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FUTURE PLANNING FOR THE HEALTH SCIENCES  
COLLEGE OF PHARMACY

PART II. STAFF AND SPACE PROJECTIONS

College of Pharmacy  
University of Minnesota  
Minneapolis, Minnesota

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## I. INTRODUCTION

The Long Range Planning Committee for the Health Sciences was appointed in October 1964 by President Wilson. In March 1966 the Deans of the College of Pharmacy and the College of Veterinary Medicine were appointed to this Committee.

The Committee for the Study of Physical Facilities for the Health Sciences published its first report entitled, "Future Planning for the Health Sciences, Part I. Preliminary Report on Roles, Objectives and Programs" on January 1, 1966. The second report, "Future Planning for the Health Sciences, Part II. Program and Personnel Space Projection" was published in October 1966. The third report, "Future Planning for Health Sciences, Part III. Subcommittee Program and Space Reports" was published in February 1967.

The College of Pharmacy published within its own faculty its first report, "Future Planning for the Health Sciences--College of Pharmacy" on January 19, 1967. In this report it was concluded that "The College of Pharmacy must become an intimate part of the health center complex with regard to academic programs and to location." The Committee for the Study of Physical Facilities for the Health Sciences accepted the recommendation without dissent. The College of Pharmacy was asked to prepare a detailed report covering program, staff and space projections. A "Joint Program Statement of the College of Pharmacy and the College of Medical Sciences/University Hospitals" was published in August 1967. The purpose of the present report is to present staff and space projections for the College of Pharmacy. An attempt has been made to present data in

a form in which it can be easily compared with that furnished by the other health professions and presented in their third report mentioned above.

## II. PHARMACY MANPOWER-STATE OF MINNESOTA

No report on the present status or future need of the pharmacy profession in Minnesota is available. Information on the need has been obtained through Mr. Paul G. Grussing, Executive Secretary, Minnesota State Board of Pharmacy, whose invaluable assistance we wish to acknowledge. This is presented below and has served as a basis for projected need.

The total number of registered pharmacists engaged in practice in the state and the annual number of graduates from the College of Pharmacy are graphically presented in Figure 1. The projections for the total pharmacists needed in Minnesota beyond 1966 are based on Federal Bureau of Census figures furnished by the Minnesota Department of Health. These plus the factor of 1 pharmacist for 1500 people, which is considered optimum, was used to determine the points on the pharmacy graduate curve for 1970, 1975, and 1980. The projections for graduates in pharmacy for 1968 and 1969 are based on present enrollments in these classes. The remainder of the curve is based on projected graduates of about 100/year by 1973 and 125/year by 1986.

There are several other factors which will greatly influence future pharmacy manpower needs. Three of the most important include:

1. Ages of Pharmacists Engaged in Practice: The most complete available data is for the year 1965. At that time there were 2122 pharmacists active in the state.

Figure 1.

Total Pharmacists in Minnesota and  
Pharmacy Graduates, University of Minnesota

- Number Pharmacists Practicing
- - -•- - Number Pharmacists Needed (Projected)

