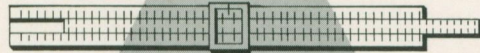


DIVISION THREE

OF NATURAL SCIENCE AND MATHEMATICS



1. Biology
2. Chemistry
3. Mathematics
4. Physics
5. Psychology

“Clearly, knowledge of the scientific method does not by itself make a good scientist, any more than knowledge of English grammar alone makes a Shakespeare. At the same time, the demands of the scientific method should make it evident that scientists cannot be the cold, inhuman precision machines that they are so often, and so erroneously pictured to be. Scientists are essentially artists, and they require a sensitivity of eye and of mind as great as that of any master painter, and an imagination and keen inventiveness as powerful as that of any master poet.”

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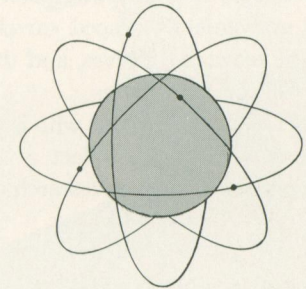
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All scientific advance has its beginnings in basic research in the laboratory.

THE SPACE AGE



Stereophonic sound, moon rockets, jet planes, platforms in space, atomic submarines, polaris solid fuel missiles, radar, color television, the electronic computer, extractors, freezers, automatic washers, ovens, dispose-alls. . . . The list grows steadily longer with the march of science in this age.

Scientists are splitting atoms and harnessing atomic power. Man-made satellites are being projected beyond the earth's orbit. The possibilities for further discovery and invention are almost limitless for those with the curiosity and patience to work by the scientific method.

But new problems are arising with this progress. Science could get out of bounds. It is developing forces that are capable of destroying mankind. These dangers will not be averted by condemning scientific advances on moral grounds. We must first develop a knowledge and appreciation of science and then work out ways in which we can guarantee that scientific discovery will be directed to socially useful ends.

Only those who have an understanding of science along with a deep concern for human welfare, for ethical and spiritual values, can safeguard tomorrow.

To provide that kind of liberal education is the objective of Milwaukee-Downer College.

A SCIENCE FOUNDATION

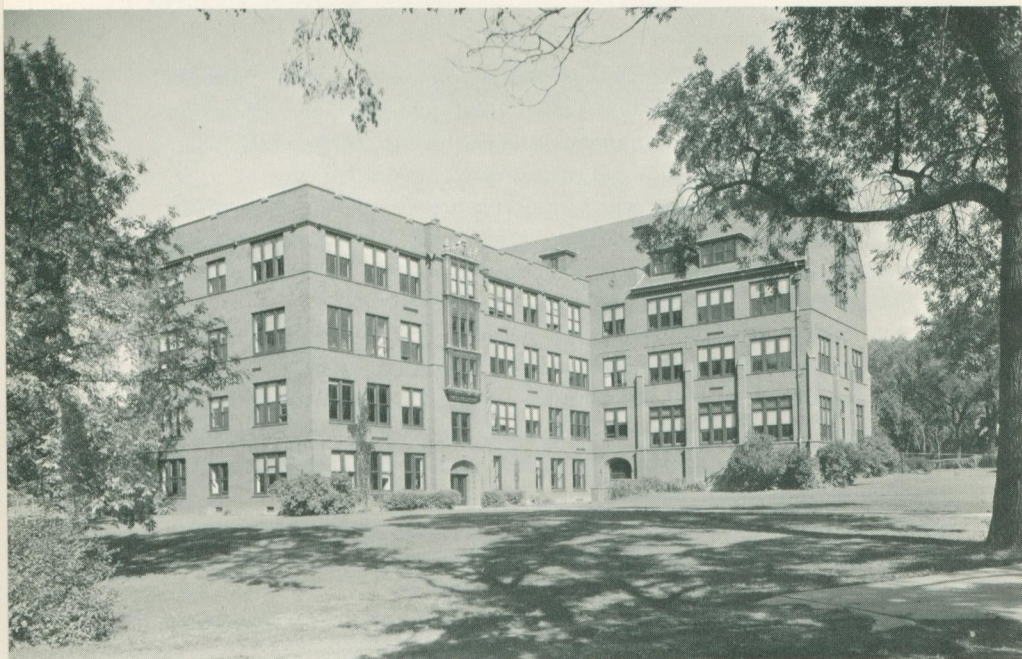
For the student who chooses science as her field of concentration at Milwaukee-Downer College, the foundation will be laid in small classes which encourage a quick tempo of learning and which permit flexibility in individual assignments.

