

UNIVERSITY OF MINNESOTA
Graduate School

Minutes of the Executive Committee
Tuesday, April 18, 1967
1:00 P.M. 306 Johnston Hall

Present: Professors Dwain W. Warner, Warren S. Loud, Maynard C. Reynolds, David W. Thompson, George Seltzer, John G. Darley, Suzanne Davison, for Clarence M. Stowe; Dr. R. Drew Miller; Mr. David Brown by invitation; Deans Francis M. Boddy, Warren E. Ibele, Millard L. Gieske; Dean Bryce Crawford, Jr., presiding; Shirley McDonald, secretary.

Dean Crawford introduced Mr. David Brown, who is an ACE intern in the University President's Office. The American Council on Education provides an opportunity for selected university personnel to observe, for an academic year, administrative and academic practices in various universities. Mr. Brown was invited to spend several days with Graduate School personnel.

1. Proposed Foreign Language Requirements - Dean Crawford reviewed the significant changes outlined in the proposal: the option to demonstrate a higher order of proficiency in one foreign language and the nine credit collateral field option. The proposal was circulated to the Graduate Faculty in a recent Newsletter.

Professor Reynolds asked about requests by students to change from the former 15 credit collateral field requirement to the new 9 credit requirement. Students who have not yet submitted Ph.D. programs and language declarations will, of course, come under the new 9 credit rule, should they elect this option. Students who have had programs and language declarations approved may submit revised Ph.D. programs and language declarations (not petitions) and these, together with the former program will be reviewed and acted upon by the group committees and the Graduate School.

The Executive Committee gave its final approval and the revised language requirements will go into effect approximately May 1, 1967. Graduate School staff will contact the language departments regarding any changes in the certification form or in materials they publish for information. Flyers describing the new requirements will be available in the Graduate School Office, 316 Johnston Hall.

A copy of the final proposal is included in the permanent file of these minutes.

2. The Candidate's Certificate - Information on the proposed Candidate's Certificate has been distributed to the Graduate Faculty. Discussion in the group committees and Executive Committee has continued over several months. Dean Boddy said that the CIC Deans will meet May 1st and 2nd and it is hoped that these deans can come to this meeting with statements of intent from their respective universities. Dean Boddy mentioned that there have been some questions about the title of the certificate and several suggestions have been made. It is believed generally that the certificate would have better understood significance if a single title can be acceptable to all institutions within the

CIC group. Endorsement of the proposal by a majority of the CIC institutions would give the certificate greater meaning, but would not force any single school to adopt it.

Although not all group committees are unanimous in recommending the adoption of the proposed certificate, there was consensus that it be endorsed by the Executive Committee subject to additional information coming out of the CIC meeting, or any positive reaction by the University of Minnesota faculty which would warrant a reconsideration of the matter.

Dean Boddy will report this intention at the CIC meeting.

3. Proposed M.S. (Plan A & B) and Ph.D. Programs with a Major in Plant Physiology - A group of plant physiologists, who have been discussing graduate training in plant physiology for some time, submitted a proposal for a graduate program in this field.

Currently, it is necessary for students whose main interest is in plant physiology, to be admitted to various majors such as botany, soil science, forestry, agronomy, etc. and thus are held to requirements of these individual areas. Program planning and review is difficult for the student, adviser, and group committees. The proposed program is flexible, for in addition to the core of courses appropriate to all degree candidates, there are ancillary courses which are not specified, but would be determined by the breadth of the field of plant physiology.

Upon recommendation by the Agriculture and Biological Sciences Group Committees, the Executive Committee approved the establishment of the M.S. and Ph.D. with a major in Plant Physiology. The graduate deans will proceed with the details of implementation of the new major.

A copy of the proposal is filed with the permanent file of these minutes.

4. Proposal to Eliminate the Graduate Major in Agricultural Biochemistry
The Agriculture and Biological Sciences Group Committees have considered the proposal and recommend that the graduate major, Agricultural Biochemistry (both Master's & Ph.D.) be discontinued and that graduate work be restricted to the more recently established major, Biochemistry.

The Executive Committee approved.

