide unique observational facilities.

THEMIS Projects — In 1967, the U.S. Department of Defense instituted a major research support program at American universities under the name Project THEMIS. The aims of the THEMIS grants were to involve a large number of disciplines in research programs of broad scope and to develop and strengthen centers of research excellence. Out of the first 50 THEMIS awards, two research grants were awarded to the University of Minnesota. One of the THEMIS projects, being carried on in the School of Mechanical and Aerospace Engineering, is a long-term study of all aspects of heat trans-

fer as related to gas turbine development. The second THEMIS project, being conducted in the Department of Electrical Engineering, is concerned with the generation and detection of infrared radiation and the processing of communications signals. Both THEMIS projects are funded at an annual level of \$200,000 and are long-term projects.

Mechanical Engineering—One of the important new research programs and laboratories under development during the biennium was the Particle Technology Laboratory for research on particles and particulate systems. Areas in which fine particles play an important role include air pollution, contamination and environmental control, radioactive fallout, meteorological and atmospheric sciences, and chemical, mining, metallurgical, and food processing industries. Research projects in these areas are sponsored by the U.S. Public Health Service, the U.S. Atomic Energy Commission, the Army Chemical Corps, and the Oak Ridge National Laboratories, as well as by several industrial companies.

University Computer Center—In the 1966-1968 biennium, the University Computer Center significantly improved its ability to provide digital computer service to the University by expanding its staff and its computer facilities. In the beginning of 1967, the Center installed as its major digital computing system the CDC 6600, the most powerful digital computer then available. The CDC 6600 was acquired and staff expansion initiated with the aid of a \$950,000 grant from the National Science Foundation. Also in 1967, a hybrid computer system was activated by the Center's Hybrid Computer Laboratory. This system consists of two general purpose EAI 680 analog consoles and a general purpose CDC 1700 digital computer. The computers are linked together so that they can operate simultaneously, exchanging information over multiple channels from the analog to the digital side and from the digital to the analog side under the control of programming in the digital computer. The hybrid system was acquired with aid of a \$400,000 grant from the National Science Foundation. Both of the new computer systems are located in Lauderdale, in a building leased from the Northern States Power Company. In the next biennium, however, the hybrid system will be moved to the Space Science Center.

As a first step toward implementing a University-wide computer network, the Center established its first remote input-output station in the Experimental Engineering Building. This station is connected directly to the central computer in Lauderdale by a wide channel telephone line and provides an input-output capability at the remote site equivalent to that provided on site at the main computer. During the biennium, plans were initiated and work started for the implementation of two more such remote stations, one in the Medical School area and one on the Minneapolis West Bank campus.

Mines Experiment Station—The research programs of the Mines Experiment Station are sponsored by federal and state agencies and by private mining companies. Some of the programs are concerned with beneficiation of manganiferous and low-grade ores and others with beneficiation of industrial minerals and nonferrous deposits. By far the most important accomplishment of the former program was the development of a process of beneficiating oxidized semitaconite that is currently being tested at pilot plant scale in Minnesota and on a larger scale in the Soviet Union. The station, working in cooperation with the Department of Bacteriology, developed a bacteria leaching system for manganiferous iron ore and Aitkin county sulfides that has been successful at bench level and will be expanded to pilot plant level. In the latter program, detailed mineralogical and beneficiation tests have been made on copper-nickel ore. Considerable effort has also been directed toward the use of Minnesota clays, and several metallurgical schemes to utilize titaniferous magnetite are currently under investigation.

St. Anthony Falls Hydraulic Laboratory—Research in the Hydraulic Laboratory during the biennium was carried on under approximately 40 research contracts and grants. Of particular interest has been the preparation of a mathematical model that will enable a computer installed by the Minneapolis-St. Paul Sanitary District to receive rainfall and sewage strength data from various sampling points. The data will be used to open and close gates that bypass sewage to the river and thus minimize river pollution. In addi-

tion, the Laboratory has been involved in model studies of structures that will become part of the Metropolitan Water District of Southern California's project to deliver larger quantities of water from northern California to the Los Angeles area. Studies have also been carried out on hydrologic data from selected watersheds in Minnesota.

Minnesota Geological Survey—The primary function of the Minnesota Geological Survey is to meet state needs for geologic data by providing geologic mapping and research on the state's mineral and water resources and by serving as a clearing house for geologic and resource information. Teaching and public education are also given high priority.

During the biennium, emphasis was again placed on studies that would aid in the establishment of new mineral industries. An intensive geologic mapping program begun in 1961 has contributed directly to the present high level of interest in the copper-nickel deposits of northeastern Minnesota. Although the economic feasibility of mining these deposits is not yet known, it is anticipated that within a few years they will be the basis of a significant base metal-mining industry in the state. In another area, research on the clay resources of the Minnesota River valley, examined intermittently by industry as a potential source of raw materials for the paper industry, indicated that the clays warrant further consideration for commercial exploitation.

Research on geologic principles constitutes a modest but significant part of the Survey's activities. As an example, a paper on the oxygen isotope composition of ancient cherts, published in 1967, contributed substantially to knowledge of the composition of ancient sea waters.

Relationships of the Survey with state agencies and other resource-oriented units of government were strengthened in the past two years through closer cooperation and coordination of programs. The Survey provided the Department of Conservation with geologic data needed for land sales and mineral leasing and participated actively in state-wide water planning activities carried out by the State Planning Agency. The Survey director continued as coordinator of the state-federal cooperative topographic mapping program in Minnesota and as an adviser to the State Planning Agency and to the Minnesota Outdoor Recreation and Resources Commission (now the Minnesota Resources Commission).

Limnological Research Center—During the biennium, an intensive survey of the water chemistry and microorganisms of Minnesota lakes continued to show the relation of water chemistry to the climatic, hydrologic, and geologic gradients of Minnesota. About 80 lakes were sampled and the growth rates of algae in many of the same lakes were measured. The algal-productivity measurements provide an index for diagnosing lake pollution and a means of determining the effectiveness of pollution abatement programs that may be initiated in the future. The productivity experiments were also used to measure growth stimulation provided by nutrients carried into lakes by tributary streams and sewage effluents. Field studies were supplemented by experimental work on algal growth rates as they are affected by water chemistry and especially by the availability of phosphorus, iron, and other nutritional elements. This work is related to efforts to determine the role of sediments in the nutrient supply of lakes. The work of the Center is supported by the Minnesota Resources Commission, the U.S. Office of Water Resources Research, and several other federal agencies.

Students, Faculty, and Facilities—The character and nature of the student body in the Institute of Technology are undergoing rapid change. Enrollment of students from state high schools is dropping off, which may be a reflection of the rapid growth of enrollment in the state and junior colleges; technical programs have recently been inaugurated in new junior colleges in the metropolitan Twin Cities area. This drop has been compensated for by a rapidly increasing number of students transferring into I.T. after spending one or two years at a state or junior college. Consequently, the Institute is becoming more heavily involved with upper division instruction. To accommodate the changing character of the instructional program that follows from the changing character of the student body, new instructional facilities must be provided, particularly laboratory facilities. Many of the laboratory facilities have become outmoded because of the rapid ad-

vance of technology. An additional factor is the increasing interest of I.T. faculty and students in technology related to the public sector, particularly in the area of the quality of the physical environment. New and expanding programs also are developing in areas of direct interest to the industrial development of the state, particularly in control science and computer technology. The development of these new fields of interest will make increasing demands on the Institute's personnel and on its physical resources.

Administration—In January, 1968, the Board of Regents approved the appointment of Warren B. Cheston as dean of the Institute of Technology. Frank Verbrugge, who had served as acting dean since the resignation of Athelstan Spilhaus in 1966, was appointed to the newly created post of director of University Computer Services. In the spring of 1968, Richard Swalin was appointed associate dean of the Institute.

UNIVERSITY COLLEGE

ALFRED L. VAUGHAN, *Chairman, University College Committee*

As one of the agencies devised by the University of Minnesota to combat institutional rigidity, the University College continued during the biennium to serve those students whose professional aims are not provided for in any recognized curriculum.

A new program developed during the biennium to begin in fall 1968 will enable University College students to earn the baccalaureate degree with honors designated as "with distinction" and "with high distinction." Approximately one-eighth of the 1,111 students who have earned degrees through the College since 1930 have established records that entitle them to graduate with scholastic honors. The new program will function in cooperation with the Honors Division of the College of Liberal Arts.

In another development during the biennium, the Minnesota junior college system called upon the University to establish courses of study for the training of faculty members in several fields of occupational education. In one area, the School of Dentistry was asked to assist in preparing students to teach dental assisting and dental hygiene in the junior colleges. The interdisciplinary nature of the curriculum required (combining elements from the College of Liberal Arts, the General College, the College of Education, the School of Dentistry, and the School of Public Health) makes University College the logical agent to assist the School of Dentistry and to supervise the progress of students.

A luncheon meeting for present and former University College students is being planned for November, 1968. This gathering, made possible by memorial gifts in honor of the late J. William Buchta, former chairman of the University College Committee, will bring the College to the attention of today's students and provide an informal, but effective, means of evaluating past programs and assembling suggestions for future development.

COLLEGE OF VETERINARY MEDICINE

W. T. S. THORP, *Dean*

The College of Veterinary Medicine, one of 18 in the nation, is the center for veterinary education, research, and service for Minnesota, North Dakota, South Dakota, and Wisconsin. The success of the College in attempting to meet the needs of the area may be judged by the fact that 80 percent of all graduates of the College live in Minnesota or the surrounding economic area. The retention figure is often closer to 50 percent in areas served by many other colleges and universities.

The need for veterinary medical service has increased greatly during the past 20 years and is continuing to increase. National authorities recommend that present enrollments be doubled to provide adequate veterinary medical manpower for the year 1985.

Although this College has increased its enrollment in the professional portion of the teaching program from 23 to approximately 240 students, the

number of faculty, the building space, and the facilities have not kept pace as originally planned. In some cases, qualified students with two, three, or four years of preprofessional college education cannot be admitted to the College because of shortages of faculty and facilities. This denial to students of an educational opportunity in the career of their choice is a loss not only for them, but for the state and nation, since they will not be available to meet the increasingly critical need for veterinary medical manpower.

Health Sciences Council—In 1967 the Regents of the University, upon recommendation of the President, approved the formation of the Health Sciences Council and the Health Sciences Center to coordinate efforts to more effectively meet the needs for education, research, and service in the health sciences. The College of Veterinary Medicine was included in the Health Sciences Center concept along with the College of Medical Sciences, the School of Dentistry, the College of Pharmacy, the School of Public Health, the School of Nursing, and the University Hospitals. This affiliation will not detract from the joint programs and cooperative efforts of this College and the Institute of Agriculture and the College of Biological Sciences.

Education—The preprofessional curriculum for students wishing to enter the College of Veterinary Medicine was revised during the biennium to meet the recommendations of the All-University Council on Liberal Education by providing students with a broader background in liberal studies. The professional program curriculum was revised in 1966-1967 after several years of study by the faculty. The new curriculum should offer additional motivation for students, a greater integration of educational material, and the opportunity to select elective courses and programs in the fourth year of the professional program to achieve a greater depth of competence and knowledge than was formerly possible. The College was one of the first in the United States to adopt this kind of curriculum; since 1966 a number of other colleges have been studying the Minnesota program for possible adoption or adaptation. The Curriculum Committee is continuing to review the educational program to keep abreast of developments that would enhance the teaching in Veterinary Medicine.

Because of a shortage of funds for staff, facilities, and equipment, it has not been possible to improve as many aspects of the teaching program as deemed essential by both staff and students. Some progress is being made, however, and it is hoped that additional funds will be forthcoming in the next biennium.

Postdoctoral and graduate education are becoming increasingly important in the search for scientific manpower for research and teaching. Research institutes, government agencies, industries, medical centers, and others are requesting highly trained specialists in their efforts to learn more about health and disease in animals and man. At present the College has eight postdoctoral and graduate programs, four of which receive training grant funds from the National Institutes of Health. The veterinary medical faculty members of the Graduate School and the School of Public Health have traditionally provided strong programs of postdoctoral and graduate education. Increasing numbers of veterinarians are seeking admittance to these programs.

With the explosion of scientific knowledge, it is evident that continuing education programs are essential, particularly in scientific and professional fields. In recognition of the need for continuing education for veterinarians and animal owners, a new program funded and administered cooperatively with the Agricultural Extension Service was established during the biennium to serve these needs in the most efficient manner possible. It is hoped that this effort can be strengthened with additional funds and staff. New information and knowledge has been disseminated to interested groups throughout the state by means of night classes, educational television and radio programs, news releases, and meetings and conferences on and off campus.

The relationship of animal health to human health in terms of diseases transmitted to man and of production of protein foods is one of the most important problems facing the United States and the world today. With the assistance of the Ford Foundation and the Office of International Programs, the College is making an effort to develop educational and research programs concerned with the international aspects of health and disease in ani-

mals and their effect on food production and human health. Although this program was initiated in 1967 with funds from the Rockefeller Foundation, it is expected that in the future it will be supported by funds from other sources, including agencies of the federal government.

To strengthen services provided for students in the preveterinary medical and veterinary medical programs, the College inaugurated an expanded counseling and advising program in 1966. The position of assistant to the dean was established, with major responsibility for student affairs. This office has materially improved the quality of counseling and advising and has also provided increased assistance for those students who must seek an alternative when they are not admitted to the College of Veterinary Medicine. A program of small-group counseling was established in the professional curriculum, with each faculty member responsible for providing guidance and assistance to a small number of students through one or more years of the curriculum. Since the College can accept only a limited number of students, it becomes very important to provide faculty and staff counseling that will make it possible for nearly all of the students to satisfactorily complete the professional program. The office of the assistant to the dean has also made an effort to work closely with student organizations such as the Preveterinary Medicine Club and the Student Chapter of the American Veterinary Medical Association, to which most students belong.

Research—Faculty members continued to develop and expand their research interests and activities during the biennium. Many projects concerned with eradication and control of diseases of animals are of great economic importance to the livestock owners of the state and to the production of food supplies of animal origin throughout the world. A number of projects involve the comparative medical aspects of diseases common to animals and man or transmitted from animals to man. Research by the faculty has contributed greatly to the solution of livestock and poultry industry problems such as mastitis in dairy cattle, brucellosis in cattle and swine, paratyphoid infection and airsacculitis in turkeys, and respiratory diseases in cattle. Contributions have also been made to both animal and human health in studies of animal diseases similar to those in man (bovine lymphocytic leukemia, porphyria, geriatric diseases, cardiovascular diseases, toxicology) and animal diseases transmissible to man (rabies, leptospirosis, Q fever, certain parasitic diseases).

Some of the research programs inaugurated during the biennium recognize the growing importance of environmental and ecological relationships that may add to or detract from the quality of life. These projects include studies of toxic substances such as heavy metals, pesticides, and antibiotics, and studies of waste disposal and contamination of water supplies in terms of microorganisms or chemicals that might be transmitted from animals to man. Another project has been concerned with toxins produced by fungi that grow on grains and other feeds and their relationship to the production of toxins affecting both animals and man.

The Veterinary Diagnostic Laboratory, which provides diagnostic services for animals and poultry, is the official laboratory of the Livestock Sanitary Board of Minnesota. In this capacity, its services aid in the control of livestock disease and diseases that are related to human health. It also serves in a screening capacity in selecting disease identities necessary and suitable for research. Projects inaugurated and conducted in the Laboratory include studies of clostridial diseases of animals and birds and a study of the effect of mycotoxins on animals and birds conducted jointly with the Department of Plant Pathology.

In addition to providing new knowledge to solve problems, research activities serve as stimulation for faculty in the creation of new knowledge and development of expertise in their field; this, in turn, benefits the teaching program.

Future Needs and Plans—During the biennium, progress in providing space and facilities was made with the construction of an addition to the Veterinary Science building and with approval of plans and funds for an addition to the Veterinary Clinic and Diagnostic Laboratory. However, several departments are still housed in temporary and outmoded buildings that

provide insufficient space for adequate teaching programs even with the present limited enrollment. Approximately three out of every four students who apply for admission each year cannot be accepted or accommodated; yet the demand for graduates in veterinary medicine is four times greater than the number available.

Congress has recognized this manpower deficit and has included veterinary medicine in the Health Professions Assistance Act. This legislation, designed to increase the number of veterinarians and to provide an education for students who are now unable to enter veterinary colleges, provides matching federal funds for increased state appropriations for facilities and student aid.

The departments of this College, together with the University Planning Office and other departments and colleges of the Twin Cities campus, are engaged in planning to effectively and efficiently meet increasing needs for education, research, and service. It is hoped that these plans will be reviewed and approved by the Regents of the University during the next biennium.

Divisions of Business Administration

BUSINESS OFFICE

CLINTON T. JOHNSON, *Assistant Vice President*

During the biennium, several changes were made in internal procedures for more efficiency in processing entries through the accounting records. The computer was used more extensively in paying vendors, reducing the time and paper work formerly required. A direct system of charging departments for items ordered from a vendor through the central storehouse was instituted. The Property Accounting Department completed the conversion of its equipment inventory from a manual to a computer tape system. The General and Chemical Storehouses also revised their procedures to utilize the computer in billing, stock control, and perpetual inventory.

The Data Processing Center replaced the IBM 1410 computer with an IBM 360-50 system. This change made a reprogramming of accounting reports desirable, and a study was made of ways to improve and revise existing reports to better serve the needs of the departments.

Research — Maintaining adequate controls, interpreting regulations, informing departments of project balances, reporting expenditures data to granting agencies, and compiling statistical reports are the research-related functions of the Business Office. The University's expenditures for research have more than tripled during the last decade, with increased support from the federal government, the state government, business, and foundations. The accompanying schedule shows the sources of funds and the growth of research expenditures by years. For the year 1967-1968, for example, research support was provided as follows:

Source of Funds	Amount	Percent of Total
The Federal Government	\$29,606,855	83.1
The State	2,647,805	7.4
Gifts	3,040,401	8.6
Income from Endowments	319,512	0.9
Total	\$35,614,573	100.0

A further explanation of each of these categories follows.

From the Federal Government — This figure includes direct federal appropriations (Bankhead-Jones, Consolidated Hatch Fund, and others); income from federal agencies for defense contracts research (Departments of the Air Force, Army, and Navy; Atomic Energy Commission; and others); and grants from other federal agencies (National Science Foundation; Department of Health, Education, and Welfare; Department of Agriculture; and others). In 1967-1968, direct federal appropriations totaled \$1,355,877 and income from federal agencies totaled \$29,250,978.

From State Funds — This figure includes special state appropriations for research in areas such as medicine, agriculture, shore development, and beneficiation of manganiferous ores. It also includes grants from state agencies such as the Department of Highways, the Department of Dairy Industries, the Department of Education, and the Iron Range Resources and Rehabilitation Commission. In 1967-1968, special state appropriations totaled \$2,370,638 and grants from state agencies totaled \$277,167.

From Gifts — This figure includes gifts and grants from businesses and industries, foundations, associations, individuals, and others. These funds are expendable for specific research. During 1967-1968, businesses and industries such as Honeywell, Inc., and the American Chemical Society contributed \$782,631; foundations such as the Louis W. and Maud Hill Family Foundation, the Ford Foundation, and the Sloan Foundation and associations such as the American Heart Association and the Minnesota Division of the American Can-

cer Society contributed \$1,563,130; and individuals and miscellaneous sources contributed \$694,640.

From Endowment Income—This category includes, for the most part, income from endowments such as the American Legion Memorial Heart Research Professorship and the George S. Clark Research Professorship in Medicine. Some gifts are given to the credit of an endowment fund with the designation that a portion be spent outright rather than invested. The total amount of funds expended for research from endowment income in 1967-1968 was \$319,512.47.

Endowment and Investments—The endowment of the University contributes substantial amounts annually both to the general maintenance of the University and to numerous scholarships, professorships, and research projects that have been specified by many donors. The main component of the University endowment is the Permanent University Fund, which had a book value of \$48,025,925 on June 30, 1968. In addition to this Fund, the Board of Regents manages the investments on funds totaling \$31,861,589. An additional \$904,212 is held in trust for the University. On June 30, 1968, the total endowments of the University had a book value of \$80,791,726.

The Group Investment Fund, established to manage the large number of individual gifts, is operated on a market value basis. New funds entering the Group Investment Fund or additions to old funds are assigned units of participation that are determined by dividing the amount received by the unit market value, which is computed at the beginning of each quarter. The unit valuation at the inception of the Group Investment Fund on June 30, 1954, was \$10.00. The value of each of the 1,688,802.3 participating units as of June 30, 1968, was \$18.26. During the biennium, endowment gifts and bequests included the following:

Clara Brown Army—Class of 1913 Fiftieth Anniversary Fund: \$32,937—The earnings from this bequest from the Clara Brown Army estate are to be used to provide scholarships and loans to needy and worthy home economics students.

Fred K. Butters Fund: \$55,402—The earnings from this bequest from the estate of George Webster Morgot are for the use of the Botany Department.

Carotind Scholarship: \$30,354—Both principal and interest of this gift from Dr. Ralph Lindgren, in memory of his parents, are to be available to support annual scholarships to students majoring in forestry or forestry pathology.

Alexander O. Corstvet Memorial Fund: \$30,000—Alexander Corstvet bequeathed this money to the University to be credited to the Minnesota Masonic Memorial Hospital Fund. The bequest has been added to the endowment until the exact use of the fund has been determined.

John B. Cronin Scholarship Endowment: \$239,654—The earnings from this bequest in memory of John B. Cronin from the Katherine C. Kelley estate are to be used to assist academically qualified but needy students to attend the University.

Margaret R. Darlington Memorial Scholarship: \$29,450.29—The earnings from this bequest from the estate of Margaret Darlington are to be used for scholarships.

Grace B. Dayton Fund for Cancer Research: \$50,000—This bequest from the will of Grace B. Dayton is to be used for cancer research.

Dwan Family Fund: \$49,173.71—This amount (principal and interest) plus additional gifts from the Dwan family credited to the current account are to be used to aid and foster cardiovascular research on children.

Helen Lasby Jeffrey Fund: \$181,702—This bequest from the estate of Helen Lasby Jeffrey in memory of her father, William Frederick Lasby, former dean of the School of Dentistry, will be used to establish a Visiting Health Science Professorship.

Carl M. Oberg Memorial Fund: \$55,402—The earnings from this bequest from the estate of Margaret A. Oberg will be used for research, scholarships, and fellowships in the field of medicine.

Alice O'Brien Foundation Endowment: \$30,000—These gifts from the Alice O'Brien Foundation are to be used to support research activities in the Department of Surgery.

Ophthalmology Service Fund: \$246,363.30—Additional gifts to this existing endowment fund were received during the biennium. The fund is to be used by the Department of Ophthalmology for equipment purchases, for research and teaching service payments, for administrative enterprises, or for other purposes within general University regulations.

Royal A. Stone Memorial Fund: \$2,202,890.05—The earnings from this bequest from the Olive Whiting Stone estate are to be used for scholarship assistance for Law School students.

Florence Goodrich Sinclair Scholarship: \$107,602—The earnings from this bequest from the estate of Florence E. Sinclair are to be used to support scholarship awards for women at the University.

Arthur C. Strachauer Surgical Fund: \$153,515.27 — Both principal and interest of this fund, a bequest from the estate of Erma L. Strachauer, may be used at the discretion of the chairman of the Department of Surgery in accordance with general University procedures.

Numerous other gifts were received for various University purposes. The income from the Permanent University Fund for the year ending June 30, 1968, amounted to \$1,974,838. The income from the other endowment funds totaled \$1,609,966. The following summary indicates the categorical composition of the University portfolio during the last two years.

ENDOWMENT FUNDS MANAGED BY THE BOARD OF REGENTS
(Book Value)

	June 30, 1967		June 30, 1968	
	Amount	%	Amount	%
I. Permanent University Fund				
Bonds:				
U. S. Government	\$12,849,650.00	27.0	\$11,140,000.00	23.2
Public Utility	15,126,000.00	31.7	14,702,000.00	30.6
Industrial	6,456,000.00	13.6	7,079,000.00	14.7
Railroads, Including Equipment				
Trust Certificates	3,911,920.00	8.2	3,881,920.00	8.1
Finance	1,890,000.00	4.0	1,650,000.00	3.4
Bonds and Loans, Minnesota				
Municipalities	153,950.00	.3	123,800.00	.3
Canadian Securities	4,198,695.20	8.8	3,921,000.00	8.2
Other			350,000.00	.7
Total Bonds	\$44,586,215.20		\$42,847,720.00	
Unamortized Premium	101,040.79	.2	96,119.93	.2
Unamortized Discount	-470,206.23	-1.0	-401,885.55	-.8
Net Book Value of Bonds	\$44,217,049.76		\$42,541,954.38	
Land Contracts	4,991.70		4,647.28	
Common Stocks	2,824,212.38	5.9	3,931,945.78	8.2
Preferred Stocks			10,910.09	
Commercial Paper	476,375.47	1.0	1,367,093.34	2.9
Cash	157,324.39	.3	169,374.14	.3
Total Assets	\$47,679,953.70	100.0	\$48,025,925.01	100.0
II. Group Investment Fund				
Bonds:				
U. S. Government and Agencies	\$ 1,685,000.00	6.8	\$ 2,780,458.87	10.2
Public Utility	6,995,000.00	28.5	7,095,000.00	26.0
Industrial	2,964,000.00	12.1	2,989,000.00	10.9
Railroads, Including Equipment				
Trust Certificates	2,200,000.00	8.9	1,940,000.00	7.1
Finance	983,551.38	4.0	988,396.94	3.6
Canadian Securities	1,887,000.00	7.7	2,175,000.00	8.0
Other			250,000.00	.9
Total Bonds	\$16,714,551.38		\$18,217,855.81	
Unamortized Premium	54,047.14	.2	27,599.23	.1
Unamortized Discount	-183,853.53	-.7	-307,133.73	-(1.1)
Net Book Value of Bonds	\$16,584,744.99		\$17,938,321.31	
Mortgages	960,565.13	3.9	1,002,788.06	3.7
Preferred Stocks			71,679.38	.3
Common Stocks	6,349,268.83	25.8	6,502,438.21	23.8
Commercial Paper	199,825.00	.8	1,022,581.17	3.8
Cash	486,383.33	2.0	774,400.52	2.7
Total Assets	\$24,580,787.28	100.0	\$27,312,208.65	100.0

III. Endowments Individually Invested

Cash	\$ 8,540.09	.2	\$ 46,568.55	1.0
Bonds:				
U. S. Government and Agencies	1,291,034.02	25.0	733,778.26	16.2
Public Utility	229,000.00	4.4	454,000.00	10.0
Industrial	170,000.00	3.3	287,539.09	6.3
Railroads, Including Equipment Trust Certificates	177,000.00	3.4	187,000.00	4.1
Canadian Securities	25,000.00	.5	25,000.00	.5
Other	1.00		119,957.00	2.6
Unamortized Premium	1,137.50		1,137.50	
Unamortized Discount	5,233.6)	-.1	45,145.20	(1.0)
Contract for Deed	8,624.04	.2	7,347.02	.2
Mortgage	6,438.42	.1	5,401.13	.1
Preferred Stock	76,349.39	1.5	16,349.80	.4
Common Stock	2,761,594.72	53.6	2,204,032.24	48.5
Real Estate	376,597.00	7.3	487,697.00	10.7
Other	29,675.29	.6	18,717.95	.4
Total Assets	\$ 5,155,753.28	100.0	\$ 4,549,380.34	100.0
Total Endowment Funds Managed by the Board of Regents	\$77,416,494.26		\$79,887,514.00	

SUMMARY OF CASH GIFTS

1966-1968

(Exclusive of Federal and State)

	1966-1967	1967-1968
Expendable		
For Education and Research	\$ 3,141,853.85	\$3,170,610.11
For Student Aid	1,539,392.75	1,621,831.85
For Other Purposes	2,617,282.83	2,939,912.75
Total Expendable	\$ 7,298,529.43	\$7,732,354.71
Capital		
Endowment		
For Education and Research	\$ 298,562.71	\$ 578,601.64
For Student Aid	2,174,604.47	445,657.78
Subject to Annuity and Residual Trust Agreement	15,000.00	
For Other Purposes	113,745.63	21,137.26
Operating Temporarily as an Endowment	23,086.00	35,340.17
Loan Funds	127,007.71	45,699.70
Plant Funds	712,606.87	195,233.10
Total Capital	\$ 3,434,613.39	\$1,321,669.65
Grand Total	\$10,733,142.82	\$9,054,024.36

SUMMARY OF RESEARCH EXPENDITURES FROM ENDOWMENT INCOME,
GIFTS, GRANTS, AND SPECIAL APPROPRIATIONS FROM THE STATE AND FEDERAL GOVERNMENTS
1948-1949 to 1967-1968

Total			Governmental Sources								Non-Governmental Sources								
			State ¹				Federal ²				Gifts		Endowments						
Year	No.	Amount	% Inc. Over Prev. Year	No.	Amount	% Inc. Over Prev. Year	No.	Amount	% Inc. Over Prev. Year	No.	Amount	% Inc. Over Prev. Year	No.	Amount	% Inc. Over Prev. Year				
1967-1968	1,765	\$ 35,614,573.60	11.0	1,164	\$ 32,254,659.85	11.0	75	\$ 2,647,805.00	11.7	1,089	\$ 29,606,854.85	10.9	569	\$ 3,040,401.28	10.8	32	\$ 319,512.47	44.9	
1966-1967	1,676	32,362,642.76	11.2	1,097	29,315,680.26	11.2	45	2,267,874.14	11.0	1,052	27,047,806.12	11.3	548	2,826,394.74	10.9	31	220,567.76	1.0	
1965-1966	1,629	28,895,995.33	14.3	1,070	26,094,555.25	15.5	35	2,058,517.87	25.7	1,035	24,036,037.38	14.7	532	2,583,799.97	3.4	27	217,640.11	10.0	
1964-1965	1,540	25,286,287.24	10.8	984	22,588,834.97	11.9	36	1,637,064.96	4.1	948	20,951,770.01	12.6	530	2,499,623.80	2.2	26	197,828.47	3.7	
1963-1964	1,510	22,820,963.99	16.1	973	20,183,739.14	19.8	31	1,571,869.26	11.2	942	18,611,869.88	20.5	508	2,446,408.54	7.1	29	190,816.31	8.7	
1962-1963	1,404	19,661,370.61	13.6	915	16,853,271.69	19.0	30	1,413,749.61	4.1	885	15,439,521.88	20.6	462	2,632,608.01	5.4	27	175,490.91	51.1	
1961-1962	1,289	17,304,403.30	13.6	800	14,160,646.61	16.3	29	1,357,443.09	4.2	772	12,803,203.52	16.7	460	2,781,710.71	1.7	29	362,045.98	13.0	
1960-1961	1,216	15,230,176.63	10.7	709	12,173,406.87	12.1	26	1,303,289.22	7.2	683	10,870,117.65	12.7	475	2,736,419.68	6.1	32	320,350.08	1.2	
1959-1960	1,139	13,762,411.84	18.1	659	10,860,273.21	23.0	26	1,215,406.19	0.8	633	9,644,867.02	26.5	453	2,578,060.38	2.9	27	324,078.25	2.4	
1958-1959	995	11,652,151.91	13.1	530	8,830,376.35	15.4	29	1,205,163.57	9.8	501	7,625,212.78	16.3	439	2,505,343.69	5.5	26	316,431.87	15.5	
1957-1958	929	10,303,713.84	23.1	465	7,654,218.77	22.5	30	1,097,510.26	19.1	435	6,556,708.51	23.1	443	2,375,477.08	28.6	21	274,017.99	0.5	
1956-1957	837	8,369,377.76	12.9	411	6,249,255.14	12.6	21	921,622.33	2.2	390	5,327,632.81	14.6	401	1,847,471.60	14.8	25	272,651.02	7.6	
1955-1956	748	7,411,114.04	3.5	357	5,549,000.49	0.1	21	902,076.59	5.3	336	4,646,923.90	1.1	363	1,608,640.78	18.4	28	253,472.77	1.6	
1954-1955	721	7,161,320.64	6.2	339	5,553,604.68	6.9	21	856,276.63	9.4	318	4,697,328.05	6.5	356	1,358,218.30	3.6	26	249,497.66	4.6	
1953-1954	640	6,742,752.94	8.4	310	5,192,970.05	4.3	26	782,668.69	3.1	284	4,410,301.36	4.5	308	1,311,335.51	23.6	22	238,447.38	33.9	
1952-1953	556	6,217,782.70	14.9	280	4,978,656.62	16.9	26	759,426.26	4.4	254	4,219,230.36	19.5	256	1,061,103.63	7.8	20	178,022.45	5.8	
1951-1952	549	5,411,886.92	33.3	257	4,259,556.27	38.5	27	727,744.96	32.6	230	3,531,811.31	39.8	274	984,127.92	21.5	18	168,202.73	3.3	
1950-1951	463	4,058,614.66	20.5	202	3,074,612.59	27.5	18	549,006.33	0.4	184	2,525,606.26	35.9	246	810,077.45	0.7	15	173,924.62	19.1	
1949-1950	426	3,367,130.06	8.1	165	2,405,242.21	6.8	21	546,825.40	18.8	144	1,858,416.81	3.8	246	815,810.40	7.6	15	146,077.45	38.1	
1948-1949	386	3,114,927.24	18.8	133	2,251,224.44	27.5	18	460,436.53	4.1	115	1,790,787.91	35.5	243	757,937.73	0.2	10	105,765.07	6.5	
Total Expenditures 1948-1949 to 1967-1968					\$284,749,598.01			\$240,483,785.46			\$24,281,777.09			\$216,202,008.37			\$39,560,971.20		\$4,704,841.35

¹ State sources include state appropriations and contracts.