The equipment and facilities in relation to the number of students offer unusual opportunity. Sabin Hall, with its extensive laboratories and scientific apparatus, is surrounded by acres of wooded campus in which botany classes may find specimens of natural plant and tree growth at their very doorstep.

Across the campus is Chapman Memorial Library with its open stacks and conveniently placed carrels. The latest scientific journals are available on the magazine shelves, and the reference rooms draw scholars from beyond the college boundaries.

The science major who is particularly gifted may work for departmental honors. Or she may elect a "400" course, with her professor encouraging independent study or research, but available for consultation as she needs it.

Ellen C. Sabin Hall houses the Science Division.



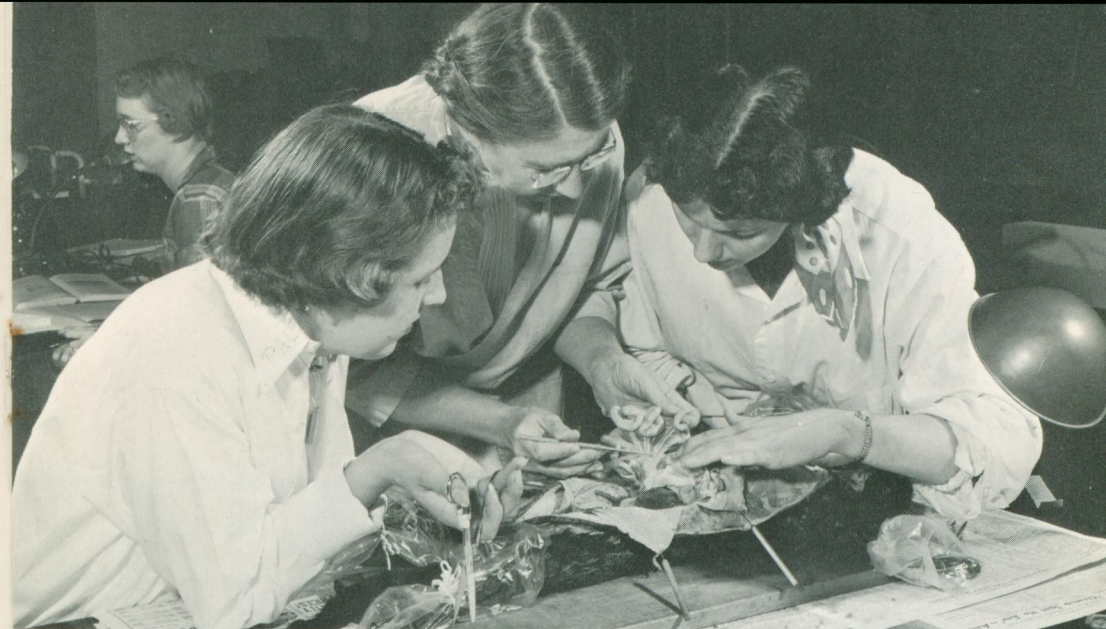
BY NO MEANS WASTED



Chromatography Seniors may elect to do independent work in their major fields. Here a chemistry major is using paper chromatography to separate and identify some of the substances found in casein.

The student who does not plan to use her science professionally will find that her education has by no means been wasted. She will have gained an appreciation of the relationship between science and the life she is living. She will have experienced the orderly procedure of the scientific scholar. She will have had a taste of the intellectual appeal of pure science, and she will have discovered how many applications of the research field are all about her: in fabrics and dyes, in eye glasses, cameras, thermometers and barometers, in the water purification plants that protect her family's health, in psychological tests that prevent or correct misfits in employment, in new medicines that heal the human body and the human mind. All these and infinitely more had their beginnings in scientific investigation.

Anatomy A knowledge of the structure and relationship of the organs in a system is essential to the understanding of its function. These students in Anatomy and Physiology have just completed the dissection of the digestive system of a cat, and the instructor is pointing out the blood supply to these organs.



“FEMININE FALL-OUT?”

While “feminine fallout,” as the Wall Street Journal phrased it, has long prevented women from reaching high places in government, business, and industry, the need for qualified personnel is drawing more and more women into responsible positions. Some are successfully combining marriage and a job. Many are returning to work in their thirties and forties after their children are in school.