5. Proposed Master of Science (Plan A) with a Major in Physics at Duluth

The Physical Sciences Group Committee and the faculty in Physics have reviewed the final proposal. Professor Loud reported that acceptance has been recommended. Final action on nominations to the Graduate Faculty in this area will be taken at the next group committee meeting.

The Executive Committee approved the adoption of the M.S. (Plan A) with a major in Physics at Duluth. A copy of the proposal is filed with the permanent file of these minutes.

6. Proposed Joint Law-Public Administration Program - Professor Seltzer noted that he had not received copies of the proposal. Copies have been forwarded and discussion will be taken up at the May meeting of the group committee.

During some general discussion on the double counting of credits for joint degrees, questions about the double counting of credits for two Master's degrees were raised. Deans Crawford and Boddy explained that a double counting of credits for two separate majors within the Master's degree is not permitted. The only exception made - and this rarely - is where the credits applied to the 2nd Master's were in excess of the minimum number of credits required for the 1st Master's degree. The double counting of credits may be permissible, within certain limits, between different degrees. For example, a student might enter into the Master of Fine Arts degree program with a Master of Arts degree earned at this University, and apply certain credits from the M.A. to the M.F.A., as long as he meets all of the other requirements. The same situation obtains with the Certificate of Specialist in Education. And, of course, there has been no question about the listing of coursework from the Master's program on the Ph.D. program, since the doctorate is not a "course-credit" degree.

Dean Boddy mentioned that there have been requests by students to take a second Master's, using the minor field (and its credits) from the first degree towards a major in a second Master's degree. Such requests have been denied, but it is conceivable that in a Plan A program, with a thesis and final examination required, that such double counting of credits might be justified. One could take the extreme position and justify the double counting in the Plan B program if different Plan B papers were submitted and the final examination were meaningful. Dean Gieske expressed some misgivings over anything but a very limited use of double counting towards two Master's degrees because wholesale use can lead to a weakening of the degree.

Dean Crawford suggested that Professors Thompson and Seltzer join with Deans Boddy and Gieske as an informal ad hoc committee to explore the subject.

7. Proposed Specialist Certificate in Library Science Teaching - Earlier discussion of the proposal by the Education Group Committee resulted in a request for more specific information on proposed curriculum and admission standards. This supplementary material was supplied. Professor Reynolds for the Education Group Committee and Professor Seltzer for the Social Sciences Group Committee reported a recommendation for acceptance of the program.

The Executive Committee approved the adoption of the Specialist Certificate in Library Science Teaching. A copy of the proposal is included with the permanent file of these minutes.

8. Ph.D. Normal Pattern - Dean Crawford reported that there seems to be a commendable trend by departments to appoint committees or directors of graduate studies and that a few do file a kind of progress report on their Ph.D. students. If the Graduate School can develop the use of the computer to the point where Quarterly Progress Reports showing unsatisfactory progress in terms of appropriately defined lower limits can be automatically separated, departments might find these more useful and might develop further usefulness through filing departmental reports with the Graduate School Office. Dean Ibele will look into ways by which departmental interaction with the Graduate School Office might be stimulated, to the end that student progress be watched more effectively and more usefully.
9. The Preliminary Oral Examination - There has been a good deal of confusion and certainly a lack of clarity on the preliminary oral examination - what it is for, how best it can be used, how it supplements the written examinations, and the like.

The Executive Committee agreed that there ought to be an exchange of views and some discussion and that perhaps a "position" paper by Dean Crawford would be a good way to begin. The dean will draft a statement and bring it before the Executive Committee at the May 16 meeting.

10. The Proposed Major in Educational Administration within the Ed.D Degree Professor Reynolds said that discussion of the proposal in the Education Group Committee led to a suggestion that there be an additional category of the Graduate Faculty for advising students in the professional doctoral programs. It was agreed that rather than establish a separate category, we distinguish between Graduate Faculty who will advise the candidates for the Ed.D. and those who will advise candidates for the Ph.D. in Educational Administration in the same way we distinguish between Graduate Faculty for different majors; there will, of course, be some overlap.