² Federal sources include federal appropriations, contracts, and grants.

Notes: A. Figures do not include expenditures for nonresearch fellowships.

B. No research expenditures on the Support Fund have been included in these totals.

Source: Financial Reports

DEPARTMENT OF CIVIL SERVICE PERSONNEL

FRANK PIEFER, *Director*

During the 1966-1968 biennium, several of the same pressures evident in the previous biennium influenced the work of the Department of Civil Service Personnel and dictated the purposes to which the resources of the Department had to be directed. Growth in the number of Civil Service employees continued; during 1967-1968 the average number of full-time employees on the payroll was approximately 7,500 and the average number of part-time employees including students was approximately 5,000. Employee turnover continued to increase; during 1967-1968 the rate of turnover was 3.3 percent per month or 40 percent for the year. The labor market was characterized by an increasingly short supply of many kinds of applicants and by a rapidly rising wage structure.

The Department took several major steps to cope with these pressures. A personnel assistant position with responsibility for recruiting applicants was added at the beginning of the biennium and a personnel services representative position was added each year of the biennium. A senior personnel representative position was created for coordination of internal office services with recruiting activities and with college and departmental personnel services; to facilitate this coordination, the editor and the personnel procedures coordinator now report to the new representative. Two clerical positions were added to the central office staff and the equivalent of another full-time clerical position was shifted from Regents' Docket production to employee document processing. The director and associate director worked during the first year of the biennium to encourage the development and passage by the State Legislature of an improved employee salary plan. Almost the entire technical staff of the Department participated in developing new recruiting material and in carrying out new recruiting methods. Substantial effort was devoted to designing an automated personnel data system to simplify personnel procedures and hold down the increasing clerical workload. Use of office space assigned to the Department was reviewed and replanned to accommodate a growing staff and to solve increasing file storage problems.

These efforts were sufficiently productive to allow the Department to provide the services required of it during the biennium. At the end of the period, however, the number of vacancies, the demands of University departments for service, the pressures from various employee groups for wage and benefit improvements, the problems caused by antiquated procedures, and the lack of adequate working space in the Department added up to a rather discouraging outlook.

A major accomplishment of the biennium was the completion of hearings and deliberations by the Civil Service Committee on a substantial revision of the University of Minnesota Civil Service Rules. The revised Rules were approved by the Board of Regents to become effective July 1, 1968. The changes had been under consideration for more than four years and involved extensive discussions with unions, employees, supervisors, and department heads.

Position Classification — At the end of the biennium, the position classification plan included 711 classes of work covering approximately 12,500 full-time and part-time Civil Service positions (including student positions). The administration of this plan involved the following activities during the biennium:

There were 16 percent more positions created than in the previous biennium. Of the 2,612 new positions established by departments (including 868 student and 281 part-time temporary nonstudent positions), 2,483 were classified as requested by the department, 66 at a lower level, 41 at a higher level, and 22 into a different class at the same salary level. There were 69 percent more requests for reclassification of positions than in the last biennium. A total of 995 requests were submitted. Of this number, 796, or approximately 80 percent, were reclassified.

There were 25 percent more position vacancies requiring classification study than in the last biennium. A total of 5,495 requests were submitted (including 1,168 student and 248 part-time or temporary nonstudent positions), of which 50 were reclassified to a lower level, 54 to a higher level, and 11 to a different class at the same salary level. The 1,168 student positions reclassified

included only those requiring classification study (the simple student jobs are not studied), a decrease of about 12 percent from the figure for the last biennium.

Of 189 positions studied in connection with classification surveys of complete series of classes, 74 were assigned to a higher class, 3 to a lower class, and 11 to a different class at the same salary level.

Sixty-seven new classes were established, and 18 obsolete classes were eliminated. Salary range assignments were changed for 45 classes (in addition to reassignment of all classes to different pay ranges in the new salary plan effective July 1, 1967).

Salary Plan — On July 1, 1966, there were no cost-of-living or general salary adjustments for Civil Service employees. However, the Legislature had allotted partial funding for merit and longevity increases. Additional funds for these increases had to be provided from step savings and by leaving vacant positions open for one month before filling during the 1966-1967 fiscal year. Sufficient funds were found to enable students and other employees working less than 75 percent time, in addition to full-time employees, to be recommended for merit increases if by July 1, 1966, they had worked 1,040 hours since their last salary increase in the same or a related class of work.

On January 1, 1967, merit increases were made available for employees hired or promoted between January 17 and July 1, 1966. Students and employees working less than 75 percent time were not eligible, and longevity increases were not available.

Effective April 15, 1967, University Civil Service employees were included by legislation in the free life, hospital, and medical insurance plan already provided for State Civil Service employees.

During the winter of 1966-1967, the director and associate director worked with the directors of the State Civil Service and with legislative committees on a new salary plan to be considered by the Legislature. Their efforts promoted understanding of the problems created for the University by the steep wage spiral that had made recruitment also impossible under the salary plan adopted by the previous Legislature. The 1967 Legislature adopted a more progressive salary plan that increased salaries an average of 12 percent and provided part of the funds needed to carry on a merit increase program for the biennium. The new plan went into effect on July 1, 1967, providing minimum salary increases of eight percent. Partial funding was also available for merit increases and for increases to eliminate inequities caused by the new plan.

The new salary plan provides two sets of ranges, "Plan A" and "Plan B." "Plan A" is intended for the majority of classes of work and contains 15 ranges (a reduction from the 45 ranges in the previous plan), each with ten 4 percent steps. "Plan B" is intended for classes of work in which a single rate or a very narrow pay range is common in industry; it contains 13 ranges, each with four 8 percent steps. The Department found it difficult to coordinate the administration of the two plans when employees moved from one plan to the other due to promotion or reclassification of their positions.

The new salary plan included one valuable feature completely new to University personnel administration. Probationary employees, if their work and service are satisfactory at the end of six months, are to be given a one-step salary increase at that time. This policy was funded to take effect on January 1, 1968. It has helped retain new employees during the second year of the biennium and has made the University more competitive with industrial and commercial establishments.

The law establishing the plan required that salary increases be awarded solely on the basis of meritorious service and provided partial funding for merit increases. The University provided additional funds and developed administrative procedures that made it possible to give a limited number of merit increases on January 1, 1968, and on July 1, 1968. On these dates, departments were permitted to give merit increases to 50 percent of their eligible employees who were in steps two through four of "Plan A" or in step two or three of "Plan B" if the work of the employee was up-to-standard. Increases were permitted for employees at higher steps only in cases of outstanding performance and were limited to 25 percent of the employees at such steps on January 1, 1968, and to 33 percent on July 1, 1968. While these administrative controls

were complicated and caused a great deal of work for departmental supervisors and for the Department of Civil Service Personnel, they indicated progress toward a true merit system.

Applicant Recruiting and Screening— During the first year of the biennium the number of vacancies in University Civil Service positions increased steadily, reaching an all-time high in April, 1967. By that time, there were 166 vacancies in clerical office positions (jobs in the three basic clerical series of classes: clerk, clerk-typist, and secretary), a 48 percent increase over the 112 vacancies of the previous year. The new salary plan effective July 1, 1967, made recruiting more successful; by April, 1968, the number of clerical vacancies had been cut to 82. However, at the end of the biennium the number of vacancies in all classes of work (231) was only 13 percent less than at the end of the previous biennium.

The turnover rate for all classes of full-time employees on the regular payroll increased during the biennium from just under 3 percent per month to 3.3 percent per month. The yearly turnover rate was 40 percent of the full-time staff compared to 37 percent during the previous biennium.

During 1967-1968 there were 13,545 applicants for nonstudent Civil Service positions at the University. Approximately 72 percent of all applicants were interviewed after being tested, 45 percent were referred to departments as qualified for jobs, and 27 percent were hired.

Because of the tight labor market, many new and unusual steps were taken to recruit applicants during the biennium. Advertising was increased substantially in metropolitan, small town, out-of-state, and college newspapers; in technical and scientific periodicals; in college football and basketball programs; and on radio programs. Television interview appearances were also arranged for the Department's recruiter. Advertising costs increased 50 percent over those of the previous biennium, from \$49,600 to \$74,800. In-person recruiting efforts by the recruiter and other members of the staff included interviewing graduating University seniors in a rented Coffman Memorial Union ballroom, interviewing at the Alumni Club in the Sheraton-Ritz Hotel for the convenience of applicants working in downtown Minneapolis, and building and staffing a University employment information booth at the State Fair. Recruiting materials from the Fair booth were later offered to the public at booths in several shopping centers. The Editorial Division designed and published a variety of recruiting brochures, pocket folders, and posters for use in these locations and in direct-mail advertising campaigns. Printing expenses rose to \$8,200, an increase of 140 percent over the \$3,400 spent during the previous biennium.

The new full-time recruiter's schedule included visits to all metropolitan employment agencies, business and trade schools, and public service agencies to seek out all possible qualified applicants in the Twin Cities area. Travel expenses in this area alone exceeded \$800. The personnel services representatives also traveled, contacting counselors and graduating students at high schools, colleges, and business and vocational schools throughout Minnesota, Wisconsin, Iowa, North Dakota, and South Dakota. They distributed packets of recruiting materials, addressed or interviewed several thousand potential applicants, and promoted the University as an employer. These trips cost approximately \$3,000.

During the second year of the biennium, an applicant follow-up system was developed. Close telephone contact is maintained with University departments to urge speedy decisions on hiring and with applicants to keep them interested in University employment. This system is expected to reduce the number of applicants lost while departments are evaluating them. Constant telephone contact is also maintained with Twin Cities private and public employment agencies, both to urge them to send applicants and to keep them informed of the progress of their applicants.

The Department was reorganized during the biennium to effect better coordination of recruiting and applicant processing work. A senior personnel representative position was created, with responsibility for management of the recruiting, applicant preliminary screening, office services, personnel records, editorial services, and research services sections of the Department as well as for coordination of the work of these sections with the activities of personnel services representatives in the College and Departmental Services Division.

In the process of strengthening recruiting and advertising programs, the Department reviewed its responsibility for recruitment of applicants for all types of University Civil Service positions and reassessed the past delegation of nurse recruiting to the Nursing Services Department of University Hospitals. During the period of recruiting by Nursing Services, the University was faced with an almost constant shortage of applicants, which adversely affected the total personnel program in University Hospitals. With the approval of the vice president for business administration, the Department of Civil Service Personnel recalled the delegation of this recruiting activity, and in February, 1967, the planning and execution of nurse recruiting and advertising programs again became its responsibility. From that date until the end of the biennium, intensive recruiting and advertising efforts (including two 12-month nationwide advertising campaigns in nursing journals and newspapers in key cities and a 16-page recruiting brochure for distribution to nurses) resulted in a supply of applicants that kept nearly all nursing positions filled in University Hospitals.

Efforts of the Department to bring about a change in University office hours resulted in implementation of this change at the beginning of the biennium. The administration approved year-round use of former summer hours (7:45 to 4:30 p.m. with 45 minutes for lunch), making the University more competitive with other large employers in the labor market. The 8 a.m. to 4:30 p.m. workday with 30 minutes for lunch has been standard in large metropolitan offices for many years. The University's former academic year workday of 8 a.m. to 5 p.m. with one hour for lunch did not compete well.

Another policy change that aided recruitment greatly during the second year of the biennium was the provision in the new salary plan for merit increases for new employees at the end of the first six months of their employment. The University had never before been able to finance such a policy, but funds obtained with the new salary plan made it possible.

The Supplementary Office Service (SOS) established by the Department during the previous biennium continued to ease problems faced by University departments when office positions could not be filled immediately. During the biennium, the average number of SOS employees working each payroll period was 60, the average number of hours worked per week was 22, and the annual SOS payroll totaled more than \$68,000.

The number of applicants tested for full-time Civil Service vacancies (10,832) decreased 14 percent from the total for the last biennium (12,641). Shorthand testing showed a marked decrease of 39 percent, reflecting the severe shortage of secretarial applicants. However, since the responsibility for testing student applicants had been taken over by the Department of Civil Service Personnel from the Student Counseling Bureau in the last biennium, the total workload of the testing section declined only slightly.

Personnel Records — The University's new merit increase procedures and higher staff turnover caused a 26 percent increase in the number of personnel documents processed during the 1966-1968 biennium as compared with the previous biennium: 87,094 documents were processed this biennium and 69,218 last biennium.

Of these, 30,966 were documents for Civil Service employees, 24,771 for student employees, and 31,357 for academic employees. The number of Civil Service documents processed increased 35 percent, partly because of new policies granting merit increases to new and promoted employees upon completion of six months satisfactory service. Merit increase documents now come in during the whole year instead of July 1 and January 1, and each document must be checked for accuracy with the employee's personnel file.

In addition to the increased volume of documents, the frequency of use of personnel files increased as new personnel technicians were added to the staff and as attempts were made to expand services to departments and employees. With the increases in University staff and in the number of documents processed, filing space became a crucial problem that must be solved in the near future.

The increasing workload of this section was offset somewhat during the biennium by reduction in the number of personnel items included in the Regents' Docket. Previously, personnel actions of most types for all Civil Service employees were outlined on the Regents' Docket for approval by the Board

of Regents. During the biennium the approval process was simplified and the size of the docket required to be typed in Personnel Records was reduced. It now includes only personnel actions concerning Civil Service employees whose classes of work are assigned to Salary Range A12 and above and actions concerning major faculty. Typing and proofreading time saved was approximately that of one full-time employee. Also, the typing of academic appointment notices was eliminated by use of the Business Office computer.

Because of office space problems, it was impossible to add to the eight full-time positions in the Personnel Records Division, and the increased workload was handled with extra assistance from student employees and overtime worked by regular staff members.

Employee Training—The manpower shortage during the biennium increased the interest of supervisors and administrators in training programs and increased the proportion of new employees requiring intensive training. The staff of the Training Division intensified efforts to stimulate development of training programs in individual University departments and the number of employees admitted to central training courses increased. But the limits of staff time and physical facilities made it impossible to multiply training activities significantly. The key accomplishments and problems encountered in the administration of both central programs and departmental programs are outlined below.

Central Training Programs

Orientation—Under a new procedure instituted during the biennium, every new employee reports to the Department of Civil Service Personnel on his first day of work to receive an orientation packet including an employee personnel policy handbook (redesigned by the Editorial Division), copies of the Civil Service Rules and the Staff Entertainment Guide, an explanation of the merit rating system, and other informational materials. At this time he also fills out a health history form and goes to the University Health Service for a tuberculosis test and for determination of the type of physical examination he needs.

During 1968, the Training Division staff planned a new orientation session to be conducted for new clerical and secretarial workers. This session, when implemented, will acquaint new office employees with such things as the organization and purpose of the University, sources of information about the University, telephone-reception and other public relations techniques appropriate to the University, and office safety, and will provide a tour of central administrative offices.

Business Procedures—This course for secretaries and supervisors, now in its seventeenth year, was attended by 359 people this biennium, an increase of 38 percent over the 260 attending last biennium. The *Manual of Business Procedures* was again revised in each year of the biennium.

Office Practices—This course in basic office techniques for inexperienced workers was attended by 157 new employees during the biennium, seven more than in the previous biennium. There were more applicants for the course, but they could not be accommodated because of classroom space limitations. In the closing months of the biennium, the classroom space being used for this course was requisitioned for office space for another University department, and at the end of the biennium the course was discontinued. As a partial substitute for the course, the Editorial Division and the Training Division condensed the course content into a *University Office Practices Manual* to be distributed to University departments for use as a training tool with new employees and as a reference manual for experienced office workers. A small amount of the material formerly in the office practices course was incorporated into the planned new orientation session for office employees.

English Refresher—This course is presented semiannually to office workers. A total of 62 employees attended during the biennium, as compared with 45 in the previous biennium. During the second year of the biennium, the course was offered on the Duluth Campus for the first time.

Laboratory Animal Care—Basic and advanced courses in laboratory animal care were attended by 115 laboratory animal technicians during

the biennium, 18 less than in the previous biennium. Problems encountered in using guest speakers from various departments in the College of Medical Sciences resulted in tentative plans to finance a full-time trainer with funds from research budget sources in the College of Medical Sciences. It became more obvious during the biennium that these courses are important in coping with criticism of the University's use of animals in research.

Medical Terminology — The programmed course in medical terminology was presented to a total of 168 medical secretaries and technicians during the biennium as compared with 115 during the preceding two years. The program has greatly alleviated the shortage of trained medical secretaries.

Supervision — Approximately 50 management employees attended management seminars presented cooperatively by the Training Division and central administrative staff of University Services during the biennium. The growing demand for supervisory training courses was obvious throughout the University, but this urgent need could not be met with the staff available in the Training Division.

Short Courses — Postal regulations clinics were held 12 times during the biennium for a total of 250 employees; 150 employees attended such clinics in the previous biennium. A short course in research contracts and grants was presented once to 75 employees, and several sessions on preparation of the annual budget were conducted for secretaries during the first year of the biennium.

Departmental Training Programs

The Training Division encourages and helps University departments to organize training programs tailored to their specific needs. During the biennium, substantial assistance was given to University Services in the development and presentation of management seminars, and the employee training programs in University Hospitals were reviewed and recommendations were made for revitalizing them.

Individual Self-Development Programs

Regents' Scholarship Program — During the biennium 1,343 University Civil Service employees were awarded Regents' Scholarships, permitting each of them to take one University course tuition-free with time off to attend class. This fringe benefit has helped to attract many applicants to University employment and to supplement the limited training services that can be offered through the Training Division.

Trainee Programs — The problem of recruiting fully qualified applicants has been partially alleviated by use of trainee and apprenticeship programs. The Training Division works with personnel services representatives and with hiring departments to work out individual trainee programs for underqualified applicants.

Unemployment Compensation — During the calendar years 1966 and 1967, 387 claims for unemployment compensation were filed by terminated Civil Service employees. This compares with 621 for the previous two years. The University's total cost for unemployment compensation dropped from \$178,196.58 during 1964-1966 to \$94,799.88 during 1966-1968, a reduction of \$83,396.70 or 50 percent. A total of 526 claims were paid during the last two years, compared with 911 during the previous two years. This reduction in unemployment compensation claims and costs was due to the abundance of available jobs and the low unemployment rate in the Twin Cities area. The decrease in the number of claims filed, however, was partially offset by recent revisions in the unemployment compensation law. These revisions made the clerical work involved in processing claims exceedingly time-consuming with the introduction of complicated forms, policies, and procedures.

The University protested 152 claims during the two-year period, resulting in disqualification of 102 claimants for five to eight weeks or until they had worked again for at least six weeks. One disqualification was appealed by the employee, but the case was decided in the University's

favor by the Appeal Tribunal. Of the 526 claims paid, approximately 40 percent were for second to tenth benefit years. The last billing of the biennium showed payment to four employees who were collecting benefits for their ninth and tenth benefit years.

Employee and Labor Relations—Relations with the majority of unions representing University employees were extremely good during the 1966-1968 biennium. However, it became increasingly difficult to communicate effectively with the growing number of nonunion employees.

The associate director and other technical staff members of the Department held weekly meetings with the business representatives of Independent Local 211, the union representing the largest number of employees on the Twin Cities campus. Many minor issues that could have grown into major conflicts were settled as a result of these discussions.

Negotiations were carried on with half a dozen unions during the first year of the biennium concerning pay ranges to be recommended in the new salary plan. All such issues were settled except those relating to professional nurses in University Hospitals.

The Minnesota Nurses Association petitioned the State Labor Conciliator early in the biennium to define a sole bargaining unit for nurses in University Hospitals, asking that general staff nurses, senior general staff nurses, assistant head nurses, senior clinic nurses, and head nurses be included in the unit; the University asked that the unit be restricted to the first two categories. The Labor Conciliator decided that the unit should be defined as requested by the Association and subsequently supervised an election in University Hospitals in which the eligible employees in the unit elected the Minnesota Nurses Association as their sole bargaining representative. Following the election, representatives of the Association bargained with representatives of the Department of Civil Service Personnel concerning emergency salary step increases for nurses and salary range recommendations to be included in the new salary plan.

Emergency increases in nurses' salaries were made in December, 1966, to meet the demands of the Association and to retain sufficient nurses to keep University Hospitals in operation. Complete agreement could not be reached, however, on salary range recommendations for the new salary plan to become effective July 1, 1967. As of that date, the Association declined conversion of University nurses' salaries into the new plan according to the formula outlined in the State Civil Service Law. The Association attempted to gather information showing that University head nurses, because of increased responsibility, deserve higher salaries than State Civil Service head nurses, which, if proven, would have changed the results of conversion for all University nurses in the bargaining unit. The needed information was not secured, however, and further bargaining sessions were held in May, 1968. After unsuccessful negotiations with the Department of Civil Service Personnel, the Association appealed to the Civil Service Committee, which also refused their requests. As the biennium closed, the nurses were preparing to appeal their case to University administrative officers and to press it with sanctions such as picketing and preventing the placement of advertisements for nurse applicants in a national nursing journal controlled by the American Nurses Association.

Employee relations with union groups and with unaffiliated employees were served during the biennium through the Department's "generalist" approach to personnel administration. Each personnel services representative working out of the College and Departmental Services Division carries on all key personnel services for one or more colleges or major administrative units of the University, attempting to keep in active touch with every employee in his departments. This approach to personnel administration prevents many problems and solves most other problems before they become serious. Also contributive to employee relations were the hearings conducted by the University Civil Service Committee concerning the comprehensive set of proposed changes in the University Civil Service Rules.

Civil Service Committee—The following staff members served on the Civil Service Committee during the biennium:

- Richard G. Bond, Professor and Director, Environmental Health (1967-1968)
- C. Luverne Carlson, Director, University Services (1966-1968)

- Clarence L. Cole, Professor and Head, Animal Science (1966-1968)
- Neal L. Gault, Assistant Dean, Medical Sciences (1966-1967)
- Thomas A. Mahoney, Assistant Director, Industrial Relations Center (1967-1968)
- Allan H. McCoid, Professor, Law School (1966-1967)
- Morris E. Nicholson, Professor, Mines and Metallurgy (1967-1968)
- Alfred O. C. Nier, Professor, Physics (1966-1967)

Dr. Clarence Cole, serving his third three-year term on the Committee, was elected its chairman both years of the biennium, but became ill toward the end of the second year and was forced to resign from the Committee.

The Committee held 30 meetings during the biennium and considered 197 agenda items. Its major actions were recommendations to the Board of Regents to establish 67 new work classifications, to abolish 18 old work classifications, to change class titles for 12 work classifications, and to change salary range assignments for 45 work classifications in addition to reassigning all classes to new ranges in the salary plan adopted on July 1, 1967.

The Committee awarded 1,343 Regents' Scholarships to Civil Service employees during the biennium, and in the second year simplified the scholarship approval procedure by requesting that the Training Division of the Department of Civil Service Personnel establish systematic screening and approval procedures for all but questionable scholarships.

Grievance appeals heard by the Committee during the biennium consisted of two appeals concerning position classification (both denied), ten appeals of salary range assignments (all granted), one appeal concerning seniority determination by work unit (granted), and one appeal concerning racial discrimination (denied but adjusted).

A study of comments made at public hearings on proposed changes in the University Civil Service Rules resulted in modifications of the proposals and scheduling of another set of hearings for December, 1967. Twelve hearings were held, one at nearly every University campus location having a concentration of more than 25 employees. Following this second set of hearings, the Committee again studied the reactions of employees before making final recommendations for rule changes to the Board of Regents in June, 1968. The Board of Regents approved the recommendations, making them effective July 1, 1968. They are the most extensive revision of University Civil Service personnel policies ever made.

Student Employment—During the 1964-1966 biennium, the Student Employment Service introduced promotion campaigns to increase the number of part-time jobs available to students. By the end of that biennium, the number of on- and off-campus jobs available began to meet the needs of students looking for work. The momentum created by promotion efforts carried into the 1966-1968 biennium. During the first year of this biennium, the Student Employment Service had many more jobs available than could be filled, permitting a gradual cutback in promotion efforts. Even with this cutback, however, the number of jobs available continued to rise faster than the number of students looking for work. As a result, an increasingly high proportion of student job applicants were placed. Comparative statistics for the two biennial periods are as follows:

	Applicants	Vacancies	On-Campus Placements	Off-Campus Placements	Total Placements
1964-1966	27,545	27,193	14,571	7,280	21,851
1966-1968	28,599	35,827	20,720	8,087	28,807
% increase	3.8	31.3	43.0	11.6	31.8

The increasing availability of commercial and governmental loan funds, private and governmental scholarship and grant funds, and, perhaps, family funds might account for the reduced proportion of the student body seeking employment. The increase of 3.8 percent in the total number of students looking for jobs is much smaller than the proportionate increase in enrollment over the same period.

The number of jobs filled rose 31.8 percent over the placements for the previous biennium, with the greatest increase during the first of the two years.

During the second year, the bus strike in fall 1967 prevented students from taking jobs in industry for an extended period.

Several new methods of informing students of the large number of jobs available were introduced during the biennium. Student job openings were listed weekly in the *Official Daily Bulletin*; display advertisements, news articles, and help wanted advertisements were placed in the *Minnesota Daily*; and telephone calls and postcards were used to provide current job vacancy information to students who had registered with the Student Employment Service.

The Federal Work-Study Program began in 1965-1966 to subsidize jobs for students from underprivileged families. During the 1966-1968 biennium, the Student Employment Service staff and the coordinator of the Work-Study Program cooperated to place 1,380 students in jobs made available under this Program.