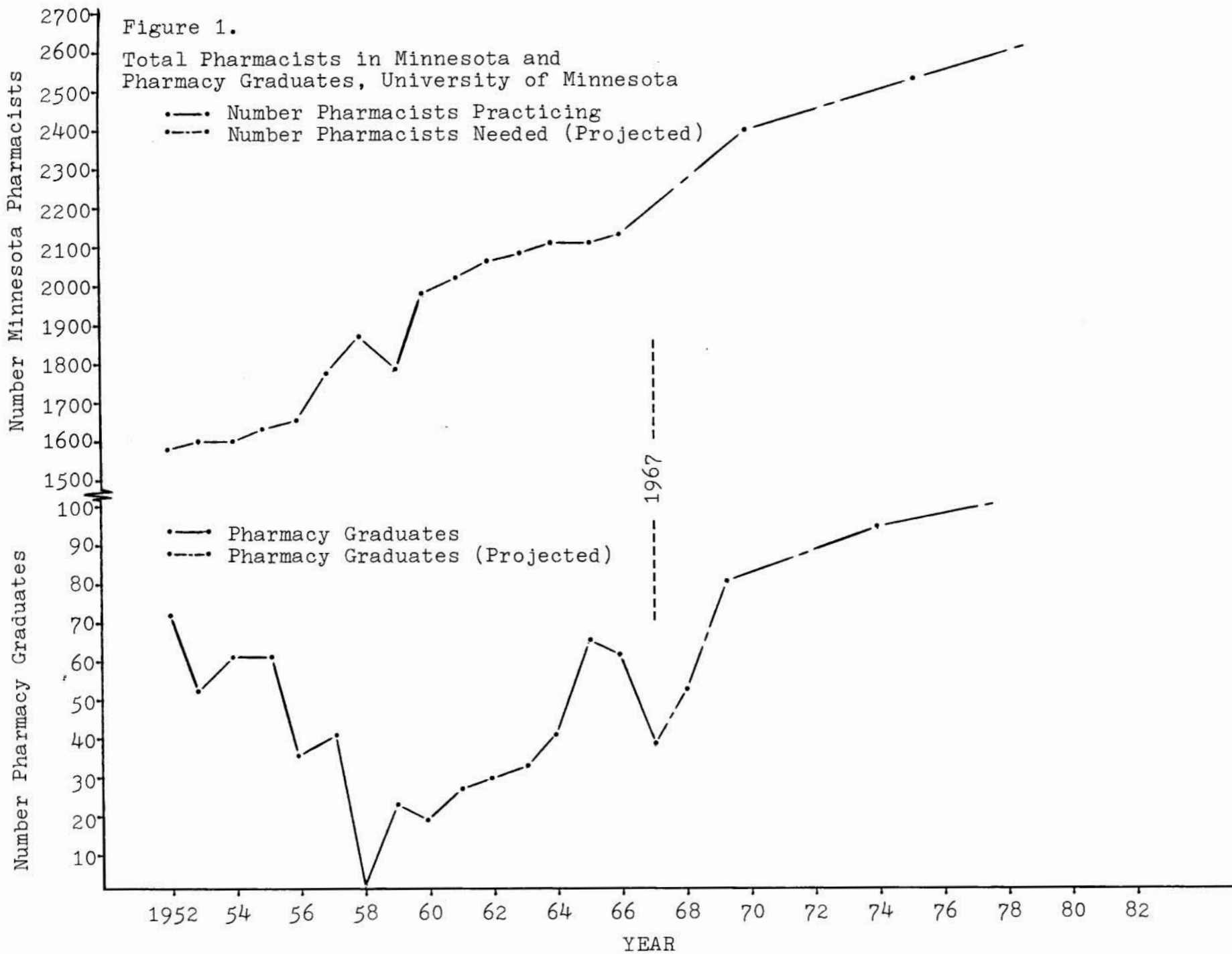


Table 1

Ages of Pharmacists Engaged In Practice  
(Minnesota, 1965)

<u>Years of Age</u>	<u>Number</u>
Under 30	318
30-39	544
40-49	401
50-59	390
60-64	207
65-over	<u>262</u>
Total:	2122

Not included in this is a group of about 500 "inactive" pharmacists who have been forced into relief roles because of pharmacy shortages. About 250 of these are asked to work at least 75% of a full-time schedule. For the most part this group would normally be classified as retired.

2. Hospital Pharmacy: In 1952 there were 36 hospitals employing 54 pharmacists. In 1967 there were 181 pharmacist practicing their profession in 68 hospitals. Recent Medicare legislation requires hospitals and nursing homes to have a pharmacist or the consultive services of a pharmacist in order to qualify; the pharmacist is responsible for compounding and dispensing. A survey of pharmacy service in smaller hospitals in the state of Minnesota by W. E. Peterson in 1963 showed that 184 hospitals existed. Of these, 116 had 100 beds or less. Only 17.1% formally utilized the services of a pharmacist at that time.