In addition, Professor Reynolds asked that the Graduate School, in collaboration with faculty in Educational Administration, draft the proposal in bulletin-type language, re-defining the Collateral Field and Supporting Program, etc.

The Education Group Committee approved the program in principle, but does wish to defer final approval until it has seen the bulletin-type material. Dean Gieske will make the necessary contacts so that work can begin on this draft.

11. Membership on Graduate Group Committees for 1967-68 - Dean Crawford asked the Executive Committee to send to him names of faculty who might replace group committee members whose terms will expire. He also noted that with increased graduate activity at Duluth, more group committees might wish to add a Duluth member. And indeed, in terms of communication and certain special offerings a Morris member might be helpful.

12. Proposal that all Graduate Students be required to Register and Pay Fees during the Quarter of the Preliminary Oral Examination - Following a short discussion, this proposal was tabled. It does not seem desirable, at this time, to impose a registration fee upon students who are not taking coursework.
13. Problems in Summer Graduate Work - Professor Seltzer was asked by the Social Sciences Group Committee to relay to the Executive Committee some of the problems which exist in respect to graduate work during the summer. Professor Seltzer emphasized four points: (1) the examination process is a greater administrative problem - thus the quality of the examination is different; (2) there is a lack of Graduate Faculty available to serve on examining committees and the substitution problem is insurmountable; (3) the summer session fee schedule is such that Graduate Faculty are not encouraged to teach and the quality of the offerings must be affected; (4) the time period of a 5-week session is much too short for reflection and thinking.

Some suggestions were offered. Perhaps we should encourage departments to rule, as some now do, that there be no Ph.D. oral preliminary exams during the summer. A single summer quarter and re-negotiation of the faculty fee scale might be considered. Professor Reynolds brought up the possibility of an "interim" quarter - a short period of "total immersion" in late January and early February plus a one-half term during the summer.

Dean Crawford asked the group committees to think about these ideas, explore any other possibilities and communicate their reactions and suggestions to the group committee chairmen. If we identify changes which seem desirable, we can explore the possibilities further with Dean Thompson.

14. Ph.D. Continuous Registration and the Five Year Time Limit - Dean Gieske stated that the Graduate School is receiving responses to the letters sent to Ph.D. candidates who are approaching the 5-year time limit. A number of petitions for extension of time have been referred to the group committees. Perhaps by the May Executive Committee meeting date, enough experience will have been gained to initiate some discussion on policy in respect to future requests for extension of time.

Before the meeting adjourned, future meeting dates were set. May 16 at 1:00 P.M. and June 6 at 1:00 P.M.

Respectfully submitted,

Shirley McDonald
Secretary

April 24, 1967

REVISED FOREIGN LANGUAGE REQUIREMENTS

The following information supersedes that contained in the 1966-68 Graduate School Bulletin. These are Graduate School requirements and departmental listings should be examined to determine whether there are language requirements beyond the minimum prescribed by the Graduate School and which languages and options are acceptable to the department. In general, languages must be relevant to the student's scholarly work in terms either of usefulness to research or of communication value in a projected scholarly career; the burden of proof of such relevance rests with the student, with the help of his adviser. In no case may English be submitted.

MASTER'S DEGREE: Reading knowledge of a foreign language, modern or ancient, the language to be determined by the major department and the appropriate group committee, is required of candidates for the Master's degree unless the requirement is specifically waived by the major department. (See also page 2)

Ph.D. DEGREE: A. General Requirements
The Graduate School permits a student to fulfill the foreign language requirements in any one of three ways:

1. Higher Proficiency in One Language

A student may elect to prepare himself for a higher level of proficiency in a single foreign language. When offering this option, the student will be expected to satisfy an additional examination in reading and conversational ability; the examination will be administered by the language department concerned. Preparation for this examination normally would require the equivalent of three continuous years of study at the college level with grades of B or better.

2. Two Foreign Languages

The traditional method has been for the student to demonstrate a competency in two languages. Frequently the department strongly urges that their majors specialize in particular languages, and each student will wish to consult with his department.