The Reserved Work Program for high ability freshmen was continued, although it was apparent that the use of the Program was declining. During the biennium, 166 high ability freshmen were placed in University Reserved Work Program jobs, a reduction from the 252 placed during the 1964-1966 biennium.

A major policy governing the operations of the Student Employment Service was modified to provide that any student who has been accepted for admission to the University and who has filed his intent-to-enroll card will be given help in finding work immediately. Previously, only those students who had actually enrolled and paid their fees were eligible to use the facilities of the Student Employment Service. This change helps new high school graduates find full-time employment in the summer months before they come to the University and makes it possible for the Student Employment Service to help them find part-time employment for the school year before they become involved in their academic work.

The estimated total of student earnings rose to \$18,103,072.00 for the 1966-1968 biennium, compared with \$15,959,333.00 for the 1964-1966 biennium. Approximately 85 percent of these earnings were from on-campus jobs and 15 percent from jobs in industry and in commercial establishments.

OFFICE OF THE FIELD AUDITOR

DONALD FAHEY, *Field Auditor*

During the 1966-1968 biennium, the Office of the Field Auditor continued to review and examine the financial operations and procedures of University departments, to familiarize new employees with established University regulations on cash handling and record keeping, and to give the usual assistance to the State Public Examiner's office.

Records for the Northwest School of Agriculture at Crookston were closed when the School was replaced by the University of Minnesota Technical Institute. Assistance in establishing proper records and procedures was given to personnel of the Institute as it began operation.

Record keeping was computerized for the Chemical Storehouse in 1966 and for the General Storehouse in 1967. Physical inventories of both operations were taken during the biennium. The Office of the Field Auditor also assisted many departments and larger areas such as the University Hospitals, the University Health Service, the Audio-Visual Extension Service, and the Veterinary Clinic in updating their accounting methods by the use of more modern machines.

DEPARTMENT OF INSURANCE AND RETIREMENT

RAY F. ARCHER, *Director*

The following changes were made in programs administered by the Department of Insurance and Retirement:

Faculty Retirement Plan — A change in this plan effective October 1, 1963, made the University's annual contribution for each eligible staff member equal

to 2½ percent of the first \$5,000 of annual salary plus 7½ percent of the amount in excess of \$5,000. Effective October 1, 1965, this was increased to 2½ percent and 9 percent; effective October 1, 1966, to 2½ percent and 10 percent; and effective October 1, 1967, to 2½ percent and 11½ percent.

Effective July 1, 1967, and July 1, 1968, certain retired staff were given an increase in their total retirement allowances.

Group Insurance — Effective April 1, 1967, staff members were covered under the State Health Care Plan (without cost to the staff member) for hospital-medical-major medical benefits; staff members may cover their dependents by assuming this cost themselves. On the same date, each staff member was covered by an additional \$5,000 in Group Life Insurance without cost to him.

Effective October 1, 1968, the Group Income Disability Insurance will be increased from \$150.00 per month to a monthly income of 60 percent of salary (not to exceed \$1,000 per month), also without cost to the staff member.

PATENTS

G. WILLARD FORNELL, *Patent Adviser*

Assignment of Patent Applications, 1966-1967

Assignment of Application for Patent, Serial No. 522,710, William E. Marshall, Non-discriminating Proteinase and the Production Thereof.

Assignment of Application for Patent, Serial No. 549,023, Arnold Landé et al., Membrane Oxygenator-Dialyzer.

Assignment of Application for Patent, Serial No. 573,209, Marvin B. Bacaner, Method for Suppressing Ventricular Fibrillation.

Assignment of Application for Patent, Serial No. 608,269, Iwao Iwasaki, Method of Removing Fatty Acid Coating from Iron Ores.

Assignment of Application for Patent, Serial No. 631,322, Robert L. Kaster, Pivoting Disk Heart Valve.

Assignment of Application for Canadian Patent, Serial No. 985,294, Robert W. Erickson, Wood Drying Method.

Assignment of Application for Patent, Serial No. 641,687, Ronald M. Hays, Iron Ore Treating Process.

Assignment of Application for Patent, Serial No. 641,896, Benjamin T. Liu et al., Aerosol Sampler.

Patents Received, 1966-1967

Original United States Patent No. 3,262,356, Fred F. Forbes, Line Voltage Compensating Timer.

Original United States Patent No. 3,272,713, Walter J. Runge, Light Shield Producing Material and Method.

Original United States Patent No. 3,296,865, Perry L. Blackshear, Jr., et al., Heat Sensing Probe and Process.

Original United States Patent No. 3,309,778, Robert W. Erickson, Wood Drying Method.

Original United States Patent No. 3,317,790, Kenneth T. Whitby, Sonic Jet Ionizer.

Original United States Patent No. 3,325,652, Roy H. Mattson, Neuristor and Process for Making the Same.

Original Canadian Patent No. 756,033, S. R. B. Cooke et al., Ore Treating Process.

Original Zambia Patent No. 129/64, S. R. B. Cooke et al., Ore Treating Process.

Assignment of Patent Applications, 1967-1968

Assignment of Application for Patent, Serial No. 658,883, Kenneth T. Whitby, Aerosol Concentration Meter.

Assignment of Application for Patent, Serial No. 685,297, Ronald M. Hays and Iwao Iwasaki, Steam Curable Composition and Method.

Assignment of Application for Canadian Patent, Serial No. 11,437, Ronald M. Hays, Iron Ore Treating Process.

Assignment of Application for Brazilian Patent, Serial No. 197,248, Ronald M. Hays, Iron Ore Treating Process.

Patents Received, 1967-1968

Original British Patent No. 1,059,476, S. R. B. Cooke et al., Ore Treating Process.

Original Swedish Patent No. 214,047, Fred F. Smith, Preservation of Animal Material.

Original Canadian Patent No. 765,802, Walter J. Runge, Light Shield Producing Material and Method.

Original United States Patent No. 3,337,328, James E. Lawver, Iron Ore Beneficiation Process.

Original United States Patent No. 3,339,076, Sadek K. Hilal, Dual Differential Densitometer.

Original United States Patent No. 3,340,867, William G. Kubicek et al., Impedance Plethysmograph.

Original Mexican Patent No. 84,811, Fred F. Smith et al., Preservation of Animal Material.

Original United States Patent No. 3,367,364, Anatolio B. Cruz, Jr., et al., Prosthetic Heart Valve.

Original United States Patent No. 3,371,778, Iwao Iwasaki, Method of Treating Starches for Flotation.

PLANT SERVICES DEPARTMENT

ROY V. LUND, *Director*

Land

During the biennium, additions were made to the Twin Cities campus, East Bank, as follows:

In Blocks 10 and 11, University Addition, bounded by 6th and 8th Streets S.E., and by 15th and 16th Avenues S.E., 16 parcels	73,831 sq. ft.
In Block 6, Mower's Addition, bounded by 6th and 7th Streets S.E., and by 16th and 17th Avenues S.E., 7 parcels	46,625 sq. ft.
In Hennepin County Auditor's Subdivision 264, Lots 2, 3, and 4, at Oak and 4th Streets S.E., 3 parcels	77,528 sq. ft.
In Block 14, Regents' Addition, Lots 11, 12, and 13, at Oak and 4th Streets S.E., 1 parcel	27,614 sq. ft.
In Blocks G and H, Tuttle's Addition, in the northeasterly halves of the blocks between 17th and 19th Avenues S.E., and between University Avenue and 4th Street S.E., 11 parcels	59,955 sq. ft.
In Block 18, St. Anthony City Addition, on the west side of Walnut Street S.E., north of Washington Avenue S.E., parts of lots 1 and 2, 1 parcel	2,200 sq. ft.
In Blocks 30 and 35, St. Anthony City Addition, bounded by Union, Harvard, Delaware, and Essex Streets S.E., 3 parcels	56,312 sq. ft.
In Blocks 10 and 11, Baker's Addition, bounded by Oak, Ontario, Delaware, and Fulton Streets S.E., 2 parcels	14,970 sq. ft.
In Block 8, Meeker Island Land and Power Co. Addition, bounded by Oak, Ontario, and Fulton Streets S.E., and by River Road East, 1 parcel	4,200 sq. ft.
Vacation of Essex Street from Harvard Street to Oak Street, and vacation of Walnut Street from Fulton Street to Delaware Street	112,000 sq. ft.

For the development of the West Bank, the following parcels were acquired:

In Blocks 3, 4, 5, 7, 8, and 9, Hancock and Rice's Addition, bounded by Washington Avenue S., First Street S., and by 15th and 21st Avenues S., 18 parcels	119,200 sq. ft.
In Blocks 177, 178, 180, 181, and 184, Town of Minneapolis Addition, bounded by Highway 12, Cedar Avenue, Riverside Avenue and 22nd Avenue S., 14 parcels	65,541 sq. ft.
In Atwater's 3rd Addition, bounded by 22nd Avenue S., 4th Street S., Locust Street and River Road West, parts of Lots 17, 18, and 19, 1 parcel ..	6,897 sq. ft.
Vacation of 22nd Avenue S. between the south line of 4th Street S. and the northwesterly line of Locust Street (extended across 22nd Avenue S.), 1 parcel	18,200 sq. ft.

The following off-campus parcels were acquired within the City of Minneapolis:

At 3338 University Avenue S.E., parts of lots 3, 4, and 5, Block 5, Prospect Park First Division, City of Minneapolis, 1 parcel	42,900 sq. ft.
At 1128 LaSalle Avenue, Lots 1, 2, 3, 4, 5, and 6, Harmon's 2nd Addition; also, part of Lot 56, Auditor's Subdivision No. 30 in Snyder and Company's 1st Addition, 1 parcel	25,698 sq. ft.

Additions were made to the St. Paul campus as follows:

At 1689 N. Cleveland Avenue, the south 94.5 feet of the north 561.5 feet of the west 216.84 feet of the east 467 feet of the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 17, T29N, R23W, Village of Falcon Heights, Ramsey County, 1 parcel	20,491 sq. ft.
At 1695 N. Cleveland Avenue, the east 466.96 feet of the north 93.34 feet of the south 943.69 feet of the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 17, T29N, R23W, Village of Falcon Heights, Ramsey County, 1 parcel	40,479 sq. ft.
At 1705 N. Cleveland Avenue, the east 466.69 feet of the north 373.35 feet of the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 17, T29N, R23W, Village of Falcon Heights, Ramsey County, 1 parcel	161,911 sq. ft.
Lots 1 through 16, Block 50, St. Anthony Park North Addition to Saint Paul, at the intersection of Raymond, Cleveland, and Como Avenues, 5 parcels	89,152 sq. ft.

Deductions were made from the St. Paul campus as follows:

Parts of the NE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 21, T29N, R23W, 4th P.M., were deeded to the Minnesota State Agricultural Society (in exchange for Lots 1 through 16, Block 50, St. Anthony Park Addition, reported above as an addition), 1 parcel	-410,035 sq. ft.
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The O'Brien Observatory was established at Marine-on-St. Croix, on a parcel of land acquired for that purpose and described as follows:

A 1.14 acre parcel in the SE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 12, T31N, R20W, in the Village of Marine-on-St. Croix, Washington County, Minnesota	1.14 acres
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Additions were made to the University of Minnesota, Duluth, campus as follows:

By State of Minnesota deed conveying title to tax forfeited land parcels adjacent to the campus: Lots 11 through 16 Block 7, Motor Line Park; Lots 1 through 7 Block 4, Lot 11 Block 6, Lots 8, 11, and 12 Block 11, Lots 9 and 12 Block 14, Lots 1 and 5 Block 15, Lot 12 Block 17, Lots 10, 11, and 12 Block 24, and Lots 10, 11, and 12 Block 32, Oakland Park Addition; Lots 7, 10, 12, and 16 Block 2, and Lot 16 Block 9, Superior View Addition; and Lots 21, 23, 25, and 27 Block 11, Superior View Addition Second Division; all in the City of Duluth	128,025 sq. ft.
Lots 1, 2, 3, 5, and 6, Block 7, Motor Line Park Addition to Duluth	15,625 sq. ft.
Lots 4, 6, 7, 8, 9, 10, 11, and 12, Block 15; Lots 4 through 12, Block 18; and Lots 7 and 8, Block 19; all in Oakland Park Addition to Duluth	59,375 sq. ft.
Outlot A, University Park Division, Duluth (acquired in exchange for the south half of vacated Maryland Street)	0.45 acres

Deductions were made from lands in the City of Duluth as follows:

The south half (33 feet) of vacated Maryland Street from the east line of Outlot A to the east line of Lot 1, University Park Division, Duluth	-0.58 acres
Lots 9 and 10, Block 7, Lester Park First Division, at 6031 London Road, Duluth (sold)	-20,400 sq. ft.

At Morris, land was acquired for the relocation of the West Central Experiment Station as follows:

Those portions of Section 31, T125N, R41W, 5th P.M. not previously owned by the University of Minnesota, except the west 660 feet of the SW $\frac{1}{4}$ and a 19.5 acre tract lying north of the Northern Pacific Railway right-of-way in the NE $\frac{1}{4}$ of Section 31	400.51 acres
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The SE $\frac{1}{4}$ of the NE $\frac{1}{4}$ of Section 36, T125N, R42W, 5th P.M., except right-of-way of the Northern Pacific Railway, Stevens County 36 acres

At Morris, a parcel of land was sold to the Independent School District No. 769 as follows:

A 35.2 acre parcel in the west half of the NE $\frac{1}{4}$ of Section 2, T124N, R42W, 5th P.M., Stevens County - 35.2 acres

Deductions were made from the lands of the Technical Institute and Northwest Experiment Station at Crookston as follows:

By permanent easement to Polk County for widening of Fisher Avenue (along the south border of the Crookston campus), an additional 27 feet west of T.H. 2 and 75, and an additional 32 feet east of T.H. 2 and 75 - 4.68 acres

Additions were made to the North Central Experiment Station at Grand Rapids as follows:

By State of Minnesota deeds conveying title to tax forfeited land parcels adjacent to the Station: The SE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 15, T55N, R25W, 4th P.M.; Outlots A, B, and C of the McGuire Addition to Grand Rapids; and Lots 1 through 9, 11, 12, and 14 through 20 in Block 1 and Lots 1 through 12 and 16 through 31 in Block 2, McGuire Addition to Grand Rapids, Itasca County, Minnesota 75.7 acres

Additions were made to the Cedar Creek Natural History Area as follows:

Lot 1, Block 2, Lynn Terrace, Village of East Bethel, Anoka County 0.417 acres

Lots 1 and 2, Block 1; and Lots 2, 3, 4, 6, 7, 8, and 9, Block 2; all in Lynn Terrace Addition to the Village of East Bethel, Anoka County 4.3 acres

Lot 5, Block 2, Lynn Terrace, Village of East Bethel, Anoka County 0.332 acres

Government Lot 1 (except the east 36 acres), in Section 25, T34N, R23W, Anoka County 25 acres

The north 525 feet of Government Lot 2, Section 25, T34N, R23W, Anoka County 5.5 acres

The S $\frac{1}{2}$ of the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 34, T34N, R23W, Anoka County 20 acres

Part of the NW $\frac{1}{4}$ of the NW $\frac{1}{4}$, Section 36, T34N, R23W, Anoka County 37 acres

An addition was made to the Southwest Experiment Station at Lamberton as follows:

The NW $\frac{1}{4}$ of Section 21, T109N, R37W, 5th P.M., Redwood County, Minnesota 160 acres

At Waseca, the 30 acre wooded tract on the east side of Clear Lake was sold:

Maplewood Park (plat) in the south half of Section 9, T107N, R22W, Woodville Township, Waseca County, Minnesota - 30 acres

At Willmar, a 2.5 acre parcel of land and an existing building were given to the University for use as a Veterinary Clinic:

The west 600 feet of the north 200 feet of the SW $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 23, T119N, R35W, Kandiyohi County, Minnesota 2.5 acres

Construction

Minneapolis — Classroom space for social science and business administration classes was provided in Anderson Hall, a new classroom building east of Blegen Hall on the West Bank. Included in the 54,304 usable square feet are eight lecture halls, study space, and general use areas. The building is of structural steel and reinforced concrete frame with masonry exterior and has an exterior walkway on the river side that leads to the pedestrian level of the new bridge. The total cost of the structure was \$2,009,695, with funds provided by the U.S. Office of Education, a state appropriation, and investment income.

To satisfy the special requirements of research in space-related science, technology, and medicine, a new air-conditioned building dedicated entirely to research has been constructed. This structure has a reinforced concrete frame and brick exterior, provides 80,969 usable square feet on six levels, and is north of and connected to Aeronautical Engineering. The total cost of the structure was \$3,286,136, with funds provided by the National Aeronautics and Space Administration, the U.S. Office of Education, a state appropriation, and investment income.

A two-level and penthouse addition is being constructed to provide 10,523 usable square feet of needed space in the Veterans of Foreign Wars Cancer Research Center. The addition is of reinforced concrete and brick exterior to match the existing building. The total cost of the work, \$496,997, is being funded by a gift from the Veterans of Foreign Wars.

The west end of the pedestrian level of the Washington Avenue Bridge, constructed by the Minnesota Highway Department, was extended 180 feet by the University. The concrete slab was finished with an exposed aggregate surface with granite borders and granite steps south to the plaza level. The total cost of this work was \$210,503, with funds provided by a state appropriation.

A bookstore was built concurrently with Anderson Hall as a street-level addition under the plaza between Anderson and Blegen Halls. This two-level building will provide 17,306 usable square feet for store, office, and storage space. The total cost of this work was \$338,784, with funds provided by University Services.

An addition on the north side of the Health Service has been completed and extensive remodeling within the existing facility is under way. The reinforced concrete frame with coordinated brick and stone exterior matches the present building; the addition is connected to the Botany Building on the lower level. Administrative and clerical office space is provided in its 22,833 usable square feet. The total cost of this work is \$1,283,678, with funds provided by University Services.

The first West Bank residence hall, a reinforced concrete frame structure with masonry exterior, is under construction near the river southeast of Wilson Library. Four core areas are included in this 13-level tower, plus the connected first phase of the dining facilities. There will be 174,780 usable square feet. The total cost of this work will be \$6,089,658, with funds provided by University Services.

The new main tunnel from the heating plant to Scott Hall was completed and three new 14-inch steam and condensate mains were installed. The design for the section to Chemistry was completed. The total cost of this work was \$490,000, with funds provided by a state appropriation.

A single-level air-conditioned office building was completed on 4th Street S.E. and 16th Avenue. The building is of light frame construction with architectural concrete block exterior and provides 55 offices in 13,104 usable square feet of space. The total cost of this work was \$203,000, with funds provided from investment income.

The Temporary, North of Child Development Building was removed, and construction of the Child Psychology Research Center is under way on its site. It will be a two-level reinforced concrete frame structure with precast concrete exterior and will be connected with a covered corridor to the west entrance of the Child Development Center. Office and research space of 16,000 usable square feet will be provided. The total cost of this building will be \$504,721, with funds provided by the U.S. Public Health Service and by gifts.

St. Paul — An addition of 5,500 usable square feet is under construction on the north side of the present Crop Service Feed Building. It is a single-level structure of concrete block and metal panels that will provide threshing and drying areas, offices, controlled seed storage, and growth chambers. A covered walkway connects it to the Plant Sciences Building. The total cost of this addition will be \$259,000, with funds provided by a state appropriation.

A four-level air-conditioned Plant Sciences Building was built between the Plant Pathology and Agronomy Buildings. Constructed of reinforced concrete frame and masonry exterior, it is connected to the adjacent buildings by a single-level covered pedestrian walkway. The 26,692 usable square feet are largely for laboratories, offices, and controlled environment rooms. The total cost of the structure was \$1,327,000, with funds provided by a state appropriation and by the U.S. Department of Agriculture.

The engineering was completed and a 70,000 lb/hour gas-coal fired boiler purchased for the project to increase the steam generating capacity of the heating plant. The output will be increased from the present 130,000 lb/hour to 200,000 lbs/hour to handle the anticipated increase in heating demands. The installation will include all the necessary piping and electrical systems and modifications of the coal and ash handling equipment, alterations to the stack,

and an addition to house the boiler. The total cost of this project will be \$730,000, with funds provided by a state appropriation.

A two-building Entomology, Fisheries, and Wildlife complex is under construction south of the Lake States Forestry Building. Constructed of reinforced concrete frame with a masonry exterior, it will provide 68,346 usable square feet. Five levels of offices, seminar rooms, laboratories, and specimen rooms in the north building are connected to the smaller south building on three levels by an enclosed pedestrian walkway. The three-level south building contains the library and classrooms. A separate well will provide water for the fish tank and, as part of the same project, a greenhouse and a honeyhouse have been built on separate field locations. The total cost of this work will be \$2,664,042, with funds provided by the U.S. Office of Education, the National Science Foundation, and a state appropriation.

A two-room, single-level, air-conditioned concrete block structure with electric heating was constructed at Marine-on-St. Croix as an observatory for the Physics Department. A 40-foot passageway connects the telescope dome room with the workroom. The total cost of this structure was \$48,197, provided by a state appropriation and by University funds.

Duluth—To provide the necessary heating capacity for new buildings while maintaining a safety margin, a new 50,000 lb/hour gas-oil fired boiler was added to the heating plant. The necessary enclosure addition was constructed with a brick veneer exterior that was extended around the existing structure. Also, gas burners were added to the other boilers to make them gas-coal fired combination. The total cost of this work was \$600,000, with funds provided by a state appropriation.

The Life Sciences Building, which will provide the Department of Biology with 40,375 usable square feet for laboratories, offices, research and seminar space, and a greenhouse, was constructed on the south side of the Science-Mathematics Building and connected to it. The new four-level building is of structural steel and reinforced concrete with a masonry and stone exterior similar to that of the adjacent buildings. The total cost of this structure was \$1,440,543, with funds provided by the U.S. Office of Education and by a state appropriation.

Two levels were added above the bookstore and adjacent to the library and Kirby Student Center. The upper level provides study hall and bag lunch space, and the lower level provides food service and lounge facilities. Brick that is compatible with the other buildings was used on the exterior, and rough hewn planking was used on the interior walls of both levels. The total cost of this work was \$327,690, with funds provided by University Services and by a state appropriation.

Morris—Phases II and III of the Science Building were constructed on the south and east sides of the existing building and will be ready for classes in fall 1968. A 300-seat lecture demonstration hall is attached by a covered pedestrian bridge to this four-level structure, which provides 37,034 usable square feet for laboratories, offices, and seminar rooms. The additions are constructed of reinforced concrete with masonry exterior, and the lecture hall has a precast concrete panel with exposed aggregate exterior on a structural steel frame. The total cost of this project was \$1,245,000, with funds provided by the U.S. Office of Education and by a state appropriation.

A new library was constructed adjacent to the west side of Edson Hall. This three-level air-conditioned structure has an exterior of reinforced concrete with combination brick and exposed aggregate concrete panels and interior walls largely of exposed Chicago common brick. It provides 22,277 usable square feet of book stack areas, offices, reading rooms, and workrooms. The total cost of this structure was \$787,454, with funds provided by a state appropriation.

A new and replacement reinforced concrete tunnel was constructed from the end of the existing tunnel near Camden Hall to Pine Hall. The total cost of the work was \$95,682, provided by a state appropriation and by University funds.

Itasca — To provide facilities for year-round research, a two-story reinforced concrete frame and masonry exterior building was constructed to house a lab and library. The total cost of the building was \$125,800, with funds provided by the National Science Foundation and by a state appropriation.

Crookston — Construction of a two-level reinforced concrete frame and masonry exterior addition to the Animal Science Building is under way. The addition will provide office space and a classroom for the operations center of the Northwest School and Experiment Station. As part of this project, the existing building is being renovated. The total cost of this work will be \$192,000, with funds provided by a state appropriation.

A single-story multipurpose steel building was constructed north of the Dining Hall as a temporary teaching facility. The total cost of the building was \$100,000, with funds provided by a state appropriation.

Rehabilitation

Minneapolis — The MacPhail School of Music was remodeled and refurbished throughout for offices and classrooms, and a new heating plant was installed. The one-story annex was rehabilitated and remodeled into three large classrooms. The total cost of this work was \$106,455, provided by University funds.

The installation of two 13.8 KV primary electric feeders has been partially completed. A six-barrel duct bank from the substation will take cable down 15th Avenue to Comstock Hall. The conversion to 13.8 KV of transformer vaults at the Psychology Building, Appleby Hall, Chemistry, and the Science Classroom Building is included in the project. The total cost of the work will be \$388,500, with funds provided by a state appropriation and from investment income.

Rehabilitation of old Sanford Hall is being accomplished in two phases. Phase I improved the kitchen and dining facilities, and Phase II is now enclosing stairways, adding fire exits, and rewiring rooms. The total cost of the work will be \$250,000, with funds provided by University Services.

Duluth — An area in the Education Classroom Building was refinished for a studio, a control room, and storage space for the closed-circuit television. The total cost of this work was \$110,000, with funds provided by a state appropriation.

A stadium improvement project is under way on Griggs Field to provide a press box, concourse, and toilet facilities. Decorative metal panels are being used in the project. The total cost of the work will be \$123,903, with funds provided by University Services, the Gift Fund, and investment income.

The 8,297 usable square feet of biology space vacated on the second floor of the Science Building is being converted to chemistry and physics laboratories. The total cost of this work will be \$230,000, with funds provided by a state appropriation.

Morris — Upgrading of Blakely Hall was accomplished through replacement of wood floors with concrete and tile floors, renovation of the toilets, and installation of an enclosed entrance. Stairways were enclosed and fire doors were installed to increase fire protection. The total cost of the work was \$129,618, with funds provided by a state appropriation.

Fire protection was improved and water capacity increased through installation of a new water main loop and replacement of deteriorated mains. The total cost of the work was \$55,243, with funds provided by a state appropriation and from investment income.

Concrete silos for a central hay and grain storage facility are under construction on the new farm. Housing for the scales and feed processing equipment will also be constructed. The total cost of the work is \$50,000, with funds provided by a state appropriation.

Waseca — Swine research facilities were improved by the remodeling of a barn and the construction of two 30-pen units. The total cost of the work was \$66,300, with funds provided by a state appropriation.

Major Projects

Minneapolis—Two steel buildings for Studio Arts offices and facilities were erected west of the Studio Arts Building during the biennium. The overpass from the Variety Club Heart Hospital to the Elliot wing of University Hospitals was completed and the open area around Mayo Auditorium was enclosed.

Renovation and remodeling projects were carried out in the Standard Oil Building to provide quarters for the Plant Services Ground Crew; in the Experimental Engineering Building to refurbish the Numerical Analysis Center area and to provide offices and laboratories for Civil Engineering; in the Armory to accommodate the Bureau of Loans and Scholarships; in Diehl Hall to provide laboratories for the Department of Laboratory Medicine, offices for Dr. Wangenstein's staff, and quarters for the History of Medicine Department; in Westbrook Hall to provide offices for University Services; in Pillsbury Hall to provide and improve laboratories; in the Shops Storehouse Building to make the area vacated by the General Storehouse suitable for use by other units; and in Coffman Memorial Union to install a new floor in the main ballroom and to repair the limestone soffit over the main entrance. The third floor of Powell Hall is being remodeled for use by the School of Nursing and the Medical School, and the Physiological Hygiene Laboratories in Memorial Stadium are being renovated to improve the safety features.

Extensive remodeling was also undertaken on three floors in Folwell Hall, in Burton Hall, and in the office area at 3338 University Avenue S.E. Three rooms for the Ecology Department were built in the unfinished space in the Museum of Natural History, and a four-bed Coronary Intensive Care Unit was constructed in the Variety Club Heart Hospital. On the West Bank, space in the sub-plaza bookstore was walled off to form the Bursar's Office, a room in Anderson Hall was converted into a vending machine area, and space in the Studio Arts Building was remodeled to provide a photo laboratory.

Other projects included installation of permanent electrical distribution systems and campus lighting on the West Bank; replacement of distilled water systems with de-ionized water systems in Jackson Hall, Millard Hall, and the Elliot wing of University Hospitals; installation of dust collectors and an ash collector at the Heating Plant to meet city air pollution requirements; installation of a higher capacity compressed air system in Owre Hall and of a heating system on the pedestrian level enclosure of the Washington Avenue Bridge; rehabilitation and installation of ventilating systems in parts of Fraser Hall, Chemistry, Botany, Coffman Memorial Union, and the Holman Building; rebuilding of the Jackson-Owre incinerator into a crematory, with removal of the existing one from Jackson Hall; and extension of a water main from the Washington Avenue Bridge to the Economics Research Laboratory for fire protection. Rehabilitation of the fume hook system in Mayo Memorial is currently under way.

Secondary feeders, switchboards, and panels were revised and replaced in Mayo Memorial, Coffman Union, Electrical Engineering, the Mines Experiment Station, Norris Gym, Experimental Engineering, Nicholson Hall, the Tandem Accelerator Building, and the Shops Storehouse. New lighting was installed in portions of the Tandem Accelerator Building, Mayo Memorial, Mechanical Engineering, the Continuation Center, Norris Gym, Chemistry, and Main Engineering, as well as in most remodeled areas.

A 12-foot-wide trestle was erected along the east side of the Science Classroom Building, a paved and lighted parking lot was developed north of Como Avenue, and the area northeast of Comstock Hall was reconstructed and landscaped after 15th Avenue was eliminated. A granite flagstone surface was installed on Northrop plaza and replacement and widening of sidewalks on the mall was begun. Installation of an underground automatic sprinkler system in the mall area is under way, as is development of a landscaped court between Architecture and Mechanical Engineering. Two football fields and a field for intramural football, soccer, and softball were developed, and work was begun on a multiple-use athletic area.