3. Changing Role of the Pharmacist: A discussion of this area appeared in the first report from the College of Pharmacy. The interested reader should consult this report (a copy can be obtained from the College of Pharmacy office).

A realistic estimate of the needs for pharmacists in Minnesota over the next two decades can be made. However, this estimate must be based on our present understanding of the role of the pharmacist.

Table 2

Estimate of Minimal Pharmacist Manpower Needs for Minnesota  
(1966-1986)

Demand	Number of Pharmacists Needed
Pharmacists needed to take care of population increase:	677
Pharmacists lost due to retirement or death--Ages in 1965: 50-59 (390); 60-64 (207); 65+ (262) and one-half of these 40-49 (401).	1059
Pharmacists needed to fulfill need brought about by new government regulations. Small hospitals (100 beds or less). Boarding care homes and nursing homes (about 500). Calculation based on 1 hour/1 day/6-day week.	75

The above estimate does not take into account manpower needs due to predicted greater involvement of the pharmacist in the total health care program. Another factor which is presently quite controversial and might have a beneficial effect on the shortage of pharmacists is the strong possibility in the future of "pharmacy technicians." It would be expected that pharmacists would gain time to devote to functions of their professional practice which are presently being slighted. It might not increase the actual number of pharmacists available for professional practice. The College of Pharmacy could be involved in the training of these "pharmacy technicians " if they become a reality.

### III. EXISTING PROGRAMS

The objectives of the College of Pharmacy are: 1) to educate men and women of ability, integrity, and character to identify, prepare, formulate, and distribute drugs and other health aids; 2) to disseminate information about the uses and value of scientific medicine; 3) to win and deservedly keep public confidence and respect for the profession of pharmacy; 4) to aid the state and federal governments to control habit-forming drugs to enforce all laws for public welfare; 5) to encourage original work and study by qualified persons who will make unselfish use of their services in the interest of health sciences; and 6) to assist public health agencies in the prevention and control of diseases.

Beginning in 1892, the University of Minnesota awarded the Ph.G. degree for two years of professional pharmaceutical study. A program requiring a minimum of three years of study leading to the Phm.C. (pharmaceutical chemist) degree was adopted in 1915-16 but was abolished in 1927-28 when four-year course leading to a B.S. (bachelor of science) degree in pharmacy was instituted. Increasing responsibilities of the pharmacist and expanding opportunities for the graduate of a college of pharmacy made necessary a further extension of the curriculum. Through actions taken by the American Association of Colleges of Pharmacy, a minimum five-year curriculum became mandatory in 1960 in all colleges of pharmacy for a degree in pharmacy.

Pharmaceutical education has progressed rapidly and soundly, keeping pace with advances made in medicine, dentistry, veterinary medicine, and the other health sciences. Progress in pharmaceutical education necessiated an extended program with the following objectives: 1) greater emphasis on cultural courses which "broaden" the student's knowledge and enhance the prestige of the profession; and 2) reduction in the clock-hour load which in the four-year curriculum was too heavy because of the large number of



laboratory courses. In the five-year curriculum the student has the opportunity to elect a wide variety of courses and to engage in many of the beneficial extracurricular activities of the University. By these means the student can enjoy the intellectual and social growth that is so important in his future position as a professional member of society.

Students are admitted to the four-year professional course in the College of Pharmacy on completion of one year of accredited collegiate work. Students applying for the three-year professional course must have completed, in addition to the courses of the prepharmacy year, courses in basic biological sciences (botany and zoology or equivalent course in general biology), physics, organic chemistry, and general economics, which are equivalent to those listed in the pharmacy curriculum.

Students who complete either the 1-4 (one year of prepharmacy work plus four years of professional study) or the 2-3 programs are awarded the degree, Bachelor of Science in Pharmacy.

Graduate study with major work in medicinal chemistry, pharmaceuticals, hospital pharmacy, pharmacognosy, and pharmacology, leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) is offered through the Graduate School.