3. Collateral Field or Research Technique and One Language

A student may elect to offer a single foreign language, and (in lieu of the second language) a special research technique or collateral field of knowledge. A special research technique should represent the acquisition of any special skill that will effectively contribute to the research proficiency of the student (provided that such a skill is not an assumed or traditional part of the major).

The collateral field of knowledge is expected to broaden the student's scholarly background by permitting exploration of knowledge in a field related to the major and/or minor.

To satisfy the research technique or collateral field, the student may complete a total of 9 credits in courses numbered 100 or above, with grades of at least C or, he may pass a special examination. However, courses that are a traditional part of the major or minor may not be included. Credits earned or proficiency demonstrated at another institution may be transferred if completed no more than 5 years before entering the Graduate School.

Foreign Students

A foreign student whose native language is other than English may use his native language if it meets the criterion of relevance; he may not, however, use it as a single language to satisfy the "High Proficiency in One Language" option.

- B. When to File Proposed Ph.D. Program and Language Declaration
Normally, the student should plan, before the end of his fourth quarter in residence, to file in the Graduate School, his proposed doctoral program and language declaration. The language requirements are expected to be fulfilled before the student is admitted to the preliminary oral examination.

C. How to Establish Proficiency in the Foreign Languages

MASTER'S
DEGREE
&
Ph.D.
DEGREE

A student may establish proficiency in one of the following ways:

1. Completing as a graduate student at the University of Minnesota three quarters of language with no grade lower than C, or an intensive course approved by the Dean of the Graduate School.
2. Successful completion of the examination at the end of the course established in the General Extension Division (German, French, Spanish, Italian, Portuguese, and Russian) to aid students in meeting the language requirement.
3. Successful completion of the examination at the end of a course (French, German, and Spanish) offered through the Correspondence Study Division.

NOTE: Courses taken in the General Extension Division or in Correspondence Study for credit may not be used in lieu of the proficiency examination.

4. Presenting evidence of completion, within five years preceding certification of two years of a language at the college level with a C average, or one year of a language at the college level with an average of B or better and a grade no lower than B in the final quarter or semester. Courses may have been taken at the University of Minnesota or at another accredited college or university.

One year is the equivalent of 12 quarter credits or 8 semester credits. Two years is the equivalent of 24 quarter credits or 16 semester credits.

The Graduate School permits transfer of language certification from any institution in the United States whose credits are regularly accepted by the Graduate School, and whose language tests are administered by procedures approved by the Graduate School at Minnesota. Language certification will not be accepted from institutions where the examinations are administered by the student's major department. Certification of language proficiency demonstrated more than 5 years before a student enrolls at the University of Minnesota will not be acceptable.

Where certification at another institution is not possible, and where it would work a hardship on the student to come to Minneapolis for an examination, the language departments will send written examinations to be taken wherever the candidate may be, provided proper arrangements for proctoring can be made. This provision cannot apply when a candidate is to be examined in depth in one language, because of the requirement of demonstrable conversational ability as well as superior reading proficiency.

5. Passing a language proficiency examination administered by a foreign language department. The level of the examination is such that a student who has completed one year of college foreign language with emphasis on reading, and who has shown higher than average proficiency (approximately a B record) would be considered adequately prepared.

Examinations to meet the language requirement of the Graduate School, unless otherwise arranged with the language departments, shall be held on the second Thursday of each quarter and on the second Thursday of each term of the Summer Session.

A repetition of the language examination is considered a special examination for which a fee of \$5 is charged.

6. Graduate School Foreign Language Test of the E. T. S. Some language departments may elect to administer a standardized foreign language test developed by the Educational Testing Service. For information about which departments use the GSFLT, the student will wish to inquire in the departmental office. A fee is charged the student each time he registers for the GSFLT.

April 7, 1967

Dr. Bryce Crawford, Jr., Dean
The Graduate School
University of Minnesota

Dear Dr. Crawford:

It has been suggested that a brief statement about requirements for the proposed graduate degree program in plant physiology would be in order, and I have been asked to send you a statement about them.