St. Paul—Several paved and lighted parking lots, including one on the State Fairgrounds, were constructed during the biennium, and the first phase

of a maintenance shops and storehouse building was completed. Renovation and remodeling projects were carried out in Haecker Hall to replace floors, ceilings, and lighting in some areas; in Veterinary Anatomy to convert space to a staff office complex; in Temporary, East of Haecker, to provide a general laboratory for brucellosis research; in Agricultural Engineering to meet fire regulations, prepare for installation of an elevator, and replace and rehabilitate some floors, windows, and electrical installations; in Snyder Hall to provide classrooms, offices, and laboratories for the cell biology program and to make the east entrance compatible with the Gortner addition; in North Hall to refurbish and air-condition Computing Center space and to improve Photo Laboratory facilities by converting space to offices, studios, laboratories, and a balcony; and in McNeal Hall to replace floors, partitions, and ceilings in some areas and to install fire exits on the fourth floor.

Other projects included replacement of the pole-type balloon inflation facility on the old University Airport; fireproofing of furnace rooms and installation of hook exhausts and casement windows at the Home Management Houses to meet fire regulations; installation of a ventilation system in the main corridor of Peters Hall; and rehabilitation of wiring and installation of new lighting in Agronomy and McNeal Hall. Electrical repairs and improvements were made in Veterinary Anatomy, Peters Hall, Snyder Hall, the Heating Plant and Shops Building, the Flight Facilities Administration Building, and Temporary, East of Haecker. An additional electric feeder was installed between the Library and Soils, and installation of an overhead primary electric line between the NSP substation and the northeast underground primary electric feeders is under way. The heating tunnel was extended approximately 250 feet from the Crops Research Building to facilitate future construction in the area.

Duluth — University Circle Drive was paved, and exposed aggregate walks, curbing, and underground storm sewers were installed. A residence hall parking lot was constructed west of the halls and the area was landscaped. The swimming pool windows were replaced with plexi-glass to minimize breakage, and the deteriorated windows in the auditorium on the old campus were bricked over. Improvements in the provost's residence included rehabilitation of the electrical system, repairing of the roof, and remodeling of the attic. The sunshades on the Social Sciences Building were rehabilitated and replaced.

Morris — An intramural athletics area was partially developed with completion of a doubles tennis court and a playing field. Pine Hall was upgraded through replacement of water mains, lighting, and installation of concrete and tile floors. The basement and the second and third floors of Behmler Hall were remodeled and facilities were upgraded throughout the building. The roofs on Behmler and Pine Halls were also replaced. Inadequate plumbing in the Humanities Building was replaced and the toilet rooms were relocated. The street lighting was rehabilitated, and the mall area in front of Edson Hall was re-landscaped and new sidewalks were installed. The new farm site was cleared, surfaced, and provided with drainage facilities. Development of utilities to serve the new farm is under way.

Crookston — Electrical service was improved in McCall Hall, the Dining Hall, Selvig Hall, and the Temporary Building. Stairways and entrances of Physical Education and McCall Hall were modified and enclosed to conform to the fire code. Bede Hall was razed to make room for new construction. A new dairy pole barn was constructed to replace the one destroyed by fire, and two 20' x 60' concrete silos that provide automatic feeding for sheep were completed. As part of the project, a liquid manure system was installed for cattle. The deteriorated water main from the campus to the city limits was replaced with cement asbestos piping of a larger capacity, and the tunnel condition was improved with installation of a new drainage system.

Rosemount — At the Research Center, roads around the office building, the shops, and the horse and poultry areas were resurfaced, as were some of the drives. A practice pistol range and shelter were built for instruction of University and other law enforcement officers. At the Experiment Station,

watering facilities for Animal Husbandry's boar lots were installed, a pole structure providing approximately 35,000 square feet of space for sheep was completed, and a pole building, including lots and fences, was installed on the north Beef Farm for research purposes.

Itasca — Two cabins of the same design as the present cabins were constructed for faculty, and a wooden cabin to accommodate 16 students was constructed to alleviate overcrowding. Construction of public toilet facilities in the classroom area is under way. Outmoded electrical distribution and wiring are being replaced, with funds provided by a state appropriation. Replacement of deteriorated water mains and installation of water softeners is also under way.

Austin — An addition to the lab is being constructed to house microbiology research facilities.

Waseca — New campus lighting was installed to improve safety, and a new superintendent's residence was constructed on the North Farm.

Lamberton — A 30' x 60' steel building providing lab space and storage space was constructed.

Cloquet — Installation of a complete modern sewage disposal system with a mechanical digester to provide needed capacity is under way, and a winterized student cabin is being constructed as part of a replacement program.

Grand Rapids — Overhead electric lines were removed and replaced with an underground system, and extensive remodeling was undertaken to improve and modernize the Dairy Barn.

Excelsior — A summer cottage to house faculty was constructed and 1¼ miles of chain link fencing was installed to protect the orchards.

POLICE DEPARTMENT

C. B. HANSCOM, *Director*

Offense Reports — During the 1966-1968 biennium, 8,621 offenses were reported to the Department. This represents an increase of 3.75 percent over the number reported in the last biennium. Of the reported offenses, 61.5 percent of the cases were successfully closed. In total cases involving theft, the value of property stolen was \$166,731.88, 23 percent less than in the last biennium, and the value of property recovered was \$97,464.72, 54 percent more than in the last biennium.

Polygraph Examinations — The Department of Police continued its program of conducting polygraph examinations for other law enforcement agencies, but because of the continued increase in workload the number of examinations was again limited. A total of 210 subjects were examined for 48 agencies during the biennium.

Security — The Department continued to process personnel security questionnaires for staff members involved in classified research projects and to periodically inspect departments engaged in classified research work to insure compliance with the regulations set forth in the *Industrial Security Manual*.

Services — In addition to normal police functions, the Department continued, among other things, to transport to the Bursar's Office all monies received by University departments other than the Business Office; to operate the University Lost and Found Department; to supervise and control use of all University building keys; to provide fingerprinting and notarial services to the public; to accept speaking engagements at a variety of organizations; to maintain records of, and periodically change, safe combinations for all University departments; and to transport sick and injured students and staff for medical aid. The Department answered 1,303 personal emergency calls during the biennium, using the Department's ambulance on 183 of the calls.

Parking—The Department of Police is responsible for operation and maintenance of University parking facilities. As of June 30, 1968, there were 13,945 parking spaces, of which 8,723 are transient spaces and 4,802 are contract spaces. This is an increase of 5,434 spaces over the number available in the last biennium. Parking was provided for 7,178,257 cars during the biennium, an increase of 1,403,745 over the figure for the last biennium. Students were again hired to operate the parking facilities. During the biennium 363 students were employed, for a total student payroll of \$409,023.75.

UNIVERSITY SERVICES

C. L. CARLSON, *Director*

The Department of University Services is responsible for administrative direction of those departments of the University that provide essential services to students and staff and to other University departments. These service departments, listed in the table of Comparative Earnings, exist and operate to aid the functions of the University either because no private enterprise exists to fill the needs or because the University can meet the service requirements at lower cost. Most of the departments are self-supporting. Charges for services rendered are established at a minimum to cover costs of operation; profits are invested in extension of the University's service facilities. Department operations provide employment for the maximum number of students consistent with sound business practice. A new brochure, *University Services*, was completed during the biennium and is available to anyone desiring more information about these departments.

The Management Seminar Program for University Services department managers and directors was continued during the biennium. Objectives of the Program are to promote understanding of management and administration and of the University and higher education, and to promote inter- and intra-departmental understanding and cooperation.

The University Services central administrative offices were enlarged and remodeled to accommodate staff additions, which included an assistant to the director and a production analyst, and to provide space for the directors of the major divisions of University Services—Housing, Food Services, Printing and Graphic Arts, and Technical Services.

University Housing—Capacity in University residence halls was increased in fall 1966 with the opening of the Sanford Hall nine-story addition for 272 women. This tower is a popular residential unit, with a house lounge on each floor, two large central lounges and a recreation room, and carpeting throughout the student residence area. The phased rehabilitation of the original Sanford Hall progressed with installation of new electrical wiring in student rooms and corridors and enclosure of stair wells for added fire protection. The next remodeling phase, scheduled to begin in spring 1969, will consist of renovation of plumbing, heating, floors, and woodwork in one section of the building.

Construction was begun on the 712-student West Bank residence tower, scheduled for completion in summer 1969. This comfortable, air-conditioned, carpeted residence with facilities relating to the total academic program of the University is the result of careful planning by student leaders and University staff. The philosophy of total residential building space contributing to the academic program was extended to existing buildings as well as to those under construction. Special attention was given to conversion of available space to study carrels, typing rooms, and group study areas, and to upgrading of student rooms for study purposes. Plans were formulated to designate one house in each of two men's halls for Institute of Technology freshmen for the 1968-1969 academic year. Tutorial help for these students will be provided in the house by the college during evening study hours.

In fall 1967, at the request of the Board of Residence Halls, a committee was organized to study the feasibility of making additional residence halls co-educational. The committee included representatives of the Dean of Students Office, the Board of Residence Halls, Plant Services, and University Services. After a year and a half of study of the sociological, physical, and financial

implications relative to each residence hall, the committee recommended that a portion of Centennial Hall be made available to women students in fall 1968. The recommendation was approved by University administration, and, as a result, Minneapolis will have two coeducational halls, two halls for women, and two halls for men. St. Paul has one coeducational hall and common dining for the two men's halls and one women's hall.

Effective at the beginning of the 1967-1968 academic year, residence hall directors were made primarily responsible to the director of Housing for maintenance and operation of physical facilities, and head counselors were made primarily responsible to the director of the Student Housing Bureau for maintenance and operation of the student personnel program, with each being equally accountable for maximizing the educational potential of the residence hall. In response to rising costs and labor scarcities, the short-interval scheduling technique previously instituted in two residence halls as a method of labor cost control was extended to two additional halls with the guidance of a labor engineering consultant.

Responsible student leaders contributed significantly to planning for residence halls operations during the biennium. They were active in making Centennial Hall coeducational, revising hours and visitation regulations in specified halls, extending private room telephones to additional halls, financing programs in hall operations and construction, and adjusting the room and board rate structure to recognize square footage as the basis for differential charges.

The University Village quonset and barrack temporary housing units for married student families were completely phased out by September, 1967. Demand for married student apartments continued to exceed capacities at Commonwealth Terrace and Thatcher Hall, with 543 families on the waiting list at the close of the biennium. Approximately 65 percent of the apartments at Commonwealth Terrace are occupied by graduate students. The 38 apartments in Thatcher Hall are designated for graduate students only. Construction of additional apartments is dependent on availability of satisfactory financing.

The Staff Housing Bureau has been assisted since 1967-1968 by a representative of the Faculty Women's Club. The program was initiated to familiarize new or present University staff members with the community. In addition to a central file of available homes and apartments, the program includes a volunteer staff of women representing the various University areas. As the result of an analysis of waiting lists for Pillsbury Court since the completion of these faculty townhouses in 1965, new priorities were approved for allotment of the units in the next year. University Grove limits were increased in November, 1967, to a maximum of \$42,500 total building costs for a finished house of two-bedroom minimum or equivalent size. Campus rentals continued to offer students and staff temporary low-cost housing close to the campus.

Food Services — Renovation of Coffman Union Food Service party facilities was begun, and the new Buffeteria dining room was opened in January, 1968. This attractive room, with a view of the campus, offers a relaxed atmosphere and a choice of fixed-price luncheons served from the buffet.

In May, 1967, questionnaires were mailed to representatives of organizations that use the banquet service to obtain comparisons with responses to a similar survey two years before. Suggestions for improvements were given consideration. Annual Food Service Seminars for managers of University food service operations were held each December. Topics discussed by speakers and participants included acceptable new foods as a partial solution to rising food costs, convenience foods as a partial solution to rising labor costs and labor shortages, personnel evaluations, and labor scheduling and cost control.

Increasing labor and food costs necessitated constant efforts toward improved employee efficiency and productivity and a reduction in staff through use of convenience foods and new and better equipment. With the aid of a labor engineering consultant, Coffman Food Service installed a system for labor cost reduction through planning, scheduling, and control. Employment of students has been mutually beneficial, affording the food services a flexible labor force and affording students significant financial aid.

The Vending Services offices were relocated at 11 Oak Street, with the expectation that the growing operation will eventually need a specially

planned building to accommodate office, storage, repair, and garage space in one location. In fall 1966, a major vending service installation was completed in the bag lunch facility of the Science Classroom Building to replace the Walter Library Service, which was located in an inadequate lunch area. Service was added in Anderson Hall in 1967-1968 and preparations were completed for servicing of the Hospitals vending areas beginning in July, 1968. The Elegen Hall vending facility is being expanded to include counter service within the next year. Planning for additional food service facilities on the West Bank was in the preliminary stage at the close of the biennium.

Auxiliary Enterprises Serving University Departments—The Audio-Visual Education Service added telelecture equipment to the rental pool, providing access to, and two-way communication with, guest lecturers who are unable to be present. Another equipment addition was a "Technifax Photo-Modifier" that enlarges up to 200 percent or reduces to 50 percent materials for use in overhead black and white projection. The Materials and Equipment Division continued to expand services for the improvement of presentation and communication of ideas. The Laboratory Seminar offered in-service training and workshops covering educational media and techniques involving telelecture equipment, telecopiers, microfilm systems, 8 mm. film developments, and video tape recorders. An "Audio-Visual Education Service Instructional Materials Catalog" was prepared for distribution on request.

The Engineering Division installed a sound system in Scott Hall auditorium to provide realistic sound effects for theater productions.

A Microfilm Ad Hoc Committee was appointed to develop recommendations for meeting the increasing demand for microfilm service and for providing safe and effective record storage and retrieval systems. The Committee recommended that the microfilm unit operate as a central service to meet the needs of many departments without duplication of equipment and personnel investments. The recommendation was accepted, and the microfilm service is being expanded in a renovated area of the Shops Building.

New films completed by the Production Department included "Minnesota, Then and Now," "Gopher Action," and "What Kind of Tomorrow?"

Remodeling of the Photographic Laboratory in North Hall was completed in January, 1967, providing increased space for expansion of services and improvement of methods and equipment. In response to a survey of photographic needs that indicated appreciable demand for color photography, the Laboratory began to work toward establishing capability for complete color production. A service desk in the Identification Photo location in Johnston Hall served as headquarters for photographic orders and supply sales on the Minneapolis campus. A brochure on the University's photographic services was developed and is available on request.

The Printing Department continued to relate new technical processes to the printing needs of the University. During the biennium, computers were used to set type for the Class Schedule, with the potential for preparing room scheduling reports from the same basic data on the magnetic tapes. The procedure saves typesetting and proofreading expense and time, provides ready access to the data, and produces more easily readable results. Printing space needs are extremely critical in view of service requirements of the University. A well-designed plant and proper temperature controls would contribute greatly to production capacity. However, renovation of the present area would be extensive and costly and still would not provide the ideal conditions for improving methods and equipment. The convenience derived from a University printing department and the impracticality of obtaining bids for the quantity of small orders processed warranted the planning of a new printing plant.

An Art Department was established in 1966 to provide professional graphic design service to University departments. There is need for an editor to provide a central editing consultative service. In July, 1967, Xerox operations were transferred to the Central Duplicating Service. New equipment in the University Bindery reduced annual work, production time, and costs during the biennium.

In December, 1966, an Addressograph and Mailing Service was established in the Shops Building to handle central bulk mailing of materials produced by the University Printing Plant and the Central Duplicating Service. Aca-

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demic information bulletin mailing is also handled in the new operation. Administrative responsibility for the Calculating Machine and Typewriter Rental Departments was assigned to University Services effective July, 1967. Results of a recent survey indicate support for reestablishment of the office equipment repair service when a suitable location becomes available.

Increasing service demands have necessitated continuing expansion and modernization of the University Laundry. Many of the features of a long-range plan developed to insure fast, efficient service are being implemented. A new conditioner-dryer, a sheet cross-folder, and two hydraulic extractors were installed during the biennium. The press department is being relocated in the basement. A training program has been planned to increase the capabilities and efficiency of the personnel.

COMPARATIVE EARNINGS, UNIVERSITY SERVICES DEPARTMENTS

	1966-67	1967-68
Centennial Hall	\$ 686,620.43	\$ 728,383.21
Pioneer Hall	578,677.97	657,659.60
Territorial Hall	465,864.27	561,779.44
Frontier Hall	535,187.22	547,000.39
Comstock Hall	603,629.24	616,281.60
Sanford Hall	463,355.16	511,312.32
Bailey Hall	129,011.53	140,083.52
St. Paul Campus Dormitories	86,442.16	86,440.80
Como Avenue Housing Project	13,327.14	2,012.86
Commonwealth Terrace	337,161.13	360,058.16
Thatcher Hall	34,183.82	36,397.26
Pillsbury Court	74,198.97	73,804.13
University Grove Rentals	9,572.07	9,189.29
Center for Continuation Study Hall	16,325.74	15,652.02
Coffman Union Food Service	761,049.39	763,152.57
Shevlin Cafeteria	102,573.35	95,749.97
St. Paul Dining Center	376,472.29	387,994.54
St. Paul Student Center Snack Bar	124,740.63	126,148.67
Milk and Cream	328,443.00	333,233.43
Food Stores	1,262,045.00	1,302,599.85
Stadium Stands	136,319.43	147,139.56
Vending Service	624,591.12	677,221.27
Audio-Visual Education Service	379,747.05	447,890.89
Photographic Laboratory	185,331.08	230,585.10
Printing Department	1,001,065.02	1,061,882.23
Bindery	121,760.63	130,621.27
Central Duplicating Service	263,473.21	385,362.34
Duplicating Services and Bulletins (St. Paul Campus)	129,229.14	173,214.93
Addressing and Mailing Services	15,133.99	41,713.45
Laundry	397,753.77	518,589.36
Calculating Machine Rentals		31,742.14
Typewriter Rentals		20,654.41
Post Office and Campus Mail	1,083.29	999.96
Transportation	92,863.43	97,456.44
Lockers	5,165.72	6,165.12
Como Clinic Building	600.00	870.00
Barber and Beauty Shops	6,947.96	6,599.43
Men's Residence Halls Recreation Dens	3,559.94	3,969.74
Men's Residence Halls Laundry Dens	4,311.32	4,987.35
Comstock Hall Candy Counter	3,054.35	3,015.99
Sanford Hall Candy Counter	2,383.98	2,249.54
St. Paul Campus Residence Halls Candy Counters	1,915.70	1,835.44
Inter-Campus Bus	44,469.69	35,612.49
Scientific Apparatus Services	90,797.92	97,186.31
Glassblowing Shop	33,472.57	51,149.11
Truck Service	78,133.09	71,506.27
Totals	\$10,612,043.91	\$11,605,153.77

Other Services — The position of director of Technical Services, with responsibility to the director of University Services, was established to coordinate those departments that provide engineering services to University departments. Scientific Apparatus Services and Glass Technology Services face immediate expansion needs; the managers of these departments had to be relieved of extensive planning responsibility to devote time to supervision of the existing operations. The director of Technical Services maintains close contact with academic and administrative offices to survey changing needs and to improve production and service. An Ad Hoc Committee on Scientific Apparatus Services recommended an enlarged shop and smaller satellite facilities in outlying areas; the Machine Shop Facilities Committee and the Medical Center concurred in the recommendations. Establishment of an electronics repair service and expansion of technical supplies procurement services were delayed because of inadequate space. Glass Technology Services prepared for relocation in the new Chemistry-Laboratory-Classroom Addition and continued planning for further expansion in satellite locations.

The position of assistant manager of Transportation Services was established to handle the responsibilities involved in scheduling and supervising intercampus buses, scheduling the relief driver service, and evaluating procedures in departments of Transportation Services. Based on recommendations of a task force studying inter- and intracampus bus services, transportation at no charge to students and staff was initiated between campuses beginning in 1966-1967. Fares are charged passengers boarding or exiting at stops between campuses. Commuter parking lots providing space for 300 cars were established near the Twenty-eighth Avenue and Como bus stop and at the Fairgrounds. A bus connection between the Fairgrounds and the St. Paul campus has been provided.

The Truck Service and Transportation fleets were increased and were used more extensively during the biennium to meet growing University needs. A dispatch office and a storage area for rental pool vehicles were established in Coffman Union garage.

Services were also improved in several other areas. To handle the heavier volume of materials processed in the service departments, the activity of Campus Mail was expanded with the addition of equipment and personnel for package pick-up and delivery. A postage tape meter installed in the Post Office contract station simplified operations and eliminated the need for a large variety of stamps. At the request of academic administrators, lockers were removed from several buildings to discourage students from loitering in the hallways and disturbing classes in session. The Barber Shop in Coffman Union was air-conditioned to create a more comfortable environment for University patrons.

Divisions of Educational Relationships and Development

OFFICE OF THE VICE PRESIDENT FOR EDUCATIONAL RELATIONSHIPS AND DEVELOPMENT

STANLEY J. WENBERG, *Vice President*

On April 19, 1968, the Board of Regents approved a transfer of responsibility for student activities from this Office to the newly created Office of the Vice President for Student Affairs. Responsibility for coordination and development of the University's campuses outside the Twin Cities area was added to the functions of the Office of the Vice President for Educational Relationships and Development. The latter assignment was made to strengthen communication and administrative response to the needs of the out-state campuses, now referred to as the coordinate campuses. President Moos described it as "in no sense a move to lessen the autonomy of the campuses at Duluth and Morris but rather to facilitate the development of these collegiate units by assuring them strong, direct, and continuing liaison with the University's central administration."

In addition to the new responsibilities, the Office of the Vice President for Educational Relationships and Development continued to have general responsibility for the Department of Alumni Relations, the Department of Intercollegiate Athletics (including intramural athletics), the Department of University Relations, the University of Minnesota Coordinating Council, the University of Minnesota Foundation, and the Office of Federal Programs, and for the function of Secretary, Senate Committee on Institutional Relationships. Also continued were the functions of maintaining contact and strengthening the University's relationship with state and federal governments and agencies, with sources of private resources for University programs, and with other educational institutions and organizations.

Dr. Stanley B. Kegler, formerly associate dean of the College of Education, was appointed assistant vice president, with major responsibilities related to programs of the coordinate campuses, coordination of federal programs, liaison with federal agencies, and expansion of relationships with the state and junior college central offices and collegiate units. His appointment will take effect on July 1, 1968.

OFFICE OF ADMISSIONS AND RECORDS

ROBERT E. SUMMERS, *Dean*

The 1966-1968 biennium was characterized by rapid change and some uncertainty at the University, and these influences were reflected in the work of the Office of Admissions and Records. The unsettling world situation, with its impact on student life, student plans, and education in general, caused sudden and sharp departures from normal trends and long-range forecasts. The outlook for student attendance changed frequently and some predictions were not realized, although the general upward trend of all enrollments continued. The shift in student interests and concerns influenced responsibilities of the Office, as was illustrated by requests from nearly 20,000 male students for assistance with educational deferments under the Selective Service law.

Preparation for more extensive mechanization of the work of the Office was greatly accelerated as plans were developed for use of the 360-50 computer ordered during this biennium and scheduled to be activated during the next biennium. The Office took responsibility for planning effective application of this equipment to "educational accounting" and student personnel services, and several staff members worked to adapt methods of work and to develop procedures suitable to the new equipment. The full effects of the revolutionized procedures in student data-keeping that have been introduced will be evident in five or six years. The Recorder's Office and the Admissions Office

bore the brunt of the developments and changes while continuing their normal functions.

Perhaps no office at the University felt the impact of change and of University growth more severely than did the Office of Space Allocation and Scheduling. In addition to the problems created by scheduling of classrooms to nearly 100 percent utilization, the Office took on new and expanded responsibilities related to institutional planning and formulation of needs for physical instructional facilities. The analytical resources available in this unit and the data on building space utilization were extensively employed as the University struggled with the problems of crowding and expansion.

Although there were few substantive changes in the admission requirements of major colleges within the University, application of the controlled growth policy continued. New programs such as Higher Education for Lower Income People and New Careers, directed toward the disadvantaged, and other programs providing scholarship aid in one form or another had a substantial impact on the quantity and complexity of the Recorder's duties. The increased number of classes offered on a P-N (pass or no grade) basis also added to the workload because of detailed limitations and special administrative arrangements. Efforts at improved communication between high schools, the University, and other Minnesota colleges and universities were continued. The Admissions Office developed and distributed materials on University programs and requirements for students transferring to the University as well as information prepared for high school counselors.

The chief operational problems encountered by the Office resulted from the critical shortage of office and reception areas and from the rapid turnover of staff at the clerical levels and, to some extent, at the middle management level. Both of these problems militated against efficiency, precision of work, and development of new, highly mechanized procedures. Preoccupation with the difficulties of maintaining "business as usual" left inadequate time for experimentation with improvements in complex and specialized operations. Nonetheless, normal progress was made toward procedural adaptation to the larger computer, plans were advanced toward creation of a revised all-University course numbering system, and microfilming of much more of the student data kept by the Recorder was begun. Preliminary work was done with advisory architects on the design of building space that will become available with an addition to Morrill Hall.

After years of close cooperation, the University joined the College Entrance Examination Board during the biennium, thus beginning participation in a second national testing program.

Work relating to veterans and the dependents of veterans continued to grow. The following figures are reported for the Twin Cities campus: veterans certified for education benefits under the Cold War G.I. bill numbered 3,139 in 1966-1967 and 3,618 in 1967-1968. Rehabilitation case reports under Ch. 31 of Title 38, U.S. Code, totaled 77 in 1966-1967 and 82 in 1967-1968. Also, approximately 2,000 certifications were made during the biennium for students whose parents were receiving pension benefits from the federal government, as under Social Security. In accordance with Ch. 35 (War Orphans bill), reports were made to the Veterans Administration for 273 students on the Twin Cities campus in 1966-1967 and for 255 in 1967-1968. For the extra work involved in the certification of student-veterans, the government made nominal restoration of the per capita allotment beginning in fall 1967.

Degrees Conferred — The number of degrees conferred by the University totaled 8,043 in 1966-1967 and 8,524 in 1967-1968, compared to 6,964 in 1964-1965 and 7,493 in 1965-1966 (Table VII-A).

Annual Enrollment — Record-breaking numbers of students were enrolled at the University during the biennium. The number of individuals instructed at all educational levels was 140,663 in 1966-1967 and 146,610 in 1967-1968, compared to 134,525 in 1965-1966 (Table V). Regular day-college enrollments for the academic year and summer session climbed to a total of 58,409 in 1966-1967 and 60,144 in 1967-1968, increases of almost 5 and 8 percent, respectively, over the 55,757 enrolled in 1965-1966 (Table I).

Other enrollments, including extension, correspondence courses, and instruction at the Nolte Center for Continuing Education, all recorded increases

during the biennium. Collegiate level instruction, including day-college enrollment, reached a total of 122,399 students in 1967-1968, a gain of 13,079 over the 1965-1966 figure (Table V). Subcollegiate enrollments declined slightly during the biennium.

Day-College Enrollment — During the regular academic year, exclusive of summer sessions, day-college enrollments rose to 50,334 in 1966-1967 and 52,487 in 1967-1968, compared with 48,199 in 1965-1966 (Table I). Fall term attendance was 43,997 in 1966 and 46,088 in 1967. In 1967-1968, the Duluth campus accounted for 5,295 students, the Morris campus for 1,157, and the Crookston campus for 372 (Table I). Major enrollment gains were made in the Graduate School, the College of Liberal Arts, and at Duluth.

Ratio of Men to Women — The percentage of male students enrolled in day college during the regular academic year was 64.9 in 1966-1967 and 64.1 in 1967-1968. At the close of the previous biennium, the proportion of men in the total student body was 66.6 percent (Table I). The minor shift in student body composition may be a reflection of military manpower demands.

Out-of-State Enrollment — The out-of-state segment of the total student body was 12.2 percent in each year of the biennium. The Graduate School continued to have the largest proportion of students from outside Minnesota—45.1 percent in 1966-1967 and 46.2 percent in 1967-1968. The number of foreign students enrolled totaled 1,417 in 1966-1967 and 1,434 in 1967-1968, comprising about 3 percent of the student body as in the preceding biennium (Tables X-A, X-B).

New Students — There were 15,275 new students in 1966-1967 and 15,224 in 1967-1968, compared to 15,289 in 1965-1966. The 1966-1967 total included 10,160 freshmen and 5,115 students with advanced standing; the 1967-1968 totals were 9,671 and 5,553, respectively. In 1965-1966, there were 10,611 freshmen and 4,678 students with advanced standing (Tables VIII-A, VIII-B, IX-A, IX-B). The decrease in the number of new freshmen was an anticipated result of the growth and expansion of the state and junior college systems.

Source of New Students — During the biennium, nearly 95 percent of entering freshmen were from Minnesota. In 1967-1968, approximately 13 percent of the freshmen of Minnesota origin came from the Minneapolis public high schools, 5 percent from the St. Paul public schools, 67 percent from other Minnesota public schools, and 15 percent from the state's private schools (Table VIII-B). The proportion of undergraduate advanced standing students who entered from Minnesota colleges was 66 percent in 1966-1967 and 69 percent in 1967-1968 (Tables IX-A, IX-B).

Summer Session — Summer Session enrollment totaled 18,582 in 1966 and 18,621 in 1967, compared to 17,178 in summer 1965. Second term enrollments were 70 percent and 71 percent of first term enrollments in the summers of 1966 and 1967, respectively (Table I).