“American women are the unclaimed treasures of science, the untapped resource in this Space Age,” claims Betty Lou Raskin, who recently made headlines across the country by suggesting that the laboratory coat rather than the mink coat should be considered the symbol of female success. Miss Raskin, who heads the plastics research and development at the Johns Hopkins Radiation Laboratory, gave her provocative address before the American Association for the Advancement of Science.

Statistics show that nine out of ten women are likely to work outside their homes in the course of their lives. According to the National Manpower Council, today’s schoolgirl can expect to work at a paid job for 25 years. It is extremely important, then, for an intelligent girl to prepare herself for the best possible kind of position.

Yet the paradox today is the headlong rush into early marriage, with many an able girl dropping out of college and taking any available job to help finance her husband through college. At the moment it may seem like an unselfish act of devotion. In the long run, the young wife may have denied herself, her husband, and her children the kind of home which a truly educated woman can create. She may have cut herself off from any future position that would call for her highest competence. Financially, materially, and in the intangibles which make a good life, she will have sacrificed the lasting advantages for the immediate.

Suggested program for a Divisional major. It may prepare for laboratory technology, or for graduate study in medical or other biological sciences.

Freshman Year	Credits	Junior Year	Credits
Chemistry or Physical Science	8	Comparative Anatomy of Vertebrates	4
English: Composition	4 or 6	Histology	3
French or German	8	Quantitative Analysis	4
Hygiene	1	Psychology	6
History	6	Religion or Philosophy	4
Electives	2 or 3	Art or Music Appreciation	2
	30 to 32	Electives (Mathematics recommended)	7 or 8
			30 to 31
Sophomore Year		Senior Year	
General Biology	8	Bacteriology	6
Organic Chemistry	4	Genetics	3
Physiological Chemistry	4	Electives (Advanced Chemistry, Calculus, and a second modern foreign language recommended)	21 or 23
English: Literature	6		30 to 32
French or German	6 or 8		
Art and/or Music Appreciation	2 or 4		
	30 to 32		

TO FURTHER THEIR GAINS



The women of yesterday who struggled valiantly for higher education and gained a small foothold in the professions surely expected this generation to guard those gains and extend them. You may ask, what can one woman do to further these gains. She can see to it that she obtains the highest education for which she has the capacity, and she can prepare herself to do the best—not the easiest—work of which she is capable. She can encourage others to do the same.

IN A LIBERAL ARTS COLLEGE

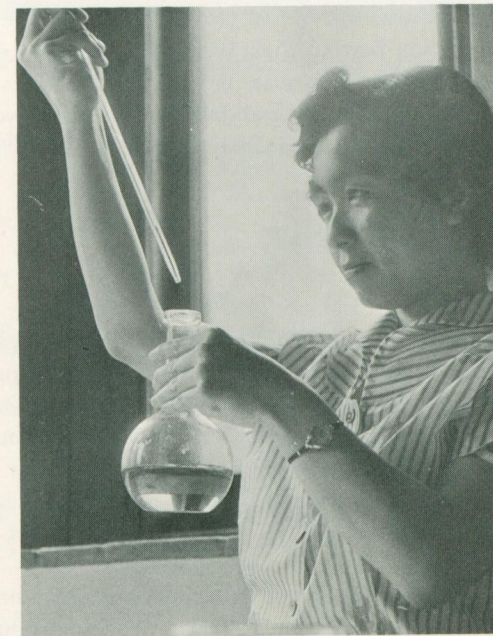
A liberal arts college is particularly designed to give the aspiring student a basic education on which to build further growth. Technical or narrowly vocational training will not be enough, since automation and improvements are so rapidly changing the patterns of production that the worker who understands only how to perform a certain process without knowing why may soon find herself at a dead end. The liberally educated worker who understands the principles underlying a process will be far more able to adapt to new developments and techniques.

Highly specialized professions, such as medicine, law, the ministry, engineering, are demanding an increasingly broad, general education as a foundation. Literature, art, languages, history, sociology, economics, all provide a sound background for the specialist who will be more expert professionally as well as a better human being for having studied the humanities.