The primary reason that the plant physiologists at the University of Minnesota have proposed a graduate degree program is that they feel the need for common basic degree program requirements and an identification by common degree designation of all those students who build on this core. Currently "plant physiology" students must get degrees in such diverse areas as Botany, Soil Science, Forestry, Agronomy, or any of several others, and the specialized and sometimes restrictive nature of the requirements in these areas makes it difficult to set up a program which makes sense as plant physiology. The simplicity inherent in having one plant physiology program would not only make easier the task of students and advisors in setting up degree programs, but it would make more rational the evaluation of these programs by Graduate Group Committees.

An essential feature of the proposed program is its flexibility. While there is a core of courses which can be identified clearly as being appropriate for all degree candidates, it is desirable that courses beyond these basic ones not be specified. The requisite flexibility of these ancillary courses is dictated by the breadth of the field of plant physiology, and some candidates will require as part of their major program courses in biochemistry, others in ecology, yet others in genetics, plant anatomy, bacterial physiology, biophysics, or other areas. One point worth emphasizing is that the total number of credits earned by a candidate in courses outside plant physiology might well exceed the number earned in plant physiology courses per se.

There follows a list of courses which would be suitable courses in the major. Those courses listed in Group A are considered to be the basic offerings and in general are recommended or required prerequisites for many of the courses in Group B; they also would likely comprise a substantial portion of a minor program. (This list does not include any of the courses which, while not being plant physiology per se, might be essential courses in a candidate's program, e.g., ecology, bacterial physiology, etc. Selection of such courses would be made in consultation with the candidate's advisor.)

Group A: Botany 182, 183, 184, 186, 187, 188.

Group B: Botany 185, 280 (or Biochem. 204 or Pharmacognosy 165-166), 281, 282, 283, 284, 285; Forestry 152, 215; Horticultural Science 138, 139, 245 (old 141); Plant Pathology 109, 136, 162, 164, 166, 167, 168, 216; Microbiology 121, 222.

It is recommended that the language requirement for the M.S. be fulfilled in German, Russian, or French. For the Ph.D. either a second language or a collateral field/research technique option would be acceptable.

It is suggested that eighteen credits of course work in plant physiology constitute a Ph.D. minor program, with the possible substitution in certain cases of a limited number of these credits in courses in closely related fields.

It is unlikely that a candidate in plant physiology would take less than 21 credits of plant physiology courses per se, and some will take considerably more, but it is quite possible that up to half of the credits earned in the "major" would be in courses which are not strictly plant physiology. To illustrate this point, and also to indicate some of the various types of programs which might be submitted in plant physiology, I am enclosing a few sample programs.

I hope that the information included here will be sufficient for the Graduate School to complete its decision on the degree program within a reasonable period of time. Should there be need for further details, please do not hesitate to request them.

Very truly yours,



Thomas K. Soulen
Assistant Professor of Botany

Program A

<u>Major</u>	<u>credits</u>
Bot 182-183-184 Plant Physiology	9
Bot 186-187-188 Laboratory courses in plant physiology	6
Bot 281 Growth and Differentiation of Plants	3
Bot 284 Ecological Physiology	5
PLPa 168 Experimental Protoplasmatology	3
PCh 107-108 Elementary Physical Chemistry	6
BioC 151-152 Introduction to Biochemistry	8
	<u>40</u>

Minor (Botany)

Bot 104 Survey of the Plant Kingdom	5
Bot 115 Flora of Minnesota	4
Bot 121 Developmental Plant Anatomy	5
Bot 130 Ecology of Plant Communities	5
	<u>19</u>

Program B

Major

Bot 182-183-184 Plant Physiology	9
Bot 186-187-188 Laboratory courses in plant physiology	6
Bot 280 Radioactive Techniques Applied to Biology	3
Bot 285 Photosynthesis	3
PLPa 136 Physiological Basis of Chemical Action	3
MicB 223 Bacterial Metabolism	3
Biom 100 Statistical Analysis I	4
MeAg 127 Principles of Radioisotope Measurements	3
Bot 118 General Cytology	5
	<u>39</u>

Minor (Biochemistry)