Extension Division — Evening class enrollment climbed to 26,795 in 1966-1967 and 28,522 in 1967-1968, both substantial increases from the 24,603 in 1965-1966. Extension short course enrollment was 4,020 in 1966-1967 and 4,639 in 1967-1968, compared to 6,468 in 1965-1966, during which a short course having state-wide interest was offered. Attendance at the Nolte Center for Continuing Education was 13,931 in 1966-1967 and 16,218 in 1967-1968, both figures higher than the 1965-1966 total of 11,167 (Table IV-B). Correspondence study reached a total enrollment of 11,801 in 1966-1967 and 12,876 in 1967-1968, also increases from the 1965-1966 total of 11,325 (Table IV-A).

Subcollegiate Programs — Subcollegiate programs had enrollments of 25,707 in 1966-1967 and 24,211 in 1967-1968 (Table III). These programs accounted for 27,336 and 25,205 students in 1964-1965 and 1965-1966, respectively. The lower enrollment totals during the biennium resulted from the decrease in agricultural short course offerings and the phaseout and termination of the College of Education Elementary School, the UMD Laboratory School, and the Northwest School of Agriculture at Crookston.

Tables — Enrollment data and trends are indicated in the following tables.

TABLE I. COLLEGIATE ENROLLMENT BY COLLEGES AND SCHOOLS, 1966-1968

College or School	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Agriculture, Forestry, and Home Economics								
Senior	324	168	492	282	174	456		36
Junior	318	182	500	339	233	572	72	
Sophomore	532	388	920	563	417	980	60	
Freshman	394	284	678	373	243	616		62
Adult Special	66	56	122	82	71	153	31	
Total	1,634	1,078	2,712	1,639	1,138	2,777	65	
Business Administration								
Senior	516	20	536	520	17	537	1	
Junior	446	15	461	432	25	457		4
Adult Special	55	5	60	54	6	60		
Total	1,017	40	1,057	1,006	48	1,054		3
Veterinary Medicine								
Senior	48	1	49	53	2	55	6	
Junior	53	2	55	59	1	60	5	
Sophomore	60	1	61	49	6	55		6
Freshman	51	6	57	54	5	59	2	
Adult Special	2	1	3	8	1	9	6	
Total	214	11	225	223	15	238	13	
School of Dentistry								
Senior	96	1	97	93	1	94		3
Junior	91	1	92	95	2	97	5	
Sophomore	95	1	96	108		108	12	
Freshman	108		108	107	1	108		
Adult Special	5		5	5		5		
Total	395	3	398	408	4	412	14	
Dental Hygiene								
Second Year		32	32		42	42	10	
First Year		45	45		50	50	5	
Adult Special								
Total		77	77		92	92	15	
College of Education								
Senior	405	924	1,329	428	1,091	1,519	190	
Junior	325	834	1,159	330	906	1,236	77	
Sophomore	100	146	246	54	92	146		100
Freshman	21	43	64	18	27	45		19
Adult Special	243	350	593	303	324	627	34	
Total	1,094	2,297	3,391	1,133	2,440	3,573	182	
Institute of Technology								
Senior	801	16	817	898	9	907	90	
Junior	804	11	815	866	9	875	60	
Sophomore	867	19	886	759	22	781		105
Freshman	791	19	810	788	24	812	2	
Adult Special	106	6	112	125	8	133	21	
Total	3,369	71	3,440	3,436	72	3,508	68	
Graduate School								
Minneapolis, St. Paul, and Duluth	6,399	1,938	8,337	6,548	2,079	8,627	290	
Mayo	697	24	631	663	17	680	49	
Total	7,006	1,962	8,968	7,211	2,096	9,307	339	
Law School								
Third Year	336	12	348	331	10	341		7
Second Year	199	6	205	236	11	247	42	
First Year	26	3	29					29
Adult Special	1		1					1
Total	562	21	583	567	21	588	5	

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TABLE I. (CONTINUED)

College or School	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Biological Sciences								
Senior	3	3	6	11	5	16	10	
Junior	9	4	13	28	14	42	29	
Adult Special	4	3	7	10	6	16	9	
Total	16	10	26	49	25	74	48	
Medical School								
Senior	143	14	157	144	11	155		2
Junior	143	12	155	151	9	160	5	
Sophomore	145	8	153	160	3	163	10	
Freshman	160	4	164	150	10	160		4
Adult Special	9	4	13	3	2	5		8
Total	600	42	642	608	35	643	1	
Medical Technology								
Senior	4	51	55	5	56	61	6	
Junior	7	57	64	4	67	71	7	
Adult Special		19	19	3	12	15		4
Total	11	127	138	12	135	147	9	
School of Nursing								
Third Year		85	85		87	87	2	
Second Year	1	244	245	1	233	234		11
First Year		46	46					46
Adult Special		5	5		7	7	2	
Total	1	380	381	1	327	328		53
College of Pharmacy								
Senior	33	12	45	59	11	70	25	
Junior	57	9	66	72	16	88	22	
Sophomore	71	16	87	90	22	112	25	
Freshman	43	14	57	25	9	34		23
Adult Special	5	1	6	3		3		3
Total	209	52	261	249	58	307	46	
College of Liberal Arts								
Senior	1,472	909	2,381	1,665	1,111	2,776	395	
Junior	1,504	1,063	2,567	1,770	1,122	2,892	325	
Sophomore	3,123	2,699	5,822	3,331	2,953	6,284	462	
Freshman	2,739	2,678	5,417	2,636	2,576	5,212		205
Adult Special	277	321	598	266	351	617	19	
Total	9,115	7,670	16,785	9,668	8,113	17,781	996	
University College								
Senior	21	15	36	20	13	33		3
Junior	11	10	21	11	12	23	2	
Sophomore								
Adult Special		4	4	2	2	4		
Total	32	29	61	33	27	60		1
General College								
Second Year	1,448	450	1,898	1,373	486	1,859		39
First Year	1,628	719	2,347	1,508	749	2,257		90
Adult Special	217	58	275	216	127	343	68	
Total	3,293	1,227	4,520	3,097	1,362	4,459		61
School of Public Health								
Senior	81	28	109	76	25	101		8
Junior								
Sophomore								
Adult Special	59	15	74	54	14	68		6
Total	140	43	183	130	39	169		14

TABLE I. (CONTINUED)

College or School	1966-1967			1967-1969			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Physical Therapy								
Senior	4	21	25	5	30	35	10	
Junior	7	42	49	9	55	64	15	
Adult Special				1		1	1	
Total	11	63	74	15	85	100	26	
Occupational Therapy								
Senior		24	24	1	21	22		2
Junior	1	26	27	2	22	24		3
Adult Special		2	2					2
Total	1	52	53	3	43	46		7
Duluth								
Senior	597	298	895	642	396	1,038	143	
Junior	634	358	992	684	440	1,124	132	
Sophomore	788	474	1,262	786	495	1,281	19	
Freshman	961	686	1,647	910	702	1,612		35
Adult Special	100	126	226	123	117	240	14	
Total	3,080	1,942	5,022	3,145	2,150	5,295	273	
Morris								
Senior	71	57	128	93	46	139	11	
Junior	134	71	205	134	96	230	25	
Sophomore	190	120	310	179	117	296		14
Freshman	272	166	438	265	176	441	3	
Adult Special	15	23	38	23	28	51	13	
Total	682	437	1,119	694	463	1,157	38	
Crookston								
Second Year	1		1	145	16	161	160	
First Year	193	24	217	162	36	198		19
Adult Special				7	6	13	13	
Total	194	24	218	314	58	372	154	
Net Academic Year	32,676	17,658	50,334	33,641	18,846	52,487	2,153	
Summer Session								
First Term	8,533	6,708	15,241	8,262	6,786	15,048		193
Second Term	6,529	4,196	10,725	6,252	4,476	10,728	3	
Sub-total Summer	15,062	10,904	25,966	14,514	11,262	25,776		190
Less Duplicates	4,943	3,003	7,946	4,668	3,118	7,786		160
Total Summer	10,119	7,901	18,020	9,846	8,144	17,990		30
Plus Mayo	538	24	562	612	19	631	69	
Net Summer Session	10,657	7,925	18,582	10,458	8,163	18,621	39	
Academic Plus Summer	43,333	25,583	68,916	44,099	27,009	71,108	2,192	
Less Duplicates	6,627	3,880	10,507	6,681	4,283	10,964	457	
NET COLLEGIATE								
TOTAL	36,706	21,703	58,409	37,418	22,726	60,144	1,735	

TABLE II-A. COLLEGIATE ENROLLMENT BY QUARTERS, 1966-1967

College or School	First Summer Session 1966			Second Summer Session 1966			Fall 1966			Winter 1967			Spring 1967			Total Individual Registration		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Ag., For., and H.E.	216	327	543	194	160	354	1,476	988	2,464	1,420	918	2,338	1,314	892	2,206	1,717	1,242	2,959
Bus. Administration	423	24	447	332	16	348	957	35	992	837	32	869	779	32	811	1,173	49	1,222
Veterinary Medicine	33	1	34	29	1	30	212	10	222	209	9	218	212	10	222	214	11	225
Dentistry	43		43	29	1	30	389	3	392	392	3	395	389	3	392	396	3	399
Dental Hygiene		6	6		7	7		77	77		72	72		70	70		77	77
Education	770	1,667	2,437	501	958	1,459	920	1,999	2,919	855	1,778	2,633	828	1,807	2,635	1,726	3,428	5,154
Inst. of Technology	736	33	769	611	25	636	3,194	67	3,261	2,914	59	2,973	2,808	59	2,867	3,584	88	3,672
Graduate:																		
Twin Cities, Duluth	2,515	1,229	3,744	1,861	752	2,613	5,771	1,683	7,454	5,423	1,545	6,968	5,274	1,528	6,802	7,389	2,714	10,103
Mayo	538	24	562	538	24	562	540	21	561	553	20	573	559	19	578	652	27	679
Law School	98	4	102	79	2	81	560	21	581	537	17	554	526	15	541	566	23	589
Biological Sciences ..	2	2	4	2	2	4	14	9	23	14	9	23	14	8	22	16	10	26
Medicine	298	31	329	284	29	313	577	39	616	547	35	582	557	30	587	647	50	697
Medical Technology	3	31	34	3	20	23	9	117	126	10	109	119	8	99	107	11	128	139
Nursing		161	161		149	149	1	370	271		353	353		344	344	1	427	428
Pharmacy	31	7	38	22	7	29	206	51	257	191	52	243	191	51	242	214	54	268
Liberal Arts	2,317	2,167	4,484	1,704	1,399	3,103	8,388	6,956	15,344	7,488	6,201	13,689	7,282	6,144	13,426	10,466	8,966	19,432
University College ..	12	12	24	9	6	15	31	27	58	28	23	51	24	22	46	35	32	67
General College	307	130	437	225	78	303	2,772	1,050	3,822	2,444	939	3,383	2,328	924	3,252	3,418	1,277	4,695
Public Health	83	26	109	129	26	155	127	39	166	132	33	165	125	27	152	206	53	259
Physical Therapy	2	10	12		4	4	10	60	70	11	58	69	11	61	72	11	63	74
Occupational Therapy ..		24	24		27	27	1	51	52	1	43	44	1	44	45	1	53	54
Duluth	600	712	1,312	492	484	976	2,806	1,771	4,577	2,628	1,646	4,274	2,503	1,592	4,095	3,373	2,384	5,757
Morris	43	104	147	22	43	65	644	406	1,050	602	388	990	587	383	970	696	520	1,216
Crookston	1		1	1		1	168	20	188	169	22	191	155	22	177	194	24	218
TOTAL	9,071	6,732	15,803	7,067	4,220	11,287	29,773	15,870	45,643	27,405	14,364	41,769	26,475	14,186	40,661	36,706	21,703	58,409

TABLE II-B. COLLEGIATE ENROLLMENT BY QUARTERS, 1967-1968

College or School	First Summer Session 1967			Second Summer Session 1967			Fall 1967			Winter 1968			Spring 1968			Total Individual Registration		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Ag., For., and H.E.	201	335	536	200	182	382	1,461	1,021	2,482	1,429	971	2,400	1,343	954	2,297	1,742	1,288	3,030
Bus. Administration	405	27	432	311	20	331	919	45	964	860	34	894	810	38	848	1,161	60	1,221
Veterinary Medicine....	41	1	42	32	1	33	215	13	228	210	14	224	209	14	223	223	15	238
Dentistry	60	2	62	35	2	37	403	4	407	397	4	401	399	4	403	408	4	412
Dental Hygiene .....	.....	9	9	.....	9	9	.....	92	92	.....	87	87	.....	85	85	.....	92	92
Education	750	1,614	2,364	491	986	1,477	929	2,130	3,059	858	1,954	2,812	846	1,993	2,839	1,697	3,474	5,171
Inst. of Technology	783	23	806	694	16	710	3,187	65	3,252	3,069	61	3,130	2,936	57	2,993	3,660	84	3,744
Graduate:																		
Twin Cities, Duluth	2,313	1,170	3,483	1,684	790	2,474	5,872	1,756	7,628	5,529	1,635	7,164	5,454	1,637	7,091	7,403	2,758	10,161
Mayo	488	18	506	606	18	624	589	14	603	586	16	602	606	15	621	701	21	722
Law School	19	.....	19	14	1	15	565	20	585	546	19	565	536	19	555	567	21	588
Biological Sciences ..	6	13	19	3	7	10	43	22	65	45	19	64	46	21	67	49	31	80
Medicine	290	28	318	278	25	303	579	31	610	561	30	591	560	23	583	656	46	702
Medical Technology	3	36	39	2	18	20	11	128	139	7	106	113	8	107	115	12	137	149
Nursing .....	.....	179	179	.....	136	136	1	318	319	.....	314	314	.....	308	308	1	387	388
Pharmacy	47	12	59	34	7	41	244	57	301	233	53	286	231	54	285	253	59	312
Liberal Arts	2,277	2,239	4,516	1,598	1,519	3,117	8,621	7,114	15,735	8,100	6,720	14,820	8,090	6,680	14,770	10,900	9,466	20,366
University College	11	10	21	9	5	14	27	24	51	25	23	48	25	22	47	35	29	64
General College	285	137	422	218	109	327	2,440	1,120	3,560	2,388	1,061	3,449	2,307	1,038	3,345	3,239	1,423	4,662
Public Health	78	24	102	118	27	145	118	36	154	110	30	140	113	30	143	192	52	244
Physical Therapy	7	33	40	4	28	32	12	81	93	11	82	93	14	83	97	15	85	100
Occupational Therapy ..	1	24	25	1	22	23	2	42	44	3	40	43	3	42	45	3	43	46
Duluth	641	779	1,420	493	511	1,004	2,790	1,969	4,759	2,653	1,814	4,467	2,585	1,793	4,378	3,484	2,554	6,038
Morris	44	91	135	33	55	88	650	426	1,076	634	409	1,043	624	418	1,042	703	539	1,242
Crookston .....	.....	.....	.....	.....	.....	.....	256	55	311	263	48	311	248	49	297	314	58	372
TOTAL	8,750	6,804	15,554	6,858	4,494	11,352	29,934	16,583	46,517	28,517	15,544	44,061	27,993	15,484	43,477	37,418	22,726	60,144

TABLE III. SUBCOLLEGIATE ENROLLMENT, 1966-1968

School or Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Schools								
Northwest School and Station, Crookston								
Senior	78	14	92	37	6	43		49
Junior	44	7	51					51
Total	122	21	143	37	6	43		100
Southern School and Station, Waseca								
Senior	49	22	71	52	20	72	1	
Junior	58	22	80	53	26	79		1
Sophomore	55	28	83	39	20	59		24
Freshman	30	16	46	39	8	47	1	
Unclassed				2		2	2	
Total	192	88	280	185	74	259		21
University High School, Minneapolis								
Nursery School, Minneapolis	44	44	88	53	47	100	12	
Elementary School, Grade VI, Minneapolis	11	12	23		2	2		21
Laboratory School, Duluth	65	82	147					147
Net Total, Schools	643	466	1,109	485	327	812		297
Agricultural Short Courses, St. Paul								
Agricultural Pesticides	512		512	521	4	525	13	
Agricultural Seminar				40		40	40	
American Agricultural Association College Editors	54	13	67					67
Beekeepers				20	8	28	28	
Carpentry Construction				52		52	52	
Cheese Conference				82		82	82	
Christmas Tree Growers	106	16	122	93	14	107		15
Commercial Flower Growers	89	4	93	140	8	148	55	
Commercial Fruit Growers	50	2	52	52	2	54	2	
Community Improvement	7	17	24					24
Concrete Block				7		7	7	
Dairy Herd Improvement	25	3	28	50	12	62	34	
Dairy Management				45	23	68	68	
Dairy Products	226	3	229	384	1	385	156	
Examination of Milk	30	7	37					37
Electrical Control				97		97	97	
Fair Management	107	29	136	93	29	122		14
Farm Income Tax	442	148	590	455	170	625	35	
Fertilizers and Farm Chemicals								
Future Farmers of America	2,203	5	2,208	2,920		2,920	712	
Flock Selection	38	1	39					39
Gaines Symposium				187	7	194	194	
Garden Store	65	12	77					77
Graduate Veterinarians	166		166					166
Grain and Cereals	128	2	130					130
Home Economics Research Conference								
Horticulture Science				344	17	361	361	
Landscape Design	36	20	56	8	39	47		9
Liquefied Petroleum Gas	111		111	124		124	13	
Livestock Judging	42		42	115		115	73	
Lumbermen	55	1	56	64	1	65	9	
Milk Concentration				82		82	82	
Milk Judging	120		120	20		20		100
Minnesota Association								
Conservation Education	100	18	118	83	11	94		24
Minnesota Concrete	57	2	59	73	2	75	16	
Minnesota Livestock	87	3	90	75	4	79		11
Minnesota Nutrition	200	1	201	251		251	50	
Minnesota Recreation	30	8	38					38
Minnesota State Fire School	507		507	523		523	16	
Minnesota Town and Country Arts Show								
Pest Control	2,000	2,000	4,000	2,000	2,000	4,000		
Post-Graduate Veterinary Conference	74		74	105		105	31	
				168	1	169	169	

TABLE III. (Continued)

School or Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Poverty Conference				84	42	126	126	
Power Use Advisors				35		35	35	
Property Tax	1,455	63	1,518	843	126	969		549
Quality Concrete	16		16					16
School Lunch Workshop	11	1,028	1,039	2	466	468		571
Shade Tree Maintenance	338	5	343					343
Silviculture	37		37	42		42	5	
Small Engines	26		26					26
Soils and Fertilizer	1,591	29	1,620	872		872		748
Spark Ignition	41		41					41
Tips for TV Talent					45	45	45	
U.S. Food and Drug	50	2	52					52
Vocational Agriculture	72		72					72
Youth Conference				73	120	193	193	
Total	11,304	3,442	14,746	11,268	3,242	14,510		236
North Central School and Station, Grand Rapids								
Gas Engines	15		15					15
Northwest School of Agriculture, Crookston								
Agricultural Chemicals	43	2	45					45
Alcoholism	23	10	33					33
Beef Feeders	177	4	181					181
Crop Improvement	90		90					90
Crops and Soils	360	24	384	456	34	490	106	
Farm Bureau	2	44	46					46
Flax-Hail Adjustment	90		90					90
Hail Adjustment				84		84	84	
Horticulture	10	58	68					68
Public Affairs		48	48					48
Sugar Beets	38		38					38
Sunflower Symposium	160	4	164					164
Southern School and Station, Waseca								
Acetylene Welding				12		12	12	
Adult Sewing					46	46	46	
Arc Welding	36		36	37		37	1	
Beef Day				392	8	400	400	
Beef Feeders	201	19	220					220
Communications	29	21	50					50
Corn and Soybeans	822	42	864	1,020	56	1,076	212	
Dairy Day				629	72	701	701	
Dairy Seminar	884	74	958					958
Gas Welding				9		9	9	
Property Tax				275	21	296	296	
Swine Feeders	231	3	234	677	21	698	464	
Visitors' Days	1,750	643	2,393	1,442	675	2,117		276
Southwest Experiment Station, Lamberton								
Beef Feeders	87		87	80		80		7
Crops and Soils	600	100	700					700
Dairy Seminar	30		30					30
Farm Credit Tour	45		45					45
Swine Feeders	90		90	125		125	35	
Winter Crops				340		340	340	
West Central School and Station, Morris								
Beef Feeders	282		282	297	3	300	18	
Corn and Soybeans	288	1	289	299	2	301	12	
Crops and Soils	720	100	820	803	87	890	70	
Dairyman's Day	110	1	111	59	1	60		51
4-H Club	241	329	570					570
Homemakers	16	372	372		277	277		95
Horticulture	16	34	50	11	21	32		18
Lamb Feeders	155	7	162	187	13	200	38	
Soybean School				108		108	108	
Swine Feeders	249	3	252	196	3	199		53
Vo-Agricultural Day	35		35	11		11		24
Total, Short Courses	19,213	5,385	24,598	18,817	4,582	23,399		1,199
NET TOTAL, SCHOOLS AND SHORT COURSES	19,856	5,851	25,707	19,302	4,909	24,211		1,496

TABLE IV-A. EXTENSION ENROLLMENT, 1966-1968

Department or Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
General Extension	16,363	10,432	26,795	17,555	10,967	28,522	1,727	
Extension Short Courses								
American Economy	11		11					11
America's Foreign Policy		19	19					19
Anatomy Laboratory				1	5	6	6	
Anatomy and Medical Terminology	84	128	212	59	104	163		49
Architecture	38	1	39	13		13		26
Art and Perception		15	15					15
Art Appreciation		1	1					1
Basic Color and Designs		16	16					16
Basic Sciences for X-Ray Techniques	36	174	210	18	89	107		103
Better Letter Program	85	36	121	35	11	46		75
Better Technical Speech				20		20	20	
Better Technical Writing				47		47	47	
Birds of Minnesota	6	6	12	6	11	17	5	
Care, Management, Showing, and Diseases of Horses	1		1					1
Cerebral Palsy				1	10	11	11	
Chemistry	28		28					28
Civil Engineers	29		29	23		23		6
Clinical Nursing					3	3	3	
Collective Bargaining				35	25	60	60	
Commercial Real Estate	175	3	178					178
Creative Dance	1	9	10					10
Creditor's Remedies				238	4	242	242	
Criminal Justice	60		60	117	3	120	60	
Current Issues				35	1	36	36	
Design and Site Planning				4		4	4	
Digital Systems	2		2					2
Diving				29	15	44	44	
Effective Communication	25	4	29	52	13	62	36	
Efficient Reading	70	18	88	109	1	110	22	
Eighteenth Century Literature		20	20					20
Electrical Engineers	31		31	27		27		4
English for Foreign Students	19	8	27					27
Estate Planning	98	2	100	35	1	36		64
Europe	2		2					2
Fall Institute	269	1	270	301		301	31	
Federal Taxation				22		22	22	
Fencing				2	10	12	12	
Fine Arts	7	1	8	3		3		5
Freedom in Contemporary Society	24		24					24
General Practice	158	2	160	63	1	64		96
Golf	55	49	104	58	46	104		
Home Economics					19	19	19	
How to Study		1	1					1
Insurance		1	1					1
Intercultural Seminar	10	18	28					28
Intercultural Seminar in Home Economics					17	17	17	
International Politics and Foreign Policy		1	1					1
International Relations	1	39	40					40
Labor Law and History	42	2	44	69	15	84	40	
Legal Secretaries		169	169		240	240	71	
Literature of Western World		1	1					1
Logic and Problem Solving	11		11	5	2	7		4
Mathematics	47	7	54					54
Mechanical Engineers	25		25	23		23		2
Mechanics and Materials	39		39					39
Minnesota Civil Trial and Appellate Practice				455	5	460	460	
Minnesota Corporations	105	2	107					107
Minnesota Estate Administration				600		600	600	
Minnesota Municipal Law and Procedure	128	1	129					129
Modern Art	12	1	13					13
Modern Dance					25	25	25	
Modern Novel	1	14	15					15
Modern Theatre		30	30					30
Nuclear Reactor Technology				25		25	25	
Nursing Administration		4	4					4
Nursing Concerns		12	12		9	9		3
Oriental Art		15	15					15

DIVISIONS OF EDUCATIONAL RELATIONSHIPS

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TABLE IV-A. (Continued)

Department or Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Our Changing World		9	9					9
Painting and Drawing		16	16					16
Parenthood		1	1					1
Physics	29		29					29
Portuguese	9	6	15					15
Primary Ideas in the 20th Century	1	12	13					13
Readings in Education	1		1					1
Real Estate Law	153	2	155					155
Reorientation to Learning		28	28					28
Rochester TV Course	28		28					28
Rules of Civil Trial and Appellate Procedure				460	2	462	462	
Scuba	13	2	15	18	10	28	13	
Second Annual Institute on Municipal Law and Procedure				85	1	86	86	
Spanish		13	13					13
Steward Training	31	2	33	61	1	62	29	
Structural Design				28	1	29	29	
Swimming	232	302	534	197	264	461		173
Taxes	309	10	319					319
Tax Institute				132	2	134	134	
Uniform Commercial Code	123	1	124	16		16		108
Union Administration	23		23	47	3	50	27	
Union Leader and World of Ideas				6	1	7	7	
Union Leadership	12	23	35	36		36	1	
U.S. Foreign Policy	8	15	23					23
Water Safety	1	1	2					2
Weaving		11	11					11
Western Art		27	27					27
X-Ray				4	49	53	53	
Total, Short Courses	2,708	1,312	4,020	3,620	1,019	4,639	519	
Correspondence Study	6,665	5,136	11,801	7,380	5,496	12,876	1,075	
GRAND TOTAL, EXTENSION	25,736	16,880	42,616	28,555	17,482	46,037	3,421	

TABLE IV-B. NOLTE CENTER FOR CONTINUING EDUCATION ENROLLMENT, 1966-1968

Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Accident Prevention	33	16	49	38	7	45		4
Accounting for Non-Accountants	37	5	42	47	1	48	6	
Administrative Supervision				19	4	23	23	
Advanced Clinical Periodontics				10		10	10	
Advanced Seminar in Communication and Persuasion				24		24	24	
Advertising Institute	19		19	17		17		2
Aerospace Workshop	4	8	12	13	10	23	11	
AFL-CIO Regional Training Conference				12		12	12	
Agency Executives				13	5	18	18	
American Crystallographic Meeting				387	107	494	494	
Anesthesiology	29		29	23	3	26		3
Archival Administration	18	20	38					38
Art of Persuasion				35	2	37	37	
Assessment and Appraisal	57		57	47		47		10
Audio-Visual	201	29	230	222	19	241	11	
Automation	8	22	30					30
Baconian Dialogue	30		30	33		33	3	
Bituminous Conference	256		256	221		221		35
Bituminous Patching				32		32	32	
British Urban Affairs				143	58	201	201	
Building Officials	131		131	157		157	26	
Capital Expenditure Analysis				21		21	21	
Care of Aged	62	49	111					111

BIENNIAL REPORT

TABLE IV-B. (Continued)

Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Care of Aged in Geriatric Homes				59	50	109	109	
Choral Arts	11	11	22	7	13	20		2
City and Village Engineers	118		118	116		116		2
City Managers	35		35	27		27		8
Clarinet	31	59	90					90
Clergy Economics Seminar	27		27	37		37	10	
Clerks of District Courts	31	7	38	39	12	51	13	
Cliet Motivation				73	83	156	156	
Clinical Dietetics				1	87	88	88	
Clinical Radiography	24		24					24
Clothing Clinic		137	137		103	103		34
Communication and Persuasion (Basic)	53	2	55	36	1	37		18
Communication and Persuasion for Sales Managers				104	8	112	112	
Complete Denture Prosthesis				8		8	8	
Computation and Presentation of Data				9		9	9	
Computer-Aided Network Design	60		60					60
Computer-Oriented Analysis of Networks				12		12	12	
Concrete Conference	237		237	150		150		87
Consulting Dietitians		49	49		59	59	10	
Contemporary Music				15	7	22	22	
Control Systems Analysis	9		9					9
Corrosion Control				136	3	139	139	
County Highway Engineers	91		91	83		83		8
Creative Writing	4	30	34	2	33	35	1	
Crown and Bridge	17		17	10		10		7
Data Processing				7	7	14	14	
Death, Grief, and Bereavement	89	197	286					286
Dental Assistants		120	120		60	60		60
Dental Hygiene					86	86	86	
Dental Hygiene Refresher					8	8	8	
Dental Hygienists		62	62					62
Dental Roentgenology for Hygienists					24	24	24	
Dentistry	87		87					87
Dentistry-Pharmacy Seminar	47		47					47
Dermatology	20	1	21	32		32	11	
Design and Analysis	30		30	18		18		12
Design of Optimal Systems				12		12	12	
Digitally Driven Displays				29		29	29	
Discussion Leadership	19	29	48	18	58	76	28	
Distinguished Visitors				39		39	39	
Finance Seminar								12
Dynamic Programming	11	1	12					12
Ear, Nose, and Throat	41	3	44					44
Economics in Engineering Decision Making	24		24	43		43	19	
Education of Handicapped Children				53	18	71	71	
Effective Office Supervision	10	1	11					11
Effective Supervisory Practices	115		115	30		30		85
Effective Use of Small Group Meetings				10	4	14	14	
Elementary Education	1	42	43					43
Elements of Human Behavior for Secretaries					96	96	96	
Employee Recreation				33	5	38	38	
Employment Interviewing				42	12	54	54	
Endodontics	22		22					22
Engineering Management	72	1	73	76		76	3	
Engineering Societies	181		181					181
Epidemiology	34	9	43					43
Exploration Drilling				123		123	123	
Faith in Life	106	177	283					283
Family Counseling				120	201	321	321	
Family Planning		19	19					19
Federal Investigators				23		23	23	
Federal-State Aids	103	2	105					105
Funeral Directors	21	3	24					24
Funeral Service	41	1	42	42	1	43	1	
Funeral Service Management				52	4	56	56	
Gastro-Intestinal Radiology				450	14	464	464	