#### IV. NEW PROGRAMS

Several new programs have been initiated. Additional programs are in the planning stage. Several of these should be mentioned.

1. New and planned graduate training programs. Because of the shortage of trained individuals in medicinal chemistry, pharmaceuticals,

pharmacognosy, hospital pharmacy and pharmacy administration, graduate training programs will be established in all these areas. A medicinal chemistry training grant from the Public Health Service was approved, funded and initiated on July 1, 1967. A training grant in pharmaceuticals is currently under review. A graduate program in pharmacy administration is presently under study by the College and the Graduate School. It is anticipated that this program will be available for the 1968-69 academic year.

2. Undergraduate training in clinical pharmacy. The projections have been presented in some detail in the report "Joint Program Statement of the College of Pharmacy and the College of Medical Sciences/University Hospitals" (copy available from College of Pharmacy or University Hospitals). This important program projects the use of hospital facilities in a manner not unlike those required by medicine and dentistry. The addition of several pharmacy practitioners will be necessary to staff the new clinical pharmacy area to aid in the training of undergraduate pharmacy students. The many experimental projects planned will require supporting personnel (i. e. drug information systems).

3. Curriculum Changes. The changing roles of the pharmacist require that a greater future emphasis be placed on the biological areas. As a result of an "in depth" review of our curriculum, additional coursework in pharmacology and public health were recommended by the faculty of our College. In addition, it is hoped that a new course in pathology for pharmacists can be arranged. The pharmacist must be increasingly concerned with and knowledgeable about the overall health care of the patient. The study of the future needs of this profession and the resulting requirements on our curriculum continues.

4. Continuing Education. During the past year we have been experimenting with different types of programs to assist the practitioner of pharmacy. These will be developed further during the coming years. Through the Committee for Institutional Cooperation we have initiated meetings with member universities with colleges of pharmacy with two goals in mind: 1) to develop regional programs in pharmacy continuing education and 2) to develop the mechanism whereby such continuing education programs can, in part, be attacked on a national basis to take advantage of the best talents and decrease the local load. Further, we believe that the University of Minnesota health professions might benefit by looking into some cooperative programming and staffing.

#### V. STUDENT ENROLLMENT

The projections are shown in Table 3. We believe that the undergraduate projections are conservative, based on the estimated needs for the state of Minnesota. However, this seems justified if one accepts the fact that, presently, the two Dakota schools train more students than are needed in their respective states. In recent years active registrants in pharmacy in the state of Minnesota who were graduates of North Dakota and South Dakota have been consistently about 20% and 10%, respectively. The rather large number of pharmacists from these two schools now practicing in this state results at least in part from the fact that the University of Minnesota instituted the five-year program about six years before the other two schools. However, as more Minnesota graduates become available fewer graduates of schools in the Dakotas will be needed.

A factor which cannot be measured accurately is the likelihood

Table 3

UNIVERSITY OF MINNESOTA COLLEGE OF PHARMACY

Existing and Projected Student Enrollment

<u>Category</u>	<u>Existing 1967</u>		<u>Projected 1973</u>		<u>Projected 1986</u>	
	<u>Entering</u>	<u>Total</u>	<u>Entering</u>	<u>Total</u>	<u>Entering</u>	<u>Total</u>
Undergraduate	100	300	125	400	150	560
Graduate (includes Post-doctoral)						
Hospital Pharmacy		10		15		30
Medicinal Chemistry		20		35		50
Pharmaceutics		8		20		40
Pharmacognosy		3		7		12
Pharmacy Administration		0		3		10
Continuing Education		250		1,000		1,200

that the University of Minnesota will be offering an optional six-year program leading to the degree of Doctor of Pharmacy within five years. The California state schools have been on the six-year program now for several years. More recently optional programs have been offered by the University of Michigan, Ohio State University, Philadelphia College of Pharmacy and Tennessee. Several other schools are contemplating such offerings. It seems that the greatest effect will be on the need for additional faculty and the number of students in training and not the number of eventual graduates.