BioC 141-142 General Biochemistry	6
BioC 145-146 General Biochemistry Laboratory	6
BioC 143 Metabolic Reactions	3
BioC 220 Advanced Protein Chemistry	2
BioC 223 Advanced Enzyme Chemistry	2
BioC 119 Physical Biochemistry	3
	<u>22</u>

Program C

Major

Bot 182-183-184 Plant Physiology	9
Bot 186-187-188 Laboratory courses in plant physiology	4
Bot 281 Growth and Differentiation of Plants	3
PLPa 136 Physiological Basis of Chemical Action	3
Soil 132 Soil Fertility	3
Soil 133 Microclimatology (Soils)	3
Soil 136 Organic and Pesticidal Residues	3
Agro 135 Weed Control	3
Gen 140-141 Intermediate Genetics	6
Biom 100-101 Statistical Analysis	8
	<u>45</u>

Minor: same as Program B.

NOV 14 1966

COLLEGE OF BIOLOGICAL SCIENCES
DEPARTMENT OF BOTANY • MINNEAPOLIS, MINNESOTA 55455

November 10, 1966

Dr. Bryce Crawford, Jr., Dean
The Graduate School
University of Minnesota

Dear Dr. Crawford:

As chairman of the ad hoc committee on plant physiology, I have been instructed to transmit to you the attached proposal regarding establishment of an all-university graduate degree program in plant physiology.

Very truly yours,

Thomas K. Soulen

Thomas K. Soulen
Assistant Professor of Botany

November 8, 1966

Dr. Bryce Crawford, Jr., Dean
The Graduate School
University of Minnesota

Dear Dr. Crawford:

With the encouragement of Dean Berg and Dean Caldecott, a group of plant physiologists has been meeting for over a year to discuss graduate training in plant physiology with the objective of providing an integrated program of courses and a common degree program. From this group of plant physiologists representing several departments in both the Institute of Agriculture and the College of Biological Sciences, Dean Berg and Dean Caldecott appointed a five-man committee to make recommendations and to receive and study suggestions on courses and the manner in which a degree program should be initiated.

There is a general consensus that plant physiology represents a distinct and important area of plant science, and because of the need for professionally trained people in this area, a degree program at the graduate level is needed.

A new group of graduate courses in plant physiology is being offered for the first time this year in a cooperative effort between the faculties of the Institute of Agriculture and the College of Biological Sciences. Both faculties herewith make a recommendation for an all-university graduate degree program in plant physiology.

Proposal for a New All-University Graduate Degree Program in
Plant Physiology

We recommend that a degree program in plant physiology be initiated in the Graduate School. This program would not be directed or administered by any one department or college but would be both inter-college and inter-departmental. The program would provide Plan A and B Master's and Ph.D. degree programs in plant physiology.

A faculty of plant physiologists should be designated by the Dean of the Graduate School or by a committee appointed by him, and a "Director of Graduate Study" should be named from and by this faculty.

The research interests and/or teaching responsibilities of the following staff members readily identify them as suitable initial members of the faculty of plant physiology:

Russell S. Adams
Robert N. Andersen
Richard Behrens
William A. Brun
William Bushnell
Alfred C. Caldwell
Lucas Calpouzos
William P. Cunningham
Albert W. Frenkel
Herbert Jonas
Paul Li
A. J. Linck

C. J. Mirocha
Robert E. Nylund
Lee C. Olson
Douglas Pratt
John B. Rowell
Lawrence M. Smith
Thomas K. Soulen
Eduard Stadelmann
Edward I. Sucoff
T. W. Sudia
C. J. Weiser

Additions to this faculty would be recommended to the Dean of the Graduate School by majority vote of the sub-committee proposed in the following paragraph. Any member of the faculty of plant physiology could recommend a person for this faculty by submitting to the sub-committee the necessary documentation in support of the nominee.

A sub-committee for plant physiology should be formed in the Graduate School to carry out the necessary administrative functions involved in the development of graduate degree programs and their approval. The sub-committee would review and give first approval for all degree programs in plant physiology and would carry out such other functions as making recommendations for the composition of the examining committees and performing other duties similar to those performed by the Genetics sub-committee for the Genetics degree program.