DIVISIONS OF EDUCATIONAL RELATIONSHIPS

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TABLE IV-B. (Continued)

Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
General Periodontics				20		20	20	
Geometric Dimensioning and Tolerance				9		9	9	
Government Contracts	64		64	105		105	41	
Grievance Procedure				15		15	15	
Gynecology				29		29	29	
Head Nursing					148	148	148	
Health 120: Family Life and Sex Education				19	58	77	77	
Heat Capacity of Proteins	43		43					43
Heat Transfer				20		20	20	
Hematopoiesis	36	77	113					113
High Speed Instrumentation	11		11	6		6		5
Home Health Aide								
Supervisors		27	27					27
Hospital Administrators	198	53	251					251
Hospital Dentistry	8		8	7	1	8		
Hospital Pedodontic Practice				7		7	7	
Human Engineering for Better Engineering				28	1	29	29	
Human Relations Seminar for Policemen				57		57	57	
Improving Counselor Supervision				30	4	34	34	
Industrial Utilization of the Electron	8	1	9					9
Information Systems				89	3	92	92	
Infrared Spectra	116	12	128	98	7	105		23
Inhalation Therapy	8	56	64	22	219	241	177	
Institute for College Instruction for Teachers of Mentally Retarded Children				10	4	14	14	
Institutional Housekeeping	11	43	54	16	54	70	16	
Integrated Circuits				51		51	51	
Internal Medicine	59	2	61	80	1	81	20	
Intravenous Pre-Medication				41		41	41	
Iron Range Labor Assembly				20	2	22	22	
Junior College Faculty				174	40	214	214	
Junior High Principals				75	1	76	76	
Juvenile Court Judges	51	3	54	57	1	58	4	
Juvenile Officers	105	5	110	162	9	171	61	
Labor Assembly	36	9	45					45
Laboratory Medicine				125	37	162	162	
Labor Communication				11		11	11	
Labor Law and History	26		26	21		21		5
Labor Negotiations	43		43	59	1	60	17	
Labor Relations	148	7	155					155
Land Surveyors	61		61	64		64	3	
Large System Flow Problems	10		10					10
Learning Disabilities				1	27	28	28	
Legislative Program, 1967	47	1	48					48
Licensed Practical Nurses				1	149	150	150	
Local Congregation and Public Higher Education	29	1	30					30
Management Development—Duluth				24		24	24	
Management Development for Department Heads—Mankato				20		20	20	
Masonry Wall Bearing				84		84	84	
Mass Appraisal	48		48	43	3	46		2
Matrix Analysis				14		14	14	
Matrix Methods in Geometric Optics	8		8					8
Mayors and Councilmen	24	1	25					25
Maxillofacial Prosthetics				8		8	8	
Medical Aspects of Sports				97	1	98	98	
Medical Interviewing	14		14					14
Mental Retardation	150	78	228					228
Methods Engineering	15		15	24		24	9	
Methods Improvement				22		22	22	
Mid-Continent Park Recreation				53	2	55	55	
Mining Symposium	830	1	831	802		802		29
Minnesota-Dakotas Assembly				40	20	60	60	
Minnesota Federation of Engineering Societies				124		124	124	
Minnesota Government and Politics	22	24	46	51	47	98	52	

TABLE IV-B. (Continued)

Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Minnesota Institute for Hospital Administration				65	34	99	99	
MMPI Workshop				92	15	107	107	
Modern Corrosion Concepts	76		76					76
Modern Drugs in Dental Practice				8		8	8	
Modern Endodontic Therapy				18		18	18	
Modern Management Seminar				48	3	51	51	
Modern Materials Analysis	8		8					8
Modular Curriculum	321	51	372	191	24	215		157
Motor Fleet Supervision	57	2	59	33		33		26
Municipal Clerks and Finance Officers	78	22	100	78	29	107	7	
Municipal Judges Traffic Court	41	5	46					46
Music Education				6	41	47	47	
Music Therapy	8	34	42					42
Neighborhood Youth Corps	67	14	81					81
Network Synthesis	23		23	22		22		1
Neurological Therapy	66	4	70					70
Neurology				28		28	28	
New Dimensions in Supervision				55	6	61	61	
New Mayors and Councilmen				122	2	124	124	
Nuclear Weapons	27	10	37					37
Nurse Anesthetists	19	62	81	30	112	142	61	
Nurses on Diabetes					54	54	54	
Nursing Administration					70	70	70	
Nursing Homes	131	61	192					192
Obstetrics	45	3	48					48
Occlusion				22		22	22	
Occupational Nurses					41	41	41	
Opera				5	10	15	15	
Ophthalmology	71	2	73	43		43		30
Optimal Inventory and Production Systems				7		7	7	
Oral Medicine	60		60	49		49		11
Oral Surgery	8		8	10		10	2	
Orthodontics	45	1	46					46
Orthopedics				43		43	43	
Orthopedic Surgery	47		47					47
Otolaryngology				37	2	39	39	
Optimizing the Human Resource				16	2	18	18	
Parent and Family Life	102	409	511	88	365	453		58
Pediatrics	25	3	28	31	5	36	8	
Pedodontics	6		6					6
Pera-Social Security Coordinator				252	40	292	292	
Perception in the Arts	17	15	32					32
Periodontics	75		75					75
Personnel Workers	36	6	42					42
Pharmacy	77	14	91					91
Pharmacy TV				496	176	672	672	
Phi Delta Kappa				19		19	19	
Physical Education	34	20	54					54
Pin Ledge—								
Crown and Bridge				9	1	10	10	
Plant Engineering	35		35	23		23		12
Police Chiefs	96		96	81		81		15
Postal Workers				48	4	52	52	
Post-Dental Alumni Day				24		24	24	
Power Systems	120	1	121	110		110		11
Practical Nursing	2	196	198					198
Practical Nursing Education					76	76	76	
Precision Attachment Partial Denture				6		6	6	
Proctology	31		31	25		25		6
Prosthodontics	23		23					23
Psychiatry				25	1	26	26	
Public Accountants	148	6	154					154
Public Affairs	25	27	52	40	50	90	38	
Public Health Nursing		28	28					28
Public Management	8		8					8
Public School Law	106	2	108	146	2	148	40	
Public Service	31		31					31
Public Speaking	15		15					15
Purchasing	48		48					48

DIVISIONS OF EDUCATIONAL RELATIONSHIPS

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TABLE IV-B. (Continued)

Course	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Quantitative Business								
Decision Making				11		11	11	
Quantum Mechanics	5		5					5
Radiography	25		25					25
Radiology	327	9	336					336
Records Administration	31	13	44	49	27	76	32	
Religious Education	78	88	166	22	53	75		91
Rheumatic Fever Nursing		34	34					34
Rising Tide of Violence	17	92	109					109
Rock Mechanics	281		281	27		27		254
School-Community Relations				26	36	62	62	
Secondary School Principals	356	7	363					363
Senior Citizens Program								
Directors				25	38	63	63	
Sewage Works Operators	135		135	127		127		8
Sex and Family Life								
Education				164	252	416	416	
Sex and Family Life								
Workshop				18	35	53	53	
Sex Education	350	556	906	191	313	504		402
Sexual Problems in Marriage	57	3	60					60
Small Group Meetings				15	1	16	16	
Social Practice in Modern								
Settings				6	26	32	32	
Soil Mechanics	124		124	131		131		7
Solid Wastes Engineering								
Conference				94		94	94	
Standards	56		56					56
State Council of Machinists				80		80	80	
Steelworkers	66	1	67	68		68	1	
Steward Training	48		48					48
Structural Concrete Design				188		188	188	
Superior-Subordinate								
Relations	49	7	56	36	1	37		19
Surgey	182	1	183	142		142		41
Swimming Pool Operators				87	5	92	92	
Tax Assessors School	267	7	274	286	8	294	20	
Tax Institute for Public								
Accountants				129	10	139	139	
Teacher and Instructor Media				22	9	31	31	
Teachers of Laryngectomized								
Persons				15	4	19	19	
Time Sharing Symposium				76	1	77	77	
Town Meeting	101	149	250					250
Transistor Switching Circuits	10		10					10
Trauma	25	1	26	21		21		5
Trumpet	140	46	186					186
Tunnel and Shaft				468		468	468	
United Fund Representatives				20	28	48	48	
Upholsterers	26		26					26
Use of MMPI	73	13	86					86
Value Engineering	14		14	9		9		5
Vectorcardiography	55		55					55
Waste Engineering	55		55	63		63	8	
Water and Sewage Works								
Operators	63		63					63
Water Supply and								
Waste Treatment				9		9	9	
Water Works Operator	138		138	166		166	28	
Wood Fibre Conference				147	1	148	148	
Workmen's Compensation				67		67	67	
Workshop of the								
Four Year Old		32	32					32
X-Ray Diffraction	11	2	13	11		11		2
TOTAL	10,359	3,572	13,931	12,092	4,126	16,218	2,287	

TABLE V. ENROLLMENT SUMMARY, 1966-1968

	1966-1967			1967-1968			Gain	Loss
	Men	Women	Total	Men	Women	Total		
Collegiate Students	36,706	21,703	58,409	37,418	22,726	60,144	1,735	
Subcollegiate	19,856	5,851	25,707	19,302	4,909	24,211		1,496
Total	56,562	27,554	84,116	56,720	27,635	84,355	239	
Extension	25,736	16,880	42,616	28,555	17,482	46,037		3,421
Nolte Center for Continuing Education	10,359	3,572	13,931	12,092	4,126	16,218	2,287	
NET GRAND TOTAL	92,657	48,006	140,663	97,367	49,243	146,610	5,947	

TABLE VI. COMPARATIVE ENROLLMENT FIGURES, 1966-1968

	1966-1967			1967-1968			Gain		Loss	
	M	W	T	M	W	T	M	W	M	W
Ag., For., Home Ec., & Vet. Med. (incl. Schools of Ag. & Ag. Short Courses)	21,375	6,583	27,958	20,901	5,815	26,716			474	768
Bus. Administration	1,017	40	1,057	1,006	48	1,054		8	11	
Dentistry (incl. Dent. Hyg.)	395	80	475	408	96	504	13	16		
Education (incl. High School, Nursery, & Elementary Grade VI)	1,423	2,654	4,077	1,396	2,687	4,083			33	27
Inst. of Technology	3,369	71	3,440	3,436	72	3,508	67	1		
Graduate School (incl. Mayo)	7,006	1,962	8,968	7,211	2,096	9,307	205	134		
Law School	562	21	583	567	21	588	5			
Biological Sciences	16	10	26	49	25	74		15	33	
Medicine (incl. Med. Tech., Nursing, Phys. & Occup. Therapy, & Public Health)	764	707	1,471	769	664	1,433	5			43
Pharmacy	209	52	261	249	58	307	40	6		
Liberal Arts	9,115	7,670	16,785	9,668	8,113	17,781	553	443		
University College	32	29	61	33	27	60	1			2
General College	3,293	1,227	4,520	3,097	1,362	4,459		135	196	
Duluth	3,080	1,942	5,022	3,145	2,150	5,295	65	208		
Morris	682	437	1,119	694	463	1,157	12	26		
Crookston	194	24	218	314	58	372	120	34		
Summer Session (Net)	10,657	7,925	18,582	10,458	8,163	18,621		238	199	
Total	63,189	31,434	94,623	63,401	31,918	95,319	212	484		
Less Duplicates	6,627	3,880	10,507	6,681	4,283	10,964	54	403		
Net Total	56,562	27,554	84,116	56,720	27,635	84,355	158	81		
Extension General Extension	16,363	10,432	26,795	17,555	10,967	28,522	1,192	535		
Short Courses	2,708	1,312	4,020	3,620	1,019	4,639	912			293
Independent Study (Correspondence)	6,665	5,136	11,801	7,380	5,496	12,876	715	360		
Net Total	25,736	16,880	42,616	28,555	17,482	46,037	2,819	602		
Nolte Center for Con- tinuing Education	10,359	3,572	13,931	12,092	4,126	16,218	1,733	554		
Summary: Total Resident Students	56,562	27,554	84,116	56,720	27,635	84,355	158	81		
Total Extension Students	25,736	16,880	42,616	28,555	17,482	46,037	2,819	602		
Total Nolte Center for Continuing Education	10,359	3,572	13,931	12,092	4,126	16,218	1,733	554		
NET GRAND TOTAL	92,657	48,006	140,663	97,367	49,243	146,610	4,710	1,237		

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TABLE VII-A. DEGREES CONFERRED, 1966-1968

Colleges and Degrees	1966-1967			1967-1968		
	Men	Women	Total	Men	Women	Total
Agriculture, Institute of, and Business Administration, School of						
Bach. of Agric. Bus. Admin. with dist.	1		1	4		4
Bach. of Agric. Bus. Admin.	25		25	30		30
Agriculture, Institute of, and Education, College of						
B.S. with high dist. (Ag. Ed.)	1		1		1	3
B.S. with dist. (Ag. Ed.)	4		4	18	4	22
B.S. (Ag. Ed.)	26		26	2	2	2
B.S. with high dist. (Home Ec. Ed.)		2	2		13	13
B.S. with dist. (Home Ec. Ed.)		9	9		33	33
B.S. (Home Ec. Ed.)		26	26			
Agriculture, Forestry and Home Economics, College of						
B.S. with high dist. (Agriculture)	4	1	5	2		2
B.S. with dist. (Agriculture)	17		17	11	1	12
B.S. (Agriculture)	81	1	82	102	1	103
B.S. with high dist. (Forestry)	3		3	2		2
B.S. with dist. (Forestry)	17		17	11		11
B.S. (Forestry)	62		62	48		48
B.S. with high dist. (Home Economics)		4	4		5	5
B.S. with dist. (Home Economics)		11	11		7	7
B.S. (Home Economics)		76	76		58	58
Biological Sciences, College of						
B.S.	1	1	2	7	4	11
Business Administration, School of						
B.B.A.	2		2	10		10
B.S. in Bus. with high dist.	3		3	4	1	5
B.S. in Bus. with dist.	28	3	31	30	1	31
B.S. in Bus.	313	12	325	366	7	373
B.S. in Economics with dist.	2		2	2	1	3
B.S. in Economics	42		42	10		10
Dentistry, School of						
B.S. with high dist.	1	1	2	3		3
B.S. with dist.	7		7	15		15
B.S.	70		70	66		66
Doctor of Dental Surgery	95	1	96	93	1	94
Graduate Dental Hygienist		29	29		40	40
Education, College of						
B.S. with high dist.	6	24	30	8	36	44
B.S. with dist.	26	98	124	45	157	202
B.S.	203	431	634	198	511	709
Master of Education	19	25	44	23	21	44
General College						
Associate in Arts	469	156	625	459	160	619
Law School						
Bach. of Laws cum laude	1		1			
Bach. of Laws	10	3	13			1
Juris Doctor summa cum laude				1		1
Juris Doctor magna cum laude	8		8	7	1	8
Juris Doctor cum laude	15	1	16	23	1	24
Juris Doctor	136	3	139	129	1	130
Liberal Arts, College of						
Associate in Liberal Arts	25	52	77	38	43	81
B.A. summa cum laude	27	27	54	33	30	63
B.A. magna cum laude	32	26	58	27	26	53
B.A. cum laude	47	23	70	35	32	67
B.A.	885	533	1,418	947	656	1,603
Bach. of Fine Arts					2	2
Medical Sciences, College of						
B.S. with high dist. (Medical Tech.)		4	4		3	3
B.S. with dist. (Medical Tech.)		5	5		9	9
B.S. (Medical Tech.)	3	26	29	1	33	34
B.S. (Medicine)	52	1	53	40	1	41
B.S. in Nursing with high dist.		6	6		26	26
B.S. in Nursing with dist.		21	21		4	4
B.S. in Nursing		54	54		58	58
B.S. with high dist. (Occup. Therapy)		5	5		2	2
B.S. with dist. (Occup. Therapy)		7	7		9	9
B.S. (Occup. Therapy)		11	11	1	2	2
B.S. with high dist. (Physical Therapy)					14	14
B.S. with dist. (Physical Therapy)	1	7	8		12	16
B.S. (Physical Therapy)	3	13	16	4	12	16
Doctor of Medicine	143	13	156	142	12	154
Master of Hospital Administration	34	2	36	29	4	33
Master of Nursing Administration					1	1
Master of Public Health	27	16	43	27	12	39

TABLE VII-A. (Continued)

Colleges and Degrees	1966-1967			1967-1968		
	Men	Women	Total	Men	Women	Total
Mortuary Science, Department of Associate in Mortuary Science	58	1	59	37	1	38
Pharmacy, College of						
B.S. in Pharmacy with high dist.	1		1			
B.S. in Pharmacy with dist.	4	4	8			
B.S. in Pharmacy	24	5	29	47	9	56
Technology, Institute of						
Bach. of Aero. Eng. with high dist.	6		6	3		3
Bach. of Aero. Eng. with dist.	8		8	5		5
Bach. of Aero. Eng.	36		36	36	1	37
Bach. of Agric. Eng. with high dist.	2		2	1		1
Bach. of Agricultural Eng.	9		9	8		8
Bach. of Arch. with dist.	7		7	5		5
Bach. of Arch.	29	2	31	36		36
Bach. of Chem. Eng. with high dist.	6		6	3		3
Bach. of Chem. Eng. with dist.	10		10	4		4
Bach. of Chem. Eng.	30		30	27		27
Bach. of Chemistry with high dist.	3	2	5	6		6
Bach. of Chemistry with dist.	9	3	12	9	1	10
Bach. of Chemistry	20	2	22	18	1	19
Bach. of Civil Eng. with high dist.	1		1	5		5
Bach. of Civil Eng. with dist.	8		8	7		7
Bach. of Civil Eng.	53		53	62		62
Bach. of Elec. Eng. with high dist.	13		13	8		8
Bach. of Elec. Eng. with dist.	20	1	21	22		22
Bach. of Elec. Eng.	116	2	118	115		115
Bach. of Geol. Eng. with dist.	2		2			
Bach. of Geol. Eng.	1		1	4		4
Bach. of Math. with high dist.	3	1	4	7	1	8
Bach. of Math. with dist.	3		3	9	1	10
Bach. of Math.	16		16	13	1	14
Bach. of Mech. Eng. with high dist.	5		5	7		7
Bach. of Mech. Eng. with dist.	9		9	14		14
Bach. of Mech. Eng.	67		67	92		92
Bach. of Metallurgical Eng. with dist.				2		2
Bach. of Metallurgical Eng.	1		1	7		7
Bach. of Mineral Eng.	4		4	2		2
Bach. of Physics with high dist.	4		4	3		3
Bach. of Physics with dist.	16		16	4	1	5
Bach. of Physics	19	1	20	15		15
B.S. in Geology with dist.	1		1	1		1
B.S. in Geology	3		3	3		3
B.S. in Geophysics				5		5
University College						
B.A. cum laude	3	4	7			
B.A.	3	5	8	6	5	11
B.S. cum laude	2		2	1		1
B.S.	5	2	7	8	2	10
Veterinary Medicine, College of						
B.S. with high dist.	4		4	1	1	2
B.S. with dist.	9		9	6		6
B.S.	37	1	38	36	3	39
Doctor of Veterinary Medicine	48	1	49	53	2	55
Graduate School						
Master of Architecture	7	1	8	11		11
Master of Arts	390	263	653	424	303	727
Master of Arts in Public Adm.	18	1	19	16	2	18
Master of Bus. Adm.	29		29	36		36
Master of Fine Arts	14	7	21	12	7	19
Master of Forestry	2		2	1		1
Master of Science	199	57	256	172	77	249
M.S. in Aero. Eng.	10		10	12		12
M.S. in Agric. Eng.	3		3	1		1
M.S. in Anesthesiology				1		1
M.S. in Chemical Eng.	12		12	6	1	7
M.S. in Civil Eng.	41		41	16		16
M.S. in Dentistry	17		17	18		18
M.S. in Dermatology	4		4	3		3
M.S. in Electrical Eng.	48		48	39		39
M.S. in Industrial Eng.	12		12	14		14
M.S. in Mechanical Eng.	27	1	28	23		23
M.S. in Medicine	5		5	15		15
M.S. in Met. Eng.	8	1	9	8		8
M.S. in Mineral Eng.	4		4	11		11

DIVISIONS OF EDUCATIONAL RELATIONSHIPS

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TABLE VII-A. (Continued)

Colleges and Degrees	1966-1967			1967-1968		
	Men	Women	Total	Men	Women	Total
M.S. in Neurology	1		1	2		2
M.S. in Neurosurgery				1		1
M.S. in Obstetrics and Gynecology	3		3			
M.S. in Ophthalmology	6		6	2	1	3
M.S. in Orthopedic Surgery	4		4	5		5
M.S. in Otolaryngology	1		1	2		2
M.S. in Physical Medicine and Rehab.	1		1	1		1
M.S. in Proctology	1		1			
M.S. in Radiology	2		2			
M.S. in Surgery	11		11	10	1	11
M.S. in Urology	2		2	2		2
Master of Social Work	18	47	65	18	25	43
Doctor of Philosophy	338	56	394	420	57	477
Ph.D. in Medicine	3		3	2		2
Ph.D. in Surgery	11		11	8		8
Duluth						
Associate in Arts		8	8	2	4	6
B.A. summa cum laude	6		6		2	2
B.A. magna cum laude	12	2	14	6	1	7
B.A. cum laude	13	11	24	14	9	23
B.A.	208	44	252	168	36	204
B.S. summa cum laude				1	4	5
B.S. magna cum laude	3	7	10		5	5
B.S. cum laude	12	31	43	10	43	53
B.S.	151	181	332	145	150	295
Morris						
B.A. with high dist.	3	4	7	4	6	10
B.A. with dist.	9	16	25	20	16	36
B.A.	67	40	107	69	24	93
B.S. with dist.					1	1
B.S.		7	7	1	14	15
Crookston						
Associate in Ag. with high. dist.				4		4
Associate in Ag. with dist.				6		6
Associate in Ag.				14		14
Associate in Bus. with high dist.					3	3
Associate in Bus. with dist.				6	3	9
Associate in Bus.				27	6	33
Total	5,451	2,592	8,043	5,625	2,899	8,524
Honorary Degrees	1		1			
GRAND TOTAL	5,452	2,592	8,044	5,625	2,899	8,524

TABLE VII-B. CERTIFICATES CONFERRED, 1966-1968

School, Division, or Course	1966-1967			1967-1968		
	Men	Women	Total	Men	Women	Total
Agriculture, Forestry, and Home Economics						
Technical Certificate in Agriculture	5		5	1		1
Extension						
Accounting Certificate						
Junior	2		2	1		1
Senior	2		2	1		1
Assessment and Appraisal	3		3	8		8
Associate in Management of Administrative Services Certificate	1		1	1		1
Business Administration Certificate						
Junior	4	1	5	7		7
Senior	6		6	8	1	9
Civil Engineering Technician Certificate				2		2
Electrical Engineering Aide Certificate	1		1			
Electrical Engineering Technician Certificate				1		1
Engineering Certificate						
Basic Engineering Aide	1		1			
Basic Engineering Science	19		19	25		25

BIENNIAL REPORT

TABLE VII-B. (Continued)

School, Division, or Course	1966-1967			1967-1968		
	Men	Women	Total	Men	Women	Total
Engineering Mathematics and Science Certificate				1		1
Engineering Science Certificate	6		6	7		7
Fellow in Management of Administrative Services				1		1
Senior General Engineering Certificate	2	3	5	1		1
Senior Industrial Engineering Certificate	1		1			
Industrial Relations Certificate	2		2	1		1
Interior Design Certificate	2	1	3	2	11	13
Liberal Arts Certificate	6	7	13	6	6	12
Management of Administrative Services Certificate				1		1
Mathematics and Science Certificate				2		2
Mechanical Engineering Technician Certificate	1		1	1		1
Public Administration Certificate	4		4	5		5
Secretarial Certificate		1	1		1	1
General College						
Certificate of Dental Assistant		34	34		38	38
Graduate						
Certificate of Specialist in Education						
Child Psychology					1	1
Counseling	3		3			
Educational Administration				2		2
Educational Psychology	1	3	4	2	6	8
Elementary School Administration	1		1	1		1
General Educational Administration	4		4			
School Psychological Services		3	3			
Secondary School Administration	1		1			
Special Education	2	2	4			
Institute of Technology						
Certificate in Science	2		2	5		5
Medical Laboratory Assistant Certificate		49	49		24	24
Nursing						
Certificate in Practical Nursing		43	43		38	38
North Central School of Agriculture, Grand Rapids						
Forestry Technician	16		16	18		18
Northwest School of Agriculture, Crookston						
Diplomas	72	14	86	36	6	42
Southern School of Agriculture, Waseca						
Diplomas	47	22	69	53	20	73
University High School, Minneapolis						
Diplomas	33	34	67	33	32	65
Certificates		1	1			
TOTAL	250	218	468	271	146	417

TABLE VIII-A. SUMMARY OF STUDENTS ENTERED FROM HIGH SCHOOLS, 1966-1967

	Ag., For., & H.E.	Dental Hygiene	Education	Inst. of Tech.	Nursing	Liberal Arts	General College	Duluth	Morris	Crookston	Total
Minneapolis Public Schools	66	2	7	82	1	754	403	17	2		1,334
St. Paul Public Schools	32	1	6	33	4	312	146	17			551
Other Minnesota High Schools	430	13	34	491	10	2,768	756	1,276	366	174	6,318
Minnesota Private Schools	43	3	6	66	3	804	314	128	6	35	1,408
Minnesota Schools Total	571	19	53	672	18	4,638	1,619	1,438	374	209	9,611
Other States and Territories	22	3	2	35		164	85	43	9	2	365
Foreign Countries	6			10		15	1	11			43
Total	599	22	55	717	18	4,817	1,705	1,492	383	211	10,019
Special Students				4		26	70	7	1	1	109
Missing Information	3			4		17	6			2	32
GRAND TOTAL	602	22	55	725	18	4,860	1,781	1,499	384	214	10,160

TABLE VIII-B. SUMMARY OF STUDENTS ENTERED FROM HIGH SCHOOLS, 1967-1968

	Ag., For., & H.E.	Dental Hygiene	Education	Inst. of Tech.	Nursing	Liberal Arts	General College	Duluth	Morris	Crookston	Total
Minneapolis Public Schools	56	1	6	79		726	329	21	7		1,225
St. Paul Public Schools	25	2	1	22		255	124	13	3		445
Other Minnesota High Schools	398	10	28	494		2,669	723	1,239	384	150	6,095
Minnesota Private Schools	47	3	3	85		783	286	131	18	19	1,375
Minnesota Schools Total	526	16	38	680		4,433	1,462	1,404	412	169	9,140
Other States and Territories	23	3	4	22		183	80	39	3	6	363
Foreign Countries	1			13		8	4	15	1		42
Total	550	19	42	715		4,624	1,546	1,458	416	175	9,545
Special Students	1		1			29	85	8	1	1	126
Missing Information											
GRAND TOTAL	551	19	43	715		4,653	1,631	1,466	417	176	9,671

TABLE IX-A. SUMMARY OF STUDENTS ENTERED WITH ADVANCED STANDING, 1966-1967

	Ag., For., & H.E.	Business	Vet. Med.	Dentistry	Dental Hygiene	Education	Institute of Tech.	Grad. & Mayo	Law School	Bio. Sci.	Medicine	Med. Tech.	Nursing	Pharmacy	Liberal Arts	University College	General College	Public Health	Phys. Therapy	Occup. Therapy	Duluth	Morris	Crookston	Total
Institutions in Minnesota	152	53	3	34	4	190	161	182	40	6	49	6	35	18	786	1	87	2	7	2	266	25	.....	2,109
Institutions in Other States and Territories	55	21	10	12	4	105	94	874	62	1	26	2	26	7	451	..	23	30	1	..	49	14	.....	1,867
Institutions in Foreign Countries .....	.....	1	.....	.....	.....	3	9	216	.....	.....	.....	2	.....	.....	7	.....	.....	1	.....	.....	4	.....	.....	243
Total	207	75	13	46	8	298	264	1,272	102	7	75	10	61	25	1,244	1	110	33	8	2	319	39	.....	4,219
Special Students	71	24	1	1	..	242	51	74	.....	4	10	9	2	1	290	..	10	18	1	1	50	16	.....	876
Missing Information .....	.....	1	.....	.....	.....	.....	.....	7	.....	.....	.....	.....	.....	.....	9	.....	.....	.....	.....	.....	2	1	.....	20
GRAND TOTAL	278	100	14	47	8	540	315	1,353	102	11	85	19	63	26	1,543	1	120	51	9	3	371	56	.....	5,115