IN A COLLEGE FOR WOMEN

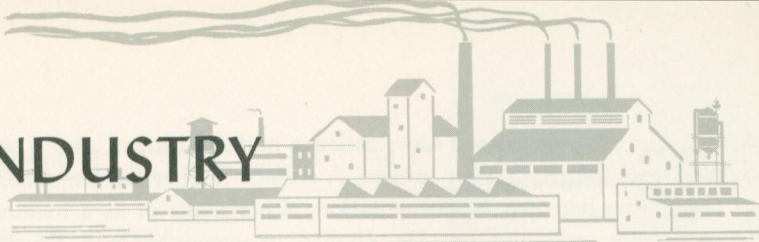
A college for women is dedicated to extending the opportunities for women and preparing them to meet these opportunities. In the classroom, women carry the discussion. In the laboratory, women perform the experiments. In extracurricular activities they conduct meetings, plan the programs, edit the publications, and develop leadership and responsibility. The value of such an education is best proved by the record of those who have experienced it.

Graduates of Milwaukee-Downer College who have majored in mathematics or science offer an interesting cross section of the many positions into which this kind of education leads.



A student from Japan is doing her part to improve the position of women. Masako Kawasaki, class of 1958, engaged in an assigned research project, has a teaching assistantship in biochemistry at the University of Illinois College of Medicine.

INDUSTRY



Industry is employing more and more women. Large corporations maintain research laboratories where constant investigation is being carried on to test and improve their products and techniques and to develop new ones. They employ scientists and technicians at all levels.

When basic research brings to light some new substance or by-product which can be developed profitably, a whole new corps of employees may be required for applied research and development, then production, promotion, and sales. Engineers, draftsmen, technicians, technical writers for manuals and reports, technical secretaries, all are sought from among applicants who have the required background. Not all of these jobs are open to women, but a surprising number of firms, from textiles to airplane producers, are steadily expanding these opportunities.

In business and commerce, there is analytical research, or computational and statistical work with banks, investment houses, insurance companies. This type of position requires mathematical background.



Determining Vitamin C by the Bioassay Method

In the research and development center of the American Can Company, Margaret Ives, Ph.D., has extensive quarters and facilities to maintain an animal colony, as well as a completely modern laboratory in which to make the necessary chemical tests for her studies and research. Her work involves biochemistry, nutrition, writing scientific articles and reports, and toxicology. By means of animal feeding studies she tests the safety of materials used in American Company containers.

Dr. Ives graduated from Milwaukee-Downer College in 1940.

Suggested program to prepare for industrial or civil service positions or graduate study with a major in chemistry.

Freshman Year	Credits	Junior Year	Credits
Chemistry, Inorganic and Qualitative Analysis	8	Chemistry, Quantitative Analysis or Organic Chemistry ..	8
Mathematics	8	General Physics	8
English: Composition	6 or 4	History	6
German or French	8	Art and Music Appreciation ..	4
Personal Hygiene	1	Electives	6
Elective	0 to 2		
	<hr/>		<hr/>
	31		30
Sophomore Year		Senior Year	
Chemistry, Quantitative Analysis or Organic Chemistry ..	8	Chemistry, Physical and Electives	6 or 7
English: Literature	6	Religion or Philosophy	4
German or French	8	Biology or Advanced Physics or Advanced Mathematics .	6 or 8
Differential and Integral Calculus	4 or 8	Electives	11 to 14
Electives	0 to 4		
	<hr/>		<hr/>
	30		30

AFTERMATH OF MATH

Arlyne Lawrence, class of 1936, had a liberal education that included a major in mathematics and in history, and minors in education and economics. Her extremely responsible position as Comptroller puts her in charge of administration of the college budgets and involves close collaboration with the President of the College, Dr. John B. Johnson, Jr.





Counsellor Elizabeth Pillsbury, class of 1937, psychological counsellor in the public school system of Milwaukee, is shown giving a test to a five-year-old by which the psychometrist may evaluate mental ability and her readiness for school.

PSYCHOLOGY

Fairly new among the professions are those growing out of a study of psychology. They range from the psychological technician's job of routine testing and interviewing, clerical and statistical work, and care and operation of instruments, which may be done by the graduate with only the B.A. degree, to the advanced research of the Ph.D. There are positions of school psychologist, industrial psychologist, clinical psychologist, as well as teachers of psychology, and psychometrists. Practically all demand graduate study beyond the bachelor's degree.

Shrubbery and trees frame the residence halls bordering on Hawthornden.



Chapman Memorial Library