The need for the sub-committee might change with time, and we recommend that its role be reviewed within three years of its initiation.

Degree programs acted upon by the sub-committee would be transmitted to either the Agriculture Group Committee or the Biological Sciences Group Committee, depending on the administrative location of the advisor. This procedure would be like that used by the Genetics sub-committee.

We recommend that the plant physiology degree program be described under the heading "Plant Physiology" in the Graduate School Bulletin along with a listing of the requirements for the program and all of the courses approved for the program. Inquiries concerning the program could be directed to any member of the faculty of plant physiology or to the director of the program.

If the above recommendations are approved in full, we recommend that the graduate degree program in "Agricultural Plant Physiology" be deleted from the Graduate School Bulletin and that the faculty for this degree program as now constituted in the Graduate School be disbanded.

This recommendation has the support and approval of:

Ernst C. Abbe
Richard Behrens
William A. Brun
Richard S. Caldecott
Alfred C. Caldwell
Lucas Calpouzos
William P. Cunningham
Albert W. Frenkel
H. W. Johnson

F. H. Kaufert
M. F. Kernkamp
Paul Li
A. J. Linck
William P. Martin
C. J. Mirocha
Robert E. Nylund
Lee C. Olson

John B. Rowell
H. J. Sloan
Lawrence M. Smith
Leon C. Snyder
Thomas K. Soulen
Eduard Stadelmann
Edward I. Sucoff
C. J. Weiser

*Not approved
4/18/67
will come later*

NOV 18 1966

UNIVERSITY OF *Minnesota*

COLLEGE OF BIOLOGICAL SCIENCES • ST. PAUL, MINNESOTA 55101

Office of the Dean

November 17, 1966

Dean Bryce Crawford
Graduate School
321 Johnston Hall
Minneapolis Campus

Dear Dean Crawford:

On October 25 I attended a meeting to discuss the manner in which plant physiology should be handled at the University of Minnesota. The recommendation was put forth by the physiologists that a Ph. D. in plant physiology be approved and that the present degree in agricultural plant physiology be disbanded. This is a position with which I concur and I hope that you will find it possible to pursue the matter with some of the individuals who represent plant physiology at the University. It is fair to say that the only concern I have is that if the Ph. D. degree is ultimately approved, then there should be some guarantee that it is a "first-class" degree. The best way I know to assure this would be to have first-class people approving the degree programs that would be submitted for consideration. I happen to think that the Subcommittee in Genetics has been particularly effective and it is possible that a similar arrangement could be worked out for plant physiology. If you care to have suggestions as to who would be appropriate to serve on such a committee, I would be pleased to try and come up with some names.

I believe I mentioned to you that the course offerings in plant physiology have been totally reworked since CBS came into being with the result that they are now fewer in number, are taught by faculty from both the Institute of Agriculture and CBS, and are all listed as offerings of the Botany Department.

Sincerely yours,

Rich

Richard S. Caldecott
Dean

jyl

*Dean Bryce
321 Johnston Hall
Hussey & Linnick
with the help of
Walter H. H. H.
at 1205 12th St
Planned Physiol.*

UNIVERSITY OF *Minnesota*

SMOD/AGS BC
EY Com
FEB 20 1967

COLLEGE OF BIOLOGICAL SCIENCES
DEPARTMENT OF BIOCHEMISTRY • ST. PAUL, MINNESOTA 55101

February 16, 1967

Dean Bryce Crawford, Jr.
321 Johnston Hall
Graduate School
University of Minnesota
Minneapolis, Minnesota

Dear Dean Crawford:

Some time ago I talked to you about the desirability of dropping the graduate program in Agricultural Biochemistry.

I have checked this matter with my colleagues here and we see no reason for leaving this old degree on the books. We therefore respectfully request that the existing graduate program in Agricultural Biochemistry be terminated and our graduate work offered in this department be restricted to the more recently approved graduate program called "Biochemistry".