TABLE IX-B. SUMMARY OF STUDENTS ENTERED WITH ADVANCED STANDING, 1967-1968

	Ag., For., & H.E.	Business	Vet. Med.	Dentistry	Dental Hygiene	Education	Institute of Tech.	Grad. & Mayo	Law School	Bio. Sci.	Medicine	Med. Tech.	Nursing	Pharmacy	Liberal Arts	University College	General College	Public Health	Phys. Therapy	Occup. Therapy	Duluth	Morris	Crookston	Total
Institutions in Minnesota	200	46	8	33	8	152	178	163	55	5	45	1	23	28	930	2	77	4	12	1	295	33	18	2,317
Institutions in Other States and Territories	58	14	16	8	2	100	85	920	75	5	14	2	12	5	467	13	24	1	1	58	10	9	1,898	
Institutions in Foreign Countries	5	2	1	2	3	256	1	1	1	12	1	1	1	1	1	1	1	1	1	1	1	1	285	
Total	263	60	26	42	10	254	266	1,339	131	10	59	3	36	33	1,409	2	90	28	13	1	354	43	28	4,500
Special Students	87	22	3	3	189	57	75	10	6	5	1	1	302	183	14	64	21	10	1,053					
Missing Information																								
GRAND TOTAL	350	82	29	45	10	443	323	1,414	131	20	65	8	37	34	1,711	2	273	42	13	1	418	64	38	5,553

TABLE X-A. SUMMARY OF GEOGRAPHIC DISTRIBUTION OF
STUDENTS OF COLLEGIATE GRADE (OTHER THAN SUMMER SESSION), 1966-1967

	Ag., For., & H.E.	Business	Vet. Med.	Dentistry	Dental Hygiene	Education	Institute of Tech.	Grad. & Mayo	Law School	Bio. Sci.	Medicine	Med. Tech.	Nursing	Pharmacy	Liberal Arts	University College	General College	Public Health	Phys. Therapy	Occup. Therapy	Duluth	Morris	Crookston	Total	
Counties in Minnesota																									
Hennepin	689	492	33	95	25	1,600	1,172	2,034	176	8	213	60	123	62	8,167	28	2,832	37	15	21	212	63	1	18,158	
Ramsey	316	162	16	50	13	642	530	966	94	7	92	21	68	25	3,301	12	1,041	19	11	13	104	9	2	7,514	
Other Minnesota Counties	1,552	366	121	199	27	983	1,463	1,919	200	8	247	52	158	164	4,636	18	573	18	37	14	4,521	1,030	212	18,518	
Total	2,557	1,020	170	344	65	3,225	3,165	4,919	470	23	552	133	349	251	16,104	58	4,446	74	63	48	4,837	1,102	215	44,190	
Other States and Territories																									
.....	96	31	51	52	12	153	208	2,923	112	3	81	3	32	9	609	3	74	89	11	5	146	17	2	4,722	
Foreign Countries																									
.....	59	6	4	1	.....	13	67	1,125	1	.....	9	2	.....	1	70	.....	.....	20	.....	.....	38	.....	1	1,417
Missing Information																									
.....	1	1	2	1	5
GRAND TOTAL	2,712	1,057	225	398	77	3,391	3,440	8,968	583	26	642	138	381	261	16,785	61	4,520	183	74	53	5,022	1,119	218	50,334	

TABLE X-B. SUMMARY OF GEOGRAPHIC DISTRIBUTION OF STUDENTS OF COLLEGIATE GRADE (OTHER THAN SUMMER SESSION), 1967-1968

	Ag., For., & H.E.	Business	Vet. Med.	Dentistry	Dental Hygiene	Education	Institute of Tech.	Grad. & Mayo	Law School	Bio. Sci.	Medicine	Med. Tech.	Nursing	Pharmacy	Liberal Arts	University College	General College	Public Health	Phys. Therapy	Occup. Therapy	Duluth	Morris	Crookston	Total
Counties in Minnesota																								
Hennepin	701	458	38	117	32	1,703	1,175	2,028	173	20	195	54	100	80	8,659	31	2,854	29	24	14	245	61	5	18,796
Ramsey	316	156	17	51	15	661	539	998	81	19	95	23	50	31	3,465	10	1,016	17	11	13	119	23	2	7,728
Other Minnesota Counties	1,582	397	117	195	32	1,047	1,520	1,984	205	26	277	66	142	182	4,979	14	532	20	53	15	4,780	1,061	353	19,579
Total	2,599	1,011	172	363	79	3,411	3,234	5,010	459	65	567	143	292	293	17,103	55	4,402	66	88	42	5,144	1,145	360	46,103
Other States and Territories																								
Other States and Territories	115	36	59	47	13	151	210	3,159	129	6	72	2	35	13	599	5	53	93	12	4	115	11	11	4,950
Foreign Countries																								
Foreign Countries	63	7	7	2		11	64	1,138		3	4	2	1	1	79		4	10			36	1	1	1,434
Missing Information																								
Missing Information																								
GRAND TOTAL	2,777	1,054	238	412	92	3,573	3,508	9,307	588	74	643	147	328	307	17,781	60	4,459	169	100	46	5,295	1,157	372	52,487

TABLE XI. SUMMARY OF ENROLLMENTS, 1966-1968

	1966-1967			1967-1968			Gain	Loss
	Individual Enrollments	Individual Enrollments	Individual Enrollments	Men	Women	Total		
	Men	Women	Total	Men	Women	Total		
Enrollments for Collegiate and Higher Grades								
Academic Year*	32,676	17,658	50,334	33,641	18,846	52,487	2,153	
Summer Sessions	10,657	7,925	18,582	10,458	8,163	18,621	39	
Extension**	16,363	10,432	26,795	17,555	10,967	28,522	1,727	
Extension Short Courses**	2,709	1,312	4,020	3,620	1,019	4,639	619	
Independent Study***	6,665	5,136	11,801	7,380	5,496	12,876	1,075	
Nolte Center for Continuing Education	10,359	3,572	13,931	12,092	4,126	16,218	2,287	
Gross Total	79,428	46,035	125,463	84,746	48,617	133,363	7,900	
Less Duplicates	6,627	3,880	10,507	6,681	4,283	10,964	457	
Net Total	72,801	42,155	114,956	78,065	44,334	122,399	7,443	
Enrollments below Collegiate Grade								
Schools of Agriculture	314	109	423	222	80	302		121
University High School	209	219	428	210	198	408		20
Nursery School and Grade Six	120	138	258	53	49	102		156
Agricultural Short Courses	19,213	5,365	24,598	18,817	4,582	23,399		1,199
Net Total	19,856	5,851	25,707	19,302	4,909	24,211		1,496
GROSS TOTAL	92,657	48,006	140,663	97,367	49,243	146,610	5,947	

*Education-Agriculture, Business-Agriculture, Institute of Technology-Agriculture, and Institute of Technology-Agriculture-Business duplicates have been deducted.

**Includes both collegiate and noncollegiate grades.

***Independent Study was formerly listed as Correspondence.

DEPARTMENT OF ALUMNI RELATIONS

EDWIN L. HAISLET, *Director*

Officers — Those serving as officers of the Minnesota Alumni Association during the biennium were as follows:

1966-1967

President	Waldo E. Hardell, '26 B.S.Bus.
First Vice President	Albert H. Heimbach, '42 B.B.A.
Second Vice President	Kenneth C. Glaser, '42 B.B.A.
Secretary	Florence Elliot Marks, '53 B.S.N., '56 M.N.A.
Treasurer	Robert J. Odegard, '42 B.S.Ag.
Past President	Edwin A. Willson, '30 B.E.E.
Executive Director	Edwin L. Haislet, '31 B.S.Ed., '33 M.A., '37 Ed.D.

1967-1968

President	Albert H. Heimbach, '42 B.B.A.
First Vice President	Kenneth C. Glaser, '42 B.B.A.
Second Vice President	James A. Watson, '42 B.A.
Secretary	Florence M. Lehmann, '23 B.A.
Treasurer	Wallace L. Boss, '28 B.S.Bus.
Past President	Waldo E. Hardell, '26 B.S.Bus.
Executive Director	Edwin L. Haislet, '31 B.S.Ed., '33 M.A., '37 Ed.D.

Office — The Alumni Office now has a staff of twelve full-time employees — eight with the Department of Alumni Relations and four with the Minnesota Alumni Association.

Budget — In 1966-1967, income for the Department of Alumni Relations was \$97,706 and for the Minnesota Alumni Association, \$101,951, making a total of \$199,651. In 1967-1968, the total was \$232,638, with \$118,000 for the Association and \$114,638 for the University.

Field Service — Alumni chapters now number 93—49 in-state and 44 out-state. Of these, two are alumnae groups (Chicago and Detroit) and four are outside the continental limits of the United States (Korea, India, Philippines,

and Taiwan). During 1966-1967, 48 in-state and 17 out-state chapters were visited; in 1967-1968, 49 in-state and 18 out-state chapters were visited.

The Association received 39 requests for University speakers in 1966-1967 and 41 in 1967-1968. In 1966-1967, 180 nonspeaker service programs (films, slides, etc.) were requested by in-state chapters; in 1967-1968, 174 requests were made. For 1966-1967, 48 in-state chapters reported a total of 192 meetings, for an average of 4 meetings per chapter per year. There was an increase in 1967-1968, with 49 chapters reporting 218 meetings.

Constituent Alumni Groups — In 1966 two new constituent groups, medical technology and occupational and physical therapy, were added, making a total of 18 such groups in the overall constituent plan. The University of Minnesota, Duluth, is organizing its own independent alumni association as of July 1, 1968.

Special Events, Services, and Programs — The St. Paul Quarterback Club was sponsored by the Alumni Association for the fourteenth and fifteenth consecutive years. Elmer E. Engelbert, Sr., '20 B.S., was chairman and acted as host at meetings held at the Minnesota Club in St. Paul on Monday noons after each football game. Football meetings were also held in other states in conjunction with games played away from home. In 1966, meetings were held in Detroit for the Michigan game and in Madison for the Wisconsin game. In 1967, meetings were held in Cedar Rapids for the Iowa game and in West Lafayette for the Purdue game. The 1966 Homecoming was celebrated October 10 with Shoo-I-Away as the slogan. The 1967 Homecoming was held October 21, with Michigan State the opponent.

The Complimentary Athletic Ticket Program cosponsored by the Minnesota Alumni Association and the Athletic Department was continued during the biennium. To acquaint more alumni with the University athletic program, 200 pairs of complimentary tickets for each basketball and hockey game were sent to alumni selected at random.

The golden anniversary reunion for the Class of 1916 was held on Cap and Gown Day, May 11, 1966. The 1941 football team, undefeated Big Ten National Champions, held their 25th reunion. In 1967 the Class of 1942 held their silver anniversary reunion, and on Cap and Gown Day, May 24, 1967, the Class of 1917 held their golden anniversary reunion.

The 63rd Annual Meeting of the board of directors and Alumni Association membership was held in conjunction with the 18th Annual Honors Presentation on June 6, 1967, at the Hotel Pick-Nicollet. Waldo Hardell presided and 387 alumni attended. The 64th Annual Meeting and 19th Annual Honors Presentation were held in the Hotel Pick-Nicollet on June 4, 1968, with 393 in attendance; Al Heimbach presided.

Alumni Magazine — Ten regular issues of the *Alumni News* were published, September through June, in both 1966-1967 and 1967-1968. Each issue was limited to 40 pages. The Alumni Reader's Survey was continued both years. Special issues begun in 1965 dominated the character of the magazine in 1967-1968. A new editor, Mary Lou Aurell, was hired to replace Joe Davidson, who retired.

Alumni Club — The University of Minnesota Alumni Club in the Sheraton-Ritz Hotel had a successful fourth and fifth year and is now the center of alumni social activity. Robert Winrich, '59 B.A., manager of the Club since May 1, 1965, resigned and was succeeded by Bruno Krempin on February 26, 1968.

The Alumni Fund — The chairmen of the Alumni Fund Advisory Committee were Ed Willson for 1966-1967 and Waldo Hardell for 1967-1968. The Alumni Fund, which operates on a calendar year, received gifts totaling \$148,372 in 1966. Gifts in 1967 totaled \$167,574, an increase of \$19,201 or 12.94 percent. The total number of gifts in 1966 was 11,089, averaging \$13.38 per gift. In 1967, 8,218 gifts represented an average of \$20.39 per gift. Participation in 1966 was 10.08 percent and in 1967, 7.47 percent.

Other Alumni Association Activities — The Association now has 98 organized and active alumni chapters, 55 in-state and 43 out-state. Five new chapters were organized during the biennium—Jacksonville, Fort Lauderdale, Miami, Hawaii, and Portland—and six were reorganized—Central Florida, Southern California, Kansas City, New York City, San Diego, and Tulsa. The

new membership plan recommended in 1967 went into effect in 1968. Dues were doubled under this plan, but it resulted in only a 3.6 percent loss in membership.

A new scholarship recruitment program was begun during the biennium, and it was decided by vote to provide for student representation on the MAA Board. Preliminary plans were discussed for an alumni center to be built on the West Bank, close to the campus.

The first alumni film, "Minnesota, Then and Now," was produced under the cosponsorship of the MAA and Farmers & Mechanics Bank. In conjunction with the General Extension Division, the Association sponsored an alumni study-retreat on the topic "Tension and Change in the New Europe." The MAA Group Life program continued to grow, with substantial dividends accruing to the Association. A new administrator and agent of record was named for this program during the biennium.

OFFICE OF THE DEAN OF STUDENTS

E. G. WILLIAMSON, *Dean*

The 1966-1968 biennium was characterized by increasing unrest among student leaders, by increased student demonstrations and a growing concern with academic changes, by some changes in organization in the Dean of Students Office, and by continued professional improvement of the staff. Changes in the Office included organization of a bureau of Student Life Studies and consolidation of the Work-Study Program and the Bureau of Student Loans and Scholarships into an Office of Student Financial Aid. Also, the head residence halls counselors are now part of the Dean of Students Office, and the Residence Counseling Program has been consolidated into the Student Housing Bureau.

Orientation Program—During the biennium, 20,385 students attended the two-day orientation registration program and 1,517 attended Freshman Camp. Specialized programs of orientation were introduced for such groups as New Careers students and the financially disadvantaged. Approximately 27,000 students attended one or more events during each Welcome Week.

Foreign Student Adviser—Approximately 1,750 students, representing over 83 countries, were enrolled at the University during the biennium. Activities of the Foreign Students Office in 1966-1967 included 28,913 contacts with these students, 2,747 interviews, 309 cases in which English assistance was given, and 145 cases in which scholarship aid was arranged. In 1967-1968, the number of contacts rose to 38,458, interviews to 2,968, English assistance cases to 364, and scholarship aid cases to 161.

Each year, 400-500 new foreign students arrive and about the same number depart. China, Canada, and India account for about 25 percent of the total. The number from Pakistan, Turkey, and the United Arab Republic continued to decline during the biennium. Tightening of governmental regulations, transition to a new immigration law, and the war in the Middle East made relations with students and governmental agencies more time-consuming for the Office of the Foreign Student Adviser.

Coordinator of Student Religious Activities—This program of inter-religious cooperation continued to function effectively during the biennium as it adapted to changes in doctrine in some faiths and marked changes in the role and function of the foundation staff in others. Henry Allen, the coordinator, took a nine-month sabbatical leave to study changes in religious activities in Asia and the Middle East. Robert Ross served as acting coordinator during this period. The voluntary student religious census card was completed by about 60 percent of the students each year of the biennium.

Office of Student Financial Aid—The college Work-Study Program and the Bureau of Student Loans and Scholarships were consolidated into an Office of Student Financial Aid during the biennium. The number of student loans, scholarships, and grants handled by the Office increased for the eleventh consecutive biennium. Financial aid exclusive of work-study totaled \$8,767,643

in 1966-1968, compared to \$5,564,321 in 1964-1966. Financial aid in each year of the biennium was as follows:

	Loans		Scholarships		Work-Study	
	Number	Amount	Number	Amount	Number	Amount
1966-1967	4,301	\$2,255,729	3,390	\$1,168,050	1,064	\$741,244
1967-1968	4,314	\$2,005,809	4,716	\$1,597,145	1,171	\$954,901

The Freshman Scholarship Program continued to grow. In 1966-1967, 2,052 students applied; in 1967-1968, 2,476 applied—an increase of 424 or 20.6 percent. In addition, the state of Minnesota freshman scholarship program began in 1967-1968, providing tuition and fees for 105 new students.

Speech and Hearing Clinic—Clinical activities during the biennium included screening, diagnosis and consultation, and therapy programs. The New Student Screening Program served 14,450 students in 1966-1968, compared to 12,000 in 1964-1966, and the College of Education Screening Program served 3,450 students in 1966-1968, compared to 3,500 in 1964-1966. The number of students seen for diagnosis and evaluation increased to 550 for this biennium compared to 312 for the previous biennium; the number of outpatients seen for diagnosis increased from 81 for 1964-1966 to 101 for 1966-1968. Therapy programs served 508 students and 163 outpatients in 1966-1968, a decrease from the 525 students and 202 outpatients served in 1964-1966. In addition, 500 information-seeking and informal contacts occurred between Clinic staff and the community during the biennium.

These figures indirectly reflect the limitations in physical facilities that restrict therapy expansion and allow only slight increases in consultation activities. They do not reflect changes in quality or area of focus that have improved Clinic services during the biennium. These changes included revision of screening procedures for increased efficiency and effectiveness, development and implementation of clinical programs based on laboratory experimentation, development of student programs to provide discussion groups for foreign students working on their speech, and reorganization of Clinic procedures and record systems.

The Clinic's research program matured and stabilized during the biennium. Results of 17 projects were published in journals and books in 1966-1968, compared to eight in 1964-1966, and 14 papers were presented at meetings in 1966-1968, compared to five in 1964-1966. Projects carried out in the laboratory resulted in five doctoral dissertations and 11 masters' theses during the biennium, compared to one dissertation and four theses produced in the previous biennium. Innumerable graduate student research projects also placed heavy demands on the laboratory and staff. Despite limitations placed on current and anticipated research by a shortage of laboratory space, the laboratory increased its potential during the biennium as a result of staff labor and financial support from the Dean of Students Office, the National Institute of Mental Health, the Graduate School, and the Department of Speech, Communication, and Theatre Arts.

Staff participation in clinic programs, academic training, community activities, and professional affairs reached a new high during the biennium. Staff members served as consultants or advisers to nearly every Minnesota public agency concerned with communication problems, as officers in state and national professional associations, as editorial consultants for five journals, and as invited lecturers at six universities outside of Minnesota and at six colleges within the state. Staff stability and their willingness to participate actively in a wide range of clinic programs was an important factor in the success achieved during the biennium. The major problem was, and will continue to be, the retention of staff. All key staff members are well known and constantly under recruitment pressure from other universities. At the present time, this University's salary offerings are well below the competitive market. In addition, space available at Minnesota is considerably less adequate than that offered at institutions of comparable stature or even at the University of Minnesota, Duluth, or the Minnesota state colleges. Additional and more suitable space, increased salaries to retain staff, and additional staff to meet new problems are essential for continued progress in Clinic programs.

Student Life Studies — This division completed its first year of operation in 1968. Although most of the research and consulting functions performed by this division were performed in the Office of the Dean of Students for many years, the formation of the office provided new impetus and direction. The Student Life Studies staff worked with students and staff members to identify and define problems relevant to the University; to design research and develop means for gathering information; to collect, analyze, and interpret information; and to aid others in research. Emphasis was placed on providing interpretations of research results to staff members and students and on facilitating the incorporation of research results into the decision-making process. Campus issues with which the staff dealt during the year included student freedom, student power and demonstrations, academic underachievement, student finance, the open/closed door question in residence halls, coeducational housing, the role of religious foundations in the University, characteristics of economically underprivileged students, and examinations for learning resulting from nonclassroom experiences. Methods were developed for observation of student experiences in the University, and extensive research was completed on the intra-individual variability of behavior.

During 1967-1968, staff members of the Student Life Studies office held 232 consultations with 47 persons or agencies in the University, 106 contacts with 141 students, and 48 contacts with 28 persons outside of the University. Thirteen projects were initiated, 35 publications and reports were completed, and staff members presented a total of 125 lectures or speeches and attended a total of 198 meetings. Publications involved the topics of personality development, counseling theory, university environment, and variability. Other professional contributions included development of several computer programs, publication of book reviews, staff membership on the editorial boards of two journals, and consultation visits to three universities.

Dads Association — Membership in the University of Minnesota Dads Association increased from 1,413 in 1965-1966 to 1,627 in 1967-1968. Six meetings were held during the biennium on such topics as "Student Unrest," "The U.S. Riot Commission Report," and "Student Involvement in the Academic."

Orientation coffee hours held by the Association were attended by approximately 2,000 parents of new students each year of the biennium. In 1966, two orientation meetings were also held in neighboring high schools for parents unable to attend the summer coffee hours; in 1967, five such meetings were held. Other special programs included the Freshman Scholarship Reception, which was attended by 560 in 1966 and 760 in 1967, five meetings in communities in the state for parents in the surrounding areas, and pre-game dinners held prior to several home athletic events.

Student Conduct — During the biennium, 453 disciplinary offenses involving 451 students (372 males and 89 females) were reported, compared to the 1965-1966 total of 553 (437 males and 116 females). Individual cases handled in the Disciplinary Counseling Office, including new disciplinary cases, previous cases reopened for further action, consultation and counseling cases, and services to closed cases, numbered 1,251 for 1966-1968, compared to 1,361 for the previous biennium. The case load of the discipline office constituted 1.58 percent of the student population of the Twin Cities campus.

The 137 judiciary boards in residence halls, sororities, fraternities, and cooperatives had jurisdiction over approximately 5,600 students during the biennium. They held 946 meetings, heard 2,824 complaints against 1,954 students, and took 2,920 actions. During the 1964-1966 biennium they held 1,252 meetings, heard 2,672 complaints against 2,152 students, and took 3,090 actions. A significant factor bearing both on the decrease in complaints and on the actions taken is the modification made in women's hours and sign-out procedures. Begun experimentally in 1966-1967 and fully applied later to all women residents 19 years of age or older, the liberalization of hours and sign-out practices eliminated the major source of rule violations.

The All-University Committee on Student Behavior heard and took action on 10 cases in 1966-1968, compared to 21 in 1964-1966. The All-University Judicial Council heard two major cases involving student organizations in 1966-1968, compared to one for 1964-1966.

During 1967-1968, small groups of students, augmented and sometimes led by nonstudents, protested and demonstrated both on and off campus. One

group protested University police participation in an off-campus drug raid; another staged a sit-in to block Dow Chemical recruiters; a third agitated for the removal of University authority over nonacademic conduct by symbolically moving some pieces of furniture from the discipline office; a fourth protested ROTC training by symbolically sweeping out the Armory; a fifth sought to gain student and staff cooperation to close down the University for a day to consider critically the performance of its educative function; and a sixth sought to obtain financial support and rights for minority and deprived students by picketing and disrupting the presidential inauguration programs. One of the significant consequences of the demonstrations was the appointment of a task force to search out solutions to recurrent demands for reform and pressures for social, economic, and educational change. A second task force developed a policy statement on demonstrations that was approved by the University Senate.

Student Housing Bureau — A number of important organizational changes were made during the biennium. The Residence Counseling Program was incorporated into the Student Housing Bureau and the head counselors were made members of the Bureau staff. In 1967-1968, 165 residence counselors were selected and trained. Training of judiciary boards was carried out by the Disciplinary Counseling Office.

In 1967-1968, housing interviews were conducted with 8,820 students and 1,797 house inspections were made. As enrollment increases, each year more students live farther from the campus, and each year a higher percentage live in apartments. The residential status of students enrolled fall quarter of each year of the biennium was as follows:

	1966-1967		1967-1968	
	Number	Percent	Number	Percent
Parents' homes	15,856	42.0	15,454	39.1
Relatives' homes	558	1.5	483	1.2
Owned or rented homes	3,111	8.2	3,089	7.8
Residence halls	3,627	9.6	3,717	9.4
Married student housing	555	1.5	261	.7
Fraternities and sororities	1,355	3.6	1,369	3.5
Apartments	8,091	21.4	8,831	22.3
Rooming houses	1,254	3.3	1,081	2.7
Other	223	.6	147	.4
Residence not identified	3,108	8.3	5,104	12.9
	37,738	100.0	39,536	100.0

Student Counseling Bureau — During the 1966-1968 biennium, Arthur Smith was named director of the Bureau. Under his leadership, more counseling hours were made available largely through an increase in the number of practicum students and interns from the Departments of Psychology and Educational Psychology. Professional contributions of the Student Counseling Bureau staff included 42 books, monographs, and articles covering a broad range of topics that included reading measurement, academic prediction, vocational interests, personality structure, and counseling. Nearly all members of the staff held state or national committee assignments or leadership positions in professional organizations.

In each year of the biennium, the conference on the State-Wide Testing Program was continued for principals and counselors, and the Bureau's school test consultant visited many Minnesota schools. Efforts to increase the Bureau's accessibility to students have resulted in specialized programs of study skills and counseling for students in the Institute of Technology and in medical technology, for St. Paul campus students and for those in residence halls, and for athletes.

The work load of the Bureau during this biennium, as compared to the previous biennium, is indicated in the following table:

	1964-1966	1966-1968
Total number visiting the Counseling Bureau	21,535	19,686
Tests scored	1,010,082	1,067,133
Case clearances	25,631	24,809
Number counseled	7,428	7,680
Number of students in Study Skills Center	3,422	2,478

Student Activities Bureau — The biennium was marked by unrest and an apparent need for involvement among student organizations. Student leader concerns included the war in Vietnam, poverty, human relations, course evaluation, and symbolic demonstrations against the "establishment." While no untoward violence resulted, several of the actions promised violence or were close to producing it. Increased student concern for involvement was also evident in the efforts made by student leaders to increase student representation on the Faculty Senate and in student power discussions.

The majority of student organizations and programs, however, were similar to those of the past. Social service projects raised \$77,586 in 1966-1967 and \$65,000 in 1967-1968; the Panel of Americans made 30 appearances to audiences totaling 3,061 persons in 1966-1967 and 43 appearances to 5,453 persons in 1967-1968; off-campus speeches numbered 169 in 1966-1967 and 137 in 1967-1968; and 124 student organizations conducted 266 human relations programs during the biennium. Five Deans' Retreats for high ability freshmen were held each year of the biennium.

In 1966-1967, 22 student organizations were recognized and 17 were disestablished, for a total of 389 at the end of the year. In 1967-1968, 15 organizations were recognized and 7 disestablished, for a total of 397 at the end of the biennium.

UNIVERSITY HEALTH SERVICE

DONALD W. COWAN, *Director*

The health of students on the Twin Cities campus was relatively good during the biennium. There were no real epidemics of any kind, although there was a brief period of increased incidence of influenza-like illness in early 1968. Five deaths occurred among student patients: three from leukemia, one from pulmonary embolus, and one from cardiac arrest of unknown cause.

The remodeling and expansion of the Health Service building, for which planning began in fall 1964, neared completion during the biennium. Nearly all necessary work should be accomplished by the beginning of 1968 fall quarter classes. With the extensive remodeling involved in this program, some of the Health Service functions had to be carried out with greater than usual difficulty. However, Health Service staff and patients were understanding and cooperative, and all obstacles were overcome with little disruption of service.

In spring 1968, the University, through the Health Service, and the North Central College Health Association co-hosted the Forty-Sixth Annual Meeting of the American College Health Association. Many members of the Health Service staff gave much time and effort to make this national meeting a success.

Health services for University High School came to an end in June, 1968, because of the merger that led to the formation of the new Marshall-University High School.

Outpatient Medical Care — Over 320,000 visits, a record number, were made to the Health Service outpatient department for medical attention during the biennium (Table II). This total includes eye refractions but does not include the many thousands of dental, clinical, x-ray, and pharmaceutical services rendered. These services are represented separately in Table IV.

Hospital Care — There was a relatively low rate of hospitalization for both medical and surgical conditions during the 1966-1968 biennium. There were 2,924 students hospitalized, for an average stay of 4.2 days. An additional 120 psychiatric cases were hospitalized in the psychiatric section of University Hospitals or were transferred to outside hospitals. The use of outside psychiatric facilities has become necessary not only because of the limited number of psychiatric beds available in University Hospitals, but also because the number of Health Service patients needing hospitalization for psychiatric care has increased rapidly during the past few years. There were 92 such cases during the last biennium.

Specialist Services — Consultation service in nearly all of the medical specialties, and especially in gynecology and orthopedics, continued to grow during the biennium.

Supplementary Insurance Plan — The optional Blue Cross-Blue Shield Supplemental Health Care Plan provided coverage for 8,869 students during 1966-1968, compared to 8,225 during 1964-1966.

Mental Hygiene Outpatient Department — During the biennium, 1,618 new patients were seen in the mental hygiene clinic, compared with 1,288 during the preceding biennium. In addition, 731 cases were carried over from previous years, bringing the total to 2,349 individuals interviewed. There were 9,247 interview sessions and 4,859 therapy hours (group therapy and CO₂ therapy). The Minnesota Multiphasic Personality Inventory was administered and interpreted for 1,240 patients. Over half (51.2 percent) of the patients seen in the mental hygiene department during this period were self-referred. About a quarter (24.2 percent) were referred by University Health Service physicians. The rest were referred by counselors, faculty and advisers, relatives, friends, private physicians, and other outside sources.

Group therapy continued to be a valuable mode of treatment in the mental hygiene section, as was the work of the psychiatric social worker assigned to the outpatient clinic area. Close liaison with and easy referral by the general medical outpatient physicians also proved helpful.

Tuberculosis Control — The tuberculosis case-finding program for students and staff was continued. Each new student, faculty member, or non-academic employee is required to have a Mantoux tuberculin test and/or chest x-ray. These tests are also routine parts of all periodic health examinations. The chest registry maintained by the public health nurse contained the names of 536 persons during the biennium, of whom 86 were foreign students. Only three newly diagnosed cases of active tuberculosis were seen: a foreign student who had just arrived on campus; an adult special student diagnosed outside, put on chemotherapy, and sent to the University; and a medical student who probably contracted the disease while working in a hospital in Hong Kong.