Graduate enrollment is expected to grow rapidly as our training grants become operative. Finally, continuing education will become a very important segment of our education. At least one state now requires participation in postgraduate programs for continued licensure. As better programs of pharmacy continuing education become available, other states will undoubtedly have such requirements.

## VI. FACULTY & STAFF

The projections are shown in Table 4. It is difficult to project needs in the new clinical pharmacy area since there is very little experience upon which to draw. Most schools having any program similar to the one we are planning are also in the early stages of planning. It is anticipated that practitioners who have other responsibilities will prove the most useful in the educational program. It is feared that the projections here will prove inadequate, particularly over the shorter period. The projections in the other areas appear conservative.

Table 4  
 UNIVERSITY OF MINNESOTA COLLEGE OF PHARMACY  
Existing and Projected Faculty and Staff

PROGRAMS AND ACTIVITIES	Full-time Faculty		Part-time Faculty		Civil Service			
	Total	Univ.	Total FTE	Univ.FTE	Total Tech.	Univ.Tech.	Total Non-Tech.	Univ. Non-Tech.
<b>I. TEACHING (UNDERGRADUATE AND GRADUATE)</b>								
Clinical Pharmacy	1-2-4*	1-2-3	0-6-20	0-4-15	1-2-4	1-2-4	0-1-3	0-1-3
Medicinal Chemistry	5-7-10	5-6-8	0.1-2-3	0-0-0	1-1-1	1-1-1	0-1-2	0-0-1
Pharmaceutics	4-7-10	4-6-8	0-1-2	0-0-0	1-1-1	1-1-1	0-1-2	0-0-1
Pharmacognosy	2-4-7	2-3-5	0-0-0	0-0-0	0-0-0	0-0-0	3-3-3	3-3-3
Pharmacology	2-4-4	2-2-3	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0
Pharmacy Administration	2-3-5	2-3-4	0-0-0	0-0-0	0-0-0	0-0-0	0-1-1	0-1-1
<b>II. RESEARCH</b>								
Clinical Pharmacy	0-2-3	0-0-1	0-0-0	0-0-0	0-1-2	0-0-0	0-1-1	0-0-0
Medicinal Chemistry	0-2-4	0-0-1	0-0-0	0-0-0	0-2-3	0-0-0	0-1-1	0-0-0
Pharmaceutics	0-2-4	0-0-1	0-0-0	0-0-0	0-2-3	0-0-0	0-1-1	0-0-0
Pharmacognosy	0-1-2	0-0-1	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0
Pharmacology	0-1-1	0-0-0	0-0-0	0-0-0	1-2-2	1-2-2	0-0-0	0-0-0
Pharmacy Administration	0-1-2	0-0-1	0-0-0	0-0-0	0-0-0	0-0-0	0-1-1	0-1-1
<b>III. SERVICE</b>								
Administration	1-1-2	1-1-2	0-1-1	0-1-1	0-1-1	0-1-1	3-4-6	3-4-6
Data Storage, Retrieval and Processing	0-0-2	0-0-1	0-0-0	0-0-0	0-1-3	0-1-2	0-1-2	0-1-2
Audio Visual	0-0-0	0-0-0	0-0-0	0-0-0	0-1-3	0-1-3	0-1-1	0-1-1
Instrument Repair - Photography	0-0-0	0-0-0	0-0-0	0-0-0	0.5-1-2	0.5-1-2	0-0-0	0-0-0
Reading Room (Student lounge)	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-0-0	0-1-1	0-1-1
Continuing Education	1-2-3	1-2-3	0-0-1	0-0-1	0-0-0	0-0-0	0-1-2	0-1-2
<b>IV. SUMMARY</b>								
Teaching	16-27-40	16-22-31	0.1-9-25	0-4-15	3-4-6	3-4-6	3-7-11	3-5-9
Research	0-9-16	0-0-5	0-0-0	0-0-0	1-7-10	1-2-2	0-4-4	0-1-1
Service	2-3-7	2-3-6	0-1-2	0-1-2	0.5-4-9	0.5-4-9	3-8-12	3-8-12
<u>TOTAL:</u>	<u>18-39-63</u>	<u>18-25-42</u>	<u>0.1-10-27</u>	<u>0-5-17</u>	<u>4.5-15-25</u>	<u>4.5-10-18</u>	<u>6-19-27</u>	<u>6-14-22</u>

\*Figures represent needs for 1967-1973-1986 in the order given.