Public Health Nursing — In addition to maintaining the chest registry and working with the chest consultant, the public health nurse handles routine processing of reports from the Emergency Receiving Department to ensure proper follow-up, processing of communicable disease reports to the State Board of Health, conferences with students concerning prenatal care, counseling of unwed mothers-to-be with referral to outside agencies, and organization of the food service workers' annual examination program. During the biennium a greatly increased number of patients were referred to the public health nurse by Health Service physicians. The many referrals by gynecologists reflect the increasing number of married women at the University, as well as a considerable increase in the number of unwed mothers-to-be.

Dietary Service and Special Diet Table — The Health Service dietician continued to counsel patients referred by physicians because of specific dietary needs. During the biennium, 1,381 such students were counseled in 3,187 interviews. Because of the remodeling program, the special diet table could not operate in 1967-1968. In 1966-1967, however, a total of 101 students having such dietary problems as diabetes, allergies, peptic ulcers, and obesity were served 5,010 meals. The main function of the diet table is to help such patients learn how to select the proper foods.

Health Care of Special Groups on Campus — Most groups on campus to attend short courses, workshops, institutes, and the like are formally enrolled at the Health Service for any needed emergency care. The total number of such persons continues to grow and adds significantly to the work of the Health Service, particularly during the summer months.

Faculty Examinations — During the biennium there were 617 medical examinations given to newly appointed members of the academic staff and to those promoted to positions implying tenure. This compares with 529 such examinations in the last biennium.

Civil Service Examinations — During 1966-1968, there were 1,711 complete medical pre-employment examinations given to Civil Service applicants, plus 2,421 medical clearance examinations consisting of a basic health questionnaire and a Mantoux test (with a chest x-ray for positive reactors). These fig-

ures compare with 2,301 complete examinations and 909 medical clearances during the preceding biennium.

Environmental Health and Safety—Members of the staff were actively involved in the teaching and research programs of the School of Public Health during the biennium. In addition, some 1,600 inspections were made of dwelling units providing housing for Twin Cities campus students. The Health Service also continued attempts to solve sanitation problems. There is an urgent need for development of a satisfactory system for the collection, transportation, and ultimate disposal of chemical and biological wastes having infectious, toxic, carcinogenic, flammable, and radioactive properties. Considerable time was spent measuring and evaluating the basic elements of this problem.

Requests for assistance in evaluating physical, chemical, and biological health and safety hazards continued to grow. Reports on employee and student accident experiences for 1965-1966 and 1966-1967 were distributed and have been used as a basis for departmental activities directed toward accident prevention.

Surveillance of personnel and activities associated with ionizing radiation continued to be an important and growing activity. Proper handling and disposal of radioactive liquid and solid wastes is becoming particularly troublesome.

Research—Phase I of a new longitudinal study on the nonmedical use of drugs by University students was begun by the health educator and Health Service psychiatrists. During the summer of 1967, a questionnaire concerning personal use of and attitudes toward LSD, marijuana, amphetamines, and other drugs was administered to a 50 percent sample of prospective students in the summer orientation program. The results of this study have been tabulated, summarized, and submitted for publication.

The Health Service entered into a project with the Communicable Disease Center of the U.S. Public Health Service in which the incidence of all respiratory infections, plus three or four other communicable diseases, are reported and tabulated on a weekly basis. This joint study involves a number of college health services across the country. The results provide a fairly comprehensive view of the variability of occurrence of certain communicable infectious diseases in different areas of the United States at different times of the year. During the winter and spring of 1968, the Health Service participated in another research project under the auspices of the Communicable Disease Center. This brief project was aimed at comparing various methods currently used for the diagnosis of infectious mononucleosis.

Also during the biennium, the University Health Service was one of 50 college health services in the United States cooperating with the American College Health Association and the U.S. Public Health Service in a joint research project on smoking practices and attitudes among college students.

TABLE I. COMPLETE MEDICAL EXAMINATIONS GIVEN OR REVIEWED

Year	Entrance Performed	Entrance Reviewed*	Periodic
1958-1959	8,680		4,940
1959-1960	8,590		4,449
1960-1961	9,689		4,204
1961-1962	10,922		4,511
1962-1963	10,893		4,824
1963-1964	307	10,760	4,587
1964-1965	343	15,377	4,812
1965-1966	393	13,415	5,316
1966-1967	283	12,558	5,607
1967-1968	262	13,476	5,818

* Beginning in fall 1963, entrance physical examinations, except for foreign students, were performed by private physicians. These examinations were reviewed and processed by Health Service physicians.

TABLE II. VISITS TO HEALTH SERVICE (MINNEAPOLIS CAMPUS) FOR MEDICAL ATTENTION

Year	Visits*	Average Visits per Student per Academic Year
1958-1959	113,497	5.09
1959-1960	99,021	4.53
1960-1961	103,630	4.52
1961-1962	114,554	4.59
1962-1963	122,993	4.65
1963-1964	131,723	4.78
1964-1965	136,214	4.46
1965-1966	149,272	4.54
1966-1967	160,414	4.64
1967-1968	161,701	4.49

*These totals do not include visits for physical examinations, dentistry, hospitalization, or physiotherapy, or for laboratory or x-ray services.

TABLE III. STUDENT HOSPITAL CARE (MINNEAPOLIS AND ST. PAUL CAMPUSES)

Year	Number of Patients			Rate per 1,000 Students (Academic Year)	Number of Hospital Days			Average Stay in Days
	Mpls.	St. Paul	Total		Mpls.	St. Paul	Total	
1958-1959	1,561	35	1,596	71.6	5,549	91	5,640	3.5
1959-1960	1,412	36	1,448	65.6	5,543	114	5,657	3.9
1960-1961	1,278	26	1,304	56.8	4,843	73	4,916	3.8
1961-1962	1,395	32	1,427	57.2	5,764	97	5,861	4.1
1962-1963	1,419	60	1,479	55.9	5,721	189	5,910	4.0
1963-1964	1,419	27	1,446	52.5	5,386	93	5,479	3.8
1964-1965	1,492	41	1,533	50.2	6,060	125	6,185	4.0
1965-1966	1,422	29	1,451	44.2	5,993	105	6,098	4.2
1966-1967	1,534	6	1,540	44.5	6,559	11	6,570	4.3
1967-1968	1,372	12	1,384	38.4	5,776	49	5,825	4.2

TABLE IV. SELECTED SERVICES RENDERED (MINNEAPOLIS CAMPUS)

Year	Professional Dental Services	Lab. Procedures, including B.M.R., E.C.G.	X-Rays, excluding Dental	Prescriptions Filled
1962-1963	22,032	79,884	11,027	40,511
1963-1964	23,467	69,788	12,037	40,241
1964-1965	22,861	74,085	12,440	43,096
1965-1966	24,508	84,834	14,423	51,769
1966-1967	26,945	91,242	14,633	50,096
1967-1968	25,652	93,231	15,399	51,054

TABLE V. ST. PAUL CAMPUS HEALTH SERVICE: OUTPATIENT DEPARTMENT

Year	Medical Attention	Number of Hospital Patients	Number of Hospital Days	Total Services Rendered
1958-1959	3,999	35	91	6,274
1959-1960	2,730	36	114	4,625
1960-1961	2,499	26	73	3,375
1961-1962	2,696	32	97	3,888
1962-1963	4,398	60	189	6,986
1963-1964	2,561	27	93	5,118
1964-1965	2,672	41	125	3,998
1965-1966	2,446	29	105	3,836
1966-1967	2,366	6	11	3,974
1967-1968	2,893	12	49	4,400

DEPARTMENT OF INTERCOLLEGIATE ATHLETICS

MARSHALL W. RYMAN, *Director*

In athletic competition, highlights of the 1966-1967 school year were the naming of defensive end Bob Stein to several All Big Ten and All America defensive football teams; selection of basketball center Tom Kondla for regional and national all-star teams after he had won the Big Ten Conference individual scoring championship; a 6-0 record in dual meets by the Gopher cross country runners; and record-setting performances in the outdoor three-mile run by Tom Heinonen and in the 70-yard indoor hurdles by John Warford.

The 1967-1968 school year was also an outstanding one for Minnesota athletics. The football team earned a tie for the Conference championship and handed Rose Bowl representative Indiana its only defeat of the season. The cross-country squad was runner-up to Indiana for the Big Ten title, and the baseball and track teams won Conference championships with strong performances. The tennis team was the best in Gopher history with a 7-2 record that included an upset win over defending champion Michigan State. The team finished third in the Big Ten meet. Four Gopher athletes were named All Americans: Bob Stein and John Williams in football; Gary Gambucci in hockey; and Bill Brask in golf. Brask became the first Gopher since 1942 to win the Conference individual title. He placed third in a strong NCAA field.

In 1966 a scholastic counseling program under the direction of Dayton Hultgren was established to provide supervised study programs, an educational skills clinic, and personal and vocational counseling for freshman and varsity student-athletes.

From April through July of 1967, the University acted as official host to the Pan-American Games Trials. M. W. Ryman, director of athletics, was general chairman for the Games Trials Committee. His staff and 160 volunteer workers from the Twin Cities area served on committees that conducted the Games Trials for 21 sports. More than 1,000 male and female competitors were on the campus during the four-month period. From this group, 571 men and women were selected to compete for the United States at the fifth annual Pan-American Games in Winnipeg, Canada, in early August. The United States Olympic Committee was pleased with the efficiency with which the Trials were conducted. The new format, whereby all of the trials are held in one locality and all of the competitors meet as a team prior to the actual Games, was also considered a success. The profit from the Trials, \$12,655.27, was sent to the Olympic Committee to be used toward the expenses of the 1968 Olympic Team.

In April, 1968, Bill Fitch replaced John Kundla as head basketball coach. Mr. Fitch came to this position with an outstanding coaching record at Bowling Green University and at the University of North Dakota.

Under the sponsorship of the Athletic Department, head coach Dick Siebert conducted baseball clinics throughout the state during the summers of 1967 and 1968. Clinics were held in 30 Minnesota communities in June and July of 1967 and in 20 communities in the same months of 1968.

In June of 1967 the fourth annual Gopher Goodwill Tour was held. Seventeen coaches and staff members visited 175 communities in Minnesota, presenting 81 programs to an audience of 3,542 people. The fifth annual Tour, held in 1968, included border towns and the larger cities in Minnesota. The athletic staff made 31 television appearances and gave 41 radio interviews during the week of June 10-14. Both Tours during the biennium received excellent coverage from the news media.

As in past years, the Athletic Department hosted free clinics for high school coaches in all ten intercollegiate sports. In November of 1967, a new type of clinic, the athletic director's workshop, was instituted to aid high school athletic directors in planning their work throughout the school year. Because of the success of this workshop, it will be continued in the future. A new clinic for high school trainers begun in March of 1968 also will be continued as a part of the annual schedule. More than 2,000 coaches attended the ten clinics sponsored by the Department during each year of the biennium.

STATISTICS ON INTERCOLLEGIATE ATHLETICS

Sport and Coach	1966-1967										1967-1968											
	Total Games or Meets	Total Big 10 Games or Meets	Total Nonconf. Games or Meets	Total Receiving Athletic Instruction, Including Freshmen	Varsity Candidates	"M" Awards	Freshman Candidates	Freshman Numerals	Games Won	Games Lost	Games Tied	Total Games or Meets	Total Big 10 Games or Meets	Total Nonconf. Games or Meets	Total Receiving Athletic Instruction, Including Freshmen	Varsity Candidates	"M" Awards	Freshman Candidates	Freshman Numerals	Games Won	Games Lost	Games Tied
Baseball Siebert	48	18	30	93	41	16	43	27	32	10	0	44	16	28	123	33	20	90	23	35	9	0
Basketball Kundla	24	14	10	57	16	9	41	17	9	15	0	24	14	10	36	21	11	15	11	7	17	0
Cross Country Griak	9	6	3	26	10	8	11	7	6	0	0	7	5	2	26	16	7	10	10	5	2	0
Football Warmath	10	7	3	134	63	49	55	34	4	5	1	10	7	3	120	65	43	55	44	8	2	0
Golf Bolstad	9	4	5	75	13	7	35	11	7th in No. Intercol. 6th in Big 10			6	5	1	37	19	8	18	4th in No. Intercol. 6th in Big 10			
Gymnastics Piper	14	7	7	42	15	11	16	10	8	7	0	15	7	8	35	18	11	16	7	8	7	0
Hockey Sonmor	30	23	7	130	28	18	82	21	9	20	1	31	22	9	59	31	17	28	20	19	12	0
Swimming Mowerson	12	10	2	42	24	16	18	13	6	5	0	12	9	3	47	23	13	24	10	5	7	0
Tennis Walsh	18	9	9	28	8	7	13	5	8	9	0	17	8	9	24	9	8	15	7	17	4	0
Track Griak	15	9	6	64	31	22	22	21	12	4	0	8	6	2	72	41	21	31	18	8	4	0
Wrestling Johnson	16	6	10	44	11	13	22	4	15	6	1	21	11	10	40	15	10	25	7	11	10	0
TOTALS	205	113	92	735	260	176	358	170	108	80	3	195	110	85	619	292	169	327	174	123	74	0

The Department continued to arrange regional meetings throughout the state for the Graduate "M" Lettermen's Club. In both years of the biennium, former lettermen, alumni, and press, radio, and television men joined local area athletic directors for dinner meetings at Rochester, Willmar, Owatonna, Moorhead, St. Cloud, Duluth, and Hibbing. These meetings are held for the promotion of University athletic programs.

DEPARTMENT OF UNIVERSITY STUDENT UNIONS

DONALD R. ZANDER, *Director*

Ideas discussed by the Ad Hoc Committee on Student Unions in fall 1964 and investigated by a Union Study Committee appointed in 1965 were carried out during the biennium. The Study Committee had divided itself into three subcommittees: administrative structure, chaired by Dean Keith McFarland; program, chaired by Dan Paskewitz; and finance and facilities, chaired by Dr. Donald Zander. The McFarland committee completed its report in January, 1966, citing the need for greater coordination between unions, greater clarity in administrative relationships, and strengthening of relationships within the academic community. The committee proposed a new position of director of University Student Unions, a University-wide advisory committee, and greater attention to the complex interrelationships of students and staff, program and finances, and future development and day-to-day operations.

On July 8, 1966, the Board of Regents approved in principle the McFarland report and authorized the positions of director of University Student Unions and director of planning. On July 1, 1967, Donald Zander, former director of the Student Activities Bureau, assumed the position of director of University Student Unions, and Gordon L. Starr was appointed director of union planning.

The reports of the program and the finance and facilities subcommittees were completed and given to the director and the new Union Advisory Committee for their consideration and action.

In addition to the new appointments, which also included a new director for Coffman Memorial Union (Edwin Siggelkow), a director of food services (Robert Ledder), and a director for the West Bank Union (Carl Nelson), numerous policy and procedural changes were made. Income from incidental fees was apportioned on the basis of the needs of the union or student center boards rather than on the number of students registered at a certain location. This resulted in a sizable increase in the St. Paul Student Center budget and a separate budget for the West Bank Union. Realistic assessment of needs and strong faculty and student support led to approval of an increase in student incidental fee support during the biennium. The union fee was raised from \$7.00 to \$10.35 per quarter, with \$3.50 to be used for capital improvements, \$6.75 for current operations, and \$.05 each for cooperative programs for honors students and for international students. Efforts were made during the biennium to allow union governing boards to bank with the Student Activities Bureau as do all other student and student-faculty groups.

A new student-faculty board was established on the West Bank, new constitutions were approved for all three student-faculty boards, and a tentative constitution was drafted for the University Student Unions Advisory Committee. A study committee on West Bank needs developed a proposal for a union building on the West Bank and a committee to consider such a building was appointed. Union staff members submitted a proposal for a learning center to the Council on Liberal Education. Also during the biennium, a Lutheran Student Center was offered to the unions free of charge for possible establishment of off-campus commons rooms or mini-unions.

A professional preparation program for college union personnel was established in the Graduate School in cooperation with the College of Education, the Department of Recreation and Park Administration, and the Department of Educational Psychology. Two new graduate-level courses on unions also were established and cooperative programs were undertaken with the Departments of Art History, Music, Studio Arts, and Speech, Communication, and Theatre Arts. An Employee Recreation Seminar was held in February, 1968,

in cooperation with the College of Education and the School of Business Administration. Many of the professional union staff members took part in the planning and implementation of the 1968 American College Union summer course at the University. More than 50 persons from 22 states and two foreign countries attended this course on union administration, which was taught primarily by University staff. Gordon L. Starr was director of the course.

St. Paul Student Center — Reorganization of the University Unions proved beneficial to the St. Paul Student Center in that the budget was no longer confined to fees paid by students registered on the St. Paul campus. The fee income was increased by \$30,000 in 1967-1968, compared to an increase of \$23,000 over the previous seven years, and has made possible extended hours of service and additional staff to keep pace with the demands of increasing campus activity. In 1967-1968 the Center increased its hours of service 13.3 percent over the previous year, extending daily operating hours and operating a total of 325 days by remaining open on holidays. Hours of service provided at the Information Desk, the principal source of campus information for both campus personnel and visitors, increased by 33 percent in 1967-1968.

The additional funds also made it possible to add one and one-half professional positions to the Student Center's staff to provide increased counseling services in activity programming for students and faculty and to meet administrative needs for improved operation of the building's facilities. Accounting responsibilities for Center business operations were transferred from Coffman Union to the Student Center, necessitating an additional accounting position and additional part-time clerical help.

The Board of Regents approved an amendment to the Constitution of the Student Center Board of Governors that provides for faculty representation from new academic units on the St. Paul campus.

Two major reports relating to expansion of the Student Center were completed during the biennium. The Student Center Expansion Committee conducted a comprehensive survey of students, faculty, and staff attitudes toward present and future Center facilities. The Subcommittee on Staff-Student Activities (as part of the President's Task Force on St. Paul Campus Facilities) submitted a report to the parent body outlining recommendations for facilities that would become necessary if the campus expands to accommodate 15,000 students. The report recommends that existing Student Center and Dining Center facilities be increased to three to three and a half times their present size, remaining at their present sites.

The primary concern of the Center is student programs, ranging from small sensitivity groups to overflowing growds listening to national and world leaders. Speakers during the biennium included Margaret Mead, Jacques Piccard, Martin Luther King, Pearl Buck, Norman Mailer, B. F. Skinner, and Paul Henri Spaak. There is continuous cooperation with campus and off-campus organizations to provide educational relevancy to all programs. Over 40 art collections and educational displays were scheduled in the galleries during 1967-1968. The following chart shows the organizational use and measurable patronage of the Center for the past two years.

ORGANIZATIONAL USE OF ST. PAUL STUDENT CENTER, 1966-1968

	1966-1967		1967-1968	
	Events	Attendance	Events	Attendance
Student Center Sponsored Events	359	29,251	269	29,040
Events Sponsored by Clubs, Organizations, etc.	1,316	54,330	1,452	61,397
Total Organizational Use	1,675	83,581	1,721	90,437
Student Center Patronage				
Information Desk		125,273		140,082
Vending Machines		65,231		62,741
Billiards		36,287		30,580
Bowling		14,645		13,634
Table Tennis		4,750		3,816
Snack Bar		353,303		340,617
Snack Bar Vending Machine		155,092		170,671
Total Patronage		754,581		762,145
Total Measurable Traffic		838,163		852,582

West Bank Union—During the 1966-1968 biennium, approximately 20 programs were scheduled each year by the West Bank Union. In 1966-1967, 18 students worked on the programs, many of which were of a cultural nature. In 1967-1968, 22 students worked on the programs, which dealt primarily with social and political issues. In addition, 40 volunteers worked with Projects in Community Service. Speakers sponsored by the West Bank Union during 1967-1968 were Syl Davis, Nicholas Nicolaidis, Nelson A. Rockefeller, Henry Ward Beecher, Robert Theobald, Thruston Morton, and William McNeil. Other programs included a "That Was the Week That Was" series, mock political conventions, and a photo display entitled "Profiles in Poverty."

An unsuccessful attempt was made to bring together representatives of the West Bank Union, the Minnesota Student Association, the Business Board, the College of Liberal Arts Intermediary Board, department-related student organizations, and the West Campus Ministry into a viable working, planning, or coordinating group. However, informal contact was maintained, information gathered in the effort influenced Union plans and activities, and a working relationship with the Student Activities Bureau was effected.

Other activities of the biennium included organization of the West Bank Union Board, opening of a common room in Anderson Hall, remodeling of the Union Lounge in the Business Administration Tower and addition of coffee service, and provision to campus organizations of such services as contract table borrowing, arrangements for luncheon meetings, mail boxes, telephone message taking, poster making, and office space. An advisory committee on general use space was established by Space Allocations and Scheduling during the biennium and a West Bank Union Study Committee recommended design and construction of a union building and development of living-learning centers or "mini-unions" integrated into classroom or office complexes.

Coffman Memorial Union—During the biennium, a new director, Edwin Siggelkow, and a new program director, Erik Erickson, were appointed; a parking ramp was built adjacent to the Union; the Union initiated additional services for commuters; and the Union Board of Governors split into two boards and then merged again.

The Union Board of Governors is one of the most active and productive in the country. Among the high points of the 762 programs initiated by students during the biennium were ski trains; jazz workshops; teach-ins; Expo '67 trips; plays such as "Oliver," "Roar of the Greasepaint," and "Spoon River Anthology"; the "Take a Professor to Lunch" program; creative arts festivals and a spring art sale; and programs on racism, the draft, hippies, alcohol, sex, and drugs. Audience participation programs included "Paint the Mall" and do-it-yourself junk sculpture. Relevancy and timeliness were stressed in the programs, several of which have become models for programs on other campuses.

"The Whole" coffeehouse program begun during the biennium was quite successful. WMMR was discontinued, but it may be revived with the support of the Department of Speech, Communication, and Theatre Arts.

The Union's educational concerns were emphasized in the "Take a Professor to Lunch" programs that were sponsored during two weeks of the biennium.

PROGRAM ATTENDANCE AT COFFMAN MEMORIAL UNION, 1966-1968

Programs	1966-1967		1967-1968	
	Events	Attendance	Events	Attendance
Board	1	23		
Creative Programming Development	34	9,716	24	9,602
Fine Arts	76	20,116	89	23,282
Music	47	20,690	39	9,336
Personnel and UBC	11	3,066	27	1,097
Recreation	100	3,998	84	7,357
Social	70	18,890	48	20,019
Topics	56	24,497	44	7,858
The Whole			11	1,814
TOTAL	395	100,996	367	80,365
Gallery Attendance		54,000		55,000

nium. Members of the faculty were luncheon guests of their students and the Union Board of Governors in the newly decorated buffeteria. The purpose of the programs was to create an awareness of the possibilities of education interaction outside the classroom. In one of the weeks, more than 100 faculty members and students participated.

Planning for new food service facilities within the building was discussed during the biennium and systematic planning was initiated. Improvement projects included a new floor in the Main Ballroom and completion of painting in most of the building.

Future—During the next biennium, planning committees for each of the unions or centers will develop ideas for the future. The University Student Union Advisory Committee will coordinate the plans of each union with the overall plans of the University. Coffman Union needs to be updated, the St. Paul Student Center needs to be enlarged, and a union building needs to be built on the West Bank. Student-faculty committees will attempt to relate themselves more closely with other campus and off-campus issues and organizations. In the future, the unions hope to become even more the action centers for educational, cultural, and social activities at the University.

DEPARTMENT OF UNIVERSITY RELATIONS

WILLIAM L. NUNN, *Director*

The University's many publics, both external and internal, and its multiple relationships with them continued to be the major concern of the Department of University Relations during the biennium. In serving the University and those publics, the Department maintained a comprehensive flow of information about the University and its activities to the publics through a variety of media; compiled, edited, and published informative and promotional booklets, brochures, directories, a house organ, pamphlets, programs, newsletters, reports, and citations; planned and managed numerous and varied University functions, ceremonies, and public events; and operated, through its Special Projects Program, a sophisticated system of fund raising, stimulating philanthropy, channeling gifts from benefactors to the University, and reporting to donors on the utilization of their gifts. Other responsibilities of the Department included arranging for University representation at major functions at other universities, colleges, and educational associations; welcoming and providing guidance for campus visitors; and providing counsel and service in public relations matters to the administration, faculty, staff, and various units of the University.

In February, 1967, offices of the Department were moved from Morrill Hall to leased space in the Hubbard Building, 2675 University Avenue, St. Paul. The move was considered temporary, and a return to the Minneapolis campus was anticipated when space there becomes available.

Public Information and Publications—Two new positions were added to the Department's University News Service during the biennium, increasing significantly the kinds of public information service available to the campus and to the news media.

In November, 1966, a health sciences writer was hired and based in the University Medical Center to cover the College of Medical Sciences, the College of Pharmacy, the School of Dentistry, University Hospitals, and the College of Veterinary Medicine. This appointment freed the general science writer to devote his time to other science areas and to develop more in-depth features.

A sixth writer was added to the staff in July, 1967, and assigned specific areas of coverage in liberal arts, education, law, business administration, the General College, the Graduate School, concerts, lectures, and entertainment.

Three writers—who covered the General Extension Division, student affairs, and general science—were replaced during this period, resulting in an entirely new News Service staff (except for the news editor), as of July, 1967.

The larger staff enabled the News Service to move ahead in such areas as setting up personal interviews and radio and television appearances for news-

worthy visitors and faculty members, planning and executing coordinated news coverage for important occasions, and covering the campus more thoroughly than had been possible before.

One innovation has been a University column sent every other week to editors of weekly newspapers throughout Minnesota. The columns have had varied acceptance depending on the subject matter, but all have appeared in several places and one in almost 100 newspapers. At least one editor has set up a standing headline—"University of Minnesota Column."

Publications of the Department vary widely and are tailored for the publics for which they are intended. Publications section editors published six issues of the *Minnesotan*, the University's house organ, in 1966-1967 and seven issues during 1967-1968. The magazine served to keep staff members informed of significant events on the various campuses. *Reports from Your University of Minnesota* was issued three times each year and sent to the parents of University students.

The Needs of the University of Minnesota, a concise presentation of the Regents' 1967-1969 request to the State Legislature, was published in December, 1966, and distributed throughout the state to legislators, parents, alumni, University staff members, and interested citizens. The *Biennial Report*, a detailed account of the University's operations, and the *President's Report*, a more attractive and more readable summary of the *Biennial Report*, were published early in 1968. The *Student-Staff Directory* was published in the fall of each year, and the *Cap and Gown Day Program*, a listing of scholarship winners and honor students, was issued each May.

Other Department publications included commencement programs; reproductions of speeches made at the University; brochures for building dedications; brochures, booklets, programs, and solicitation material for fund-raising campaigns; calendars of University events; citations for Outstanding Achievement Awards, Regents' Awards, and Alumni Service Awards; and programs for special events such as the University and Variety Club of the Northwest dinner honoring the Earl Mountbatten of Burma in March, 1968, and the inauguration of President Malcolm Moos in May, 1968.

Functions and Special Events—As the operating and administrative agency for major University functions and special events, the Department arranged and supervised ten commencements and receptions for the graduating classes; an annual new faculty orientation program; a staff and faculty retirement party each year; annual opening convocations and Cap and Gown Day convocations; a Legislators', Editors', and Broadcasters' Day each fall; a farewell dinner for President and Mrs. O. Meredith Wilson in May, 1967; and President Moos' inauguration.

Through its functions section, the Department also processed the presentation of Outstanding Achievement, Regents', and Alumni Service Awards; planned dinners and receptions for distinguished visitors; and arranged ceremonies for the dedication of new buildings. It also coordinated with the Minnesota Jaycees and the Minnesota Alumni Association the annual observance of University of Minnesota Week, handled tours for groups visiting the University—including tours for new legislators and for the Dome Club, wives of legislators—and arranged for University representation at major functions such as centennials and inaugurations at other universities and colleges.

Fund Raising—The Department, through its Special Projects Program, is charged with soliciting, accepting, acknowledging, receipting for, and depositing gifts to the University and for establishing funds for the employment of those gifts. It also provides the "housekeeping" for the University of Minnesota Memorial Fund Committee, the General Memorial Fund, the School of Nursing Foundation, and the annual Consolidated Fund Drive.

During the biennium, the Department's Special Projects Program received contributions and bequests totaling \$520,788. Included was \$230,561 received through the University of Minnesota Memorial Fund and \$17,532 through the School of Nursing Foundation.

In addition, the 1966 and 1967 Consolidated Fund Drives for the United Fund of Hennepin County, the American Cancer Society, and the Minnesota Heart Association raised a total of \$251,640 from staff members on the Minne-

apolis campus. Three weeks of campus-wide, personal solicitation each October brought in donations totaling \$117,982 in 1966 and \$133,658 in 1967.

The Department was closely associated during the biennium with fund-raising activities for the University of Minnesota Landscape Arboretum and provided substantial support to the Eye Bank Board of the Minnesota Lions Club in a project to equip an Eye Clinic for Children in the proposed new Health Sciences Center. The Department also maintained liaison with organizations that are major University benefactors, including the Minnesota Masons, the Variety Club of the Northwest, the American Legion, and the Veterans of Foreign Wars.

During the biennium, intensified efforts were made to inform donors of what had been accomplished with their gifts. Special meetings were arranged at which reports were made to donor organizations. Recipients of scholarships and grants made possible by gifts to the University were informed about their benefactors in brochures prepared by the Special Projects Program in the hope that they might be inspired to become donors in the future.

Special attention was given during the period to stimulating staff members throughout the University to become involved in raising those supplementary funds that enable their University to achieve its "margin of excellence."

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