- Explanation of headings:
1. Total -- complete faculty, technical or civil service needs.
  2. Univ. -- requested support from University funds for College of Pharmacy budget.
  3. FTE -- full-time equivalent.
  4. Tech. -- technical.
  5. Non-tech. -- Non-technical (clerical, gardeners, etc.).

## VII. SPACE REQUIREMENTS

The projections are shown in Table 5. We are presently pressed for space, a condition which will become serious because of our decision to delay a request to the Legislature for funds to add a wing to the present building. The College of Pharmacy faculty made the decision to delay this request in order that a study could be made of pharmacy's future needs. If the recommendations presented in the first report are accepted, the College of Pharmacy will be moved to a yet undecided site within or next to the other health sciences. The programs, some of which have already been initiated, will require the space projected in Table 5.

It should be emphasized that no classroom or library space needs were projected.

## VIII. SUMMARY

The proposals made by the faculty of the College of Pharmacy in their several reports represent a significant departure from the College's programs in the recent past. The present and future roles for the practicing pharmacist must be correctly interpreted by us so that the right educational experience will be available to our students. It is obvious that the pharmacist is going to play an ever increasing role in total health care in the future. This will require him to become more patient (and disease) oriented; he is presently drug oriented. Thus, clinical pharmacy, an increase in biological science offerings and more intimate contact with other undergraduate health professionals become important factors in his training.

Table 5

UNIVERSITY OF MINNESOTA COLLEGE OF PHARMACY

Existing and Projected Space

<u>Activities</u>	<u>Existing</u>	Net Square Feet <u>1973</u>	<u>1986</u>
Faculty Office		6,370	11,700
Faculty Research Laboratories	3,095*	12,740	23,400
Teaching Laboratories	10,045	11,524	17,286
Research	6,980	32,000	56,800
Administration	1,772	3,000	3,600
<u>Service</u>			
Teaching Service**	3,225	7,644	10,372
Instrument repair, photography	196	400	600
Audio-visual	-	300	600
Data handling	-	600	800
Locker room - lounge (student)	1,439	3,000	4,500
Animal rooms	353	1,000	2,000
Greenhouse facility***	<u>3,643</u>	<u>1,000</u>	<u>1,000</u>
TOTAL:	30,748	79,578	132,658

\* Existing space for office-laboratories.

\*\* Stock rooms, storage and rest rooms.

\*\*\* Wulling Hall space released to University 1185 sq. ft. Additional space (lecture rooms) expected for research and offices in 1968, 1109 sq. ft. in Appleby Hall.



In the graduate areas we are uniquely qualified to train young people for careers in teaching and/or research. We have at this University all the supporting areas needed to offer outstanding graduate programs in medicinal chemistry, pharmaceuticals, pharmacognosy, hospital pharmacy and pharmacy administration.

To realize success in these areas we must have, as a minimum, the staff and space indicated in the report (Table 6).

Table 6

UNIVERSITY OF MINNESOTA COLLEGE OF PHARMACY

Summary of Existing and Projected Faculty and Space

<u>Item</u>	<u>Existing</u>	<u>1973</u>	<u>1986</u>
University Budgeted Full-time Faculty	18	25	42
University Budgeted Part-time Faculty, Full-time Equivalents	0	5	17
Net Square Feet Space*	30,748	79,578	132,658
Undergraduate Enrollment	300	400	560
Graduate Enrollment	41	80	142

\* Excludes all lecture room space, library and laboratory space used by supporting basic sciences. Includes laboratory space for pharmacy courses.