Sincerely yours,

L M Henderson

L. M. Henderson,
Head

LMH:ls

*Approved by
S. P. C. comm
4/18/67*

*2000-10-10
L. M. Henderson
2/21/67*

MAR 20 1967

UNIVERSITY OF MINNESOTA, DULUTH
DULUTH, MINNESOTA 55812

Office of the Academic Dean

March 17, 1967

Dean Bryce Crawford, Jr.
321 Johnston Hall
University of Minnesota
Minneapolis, Minnesota 55455

Dear Dean Crawford:

It gives me pleasure to submit a proposed Physics M.S. major program from the Duluth campus to be considered by the Graduate School. This proposal has been approved by the Duluth Campus Curriculum Committee, the Duluth campus administration, and by the Science and Mathematics Division.

I know that Professor Hanson has conferred with appropriate faculty of the School of Physics and has consulted with the Chairman of the Physical Sciences Group Committee prior to completion of the proposal.

You will note in the attached letter from Professor Hanson that he is requesting A-3 appointments for four of the Physics faculty concerned with the new major. Also, in the proposal he is requesting several new Graduate level courses in the field of Physics.

If you have any questions unanswered by the proposal, please let me know, and we will be glad to answer them.

Provost Darland concurs in recommending the new Physics major for your consideration.

Sincerely,

Tom Chamberlin

T. W. Chamberlin
Academic Dean

TWC/mm

Enc.

cc: Professor W. Loud
Assistant Dean M. L. Gieske
Mrs. Ann Johnson

March 17, 1967

Dean Bryce Crawford
321 Johnston Hall
University of Minnesota
Minneapolis, Minnesota 55455

Dear Dean Crawford:

Enclosed are copies of our proposal for a master's degree in physics in Duluth. As is indicated, the proposal has the approval of the appropriate committees and the administration on this campus.

Requests for appointment of four (4) members of the physics staff to A3 status in the Graduate School are being submitted under separate cover.

The publications of each staff member are listed on the back of each request form. Only publications in journals which referee submitted papers are listed. An expanded list of reports, abstracts, etc. are available for each person, if desired, but since such lists are bulky and hard to evaluate they are not included.

My comments, as department head, for each request:

John Gergen (Present rank: Assoc. Prof.)

I feel that the quality of his record of published work would entitle him to full fledged membership in the Graduate School. His work in promoting the acquisition of computer facilities at UMD and his ability to attract outside support are noteworthy. The high standards of excellence he demands of his students should do much to insure the success of the graduate program in which he participates. More valid evaluations of his ability and interest in atmospheric physics can be obtained from the School of Physics.

We are also recommending his promotion in the near future to the rank of full professor. We are also recommending that he serve as director of graduate study, physics, for the Duluth department.

Howard G. Hanson (Present rank: Prof.)

The publication record is minimal.

John Kroening (Present rank: Asst. Prof.)

His instructional work at UMD has been most promising. His work on ozone in the atmosphere can best be evaluated by Prof. Nye in the School of Physics. He has the ability to direct graduate research. He will soon be recommended for promotion to the rank of associate professor.

Michael Sydor (Present rank: Asst. Prof.)

The vigor and ability with which he has started a research program here in solid state physics, where none existed, is evidence of his likelihood of success in directing graduate work. He is also an excellent teacher and deserves early promotion to the rank of associated professor.

I wish to thank you for your kind attention to the many questions and problems attendant to the submission of this proposal. We will, of course, be glad to answer any questions that you or other Graduate School members may wish to ask.

Sincerely,



Howard G. Hanson, Head
Department of Physics

HGH:dh

cc: Dean T. W. Chamberlin, Duluth

C. C. Number 36

Physics Dept. Approval 3/15/67

Division Approval 3/16/67

C. C. Approval 3/17/67

TO: Curriculum Committee

FROM: Department of Physics

SUBJECT: Proposed Master of Science Plan A Program in Physics.

The attached copy is a proposal for a Master of Science Plan A Program in Physics at Duluth which has arrived in the final form after discussions and consultations with members of the School of Physics and members of the Graduate School.

The numbers of the new courses should be considered tentative, inasmuch as it may be desirable to design a Duluth numbering system which will not conflict with the system used by the School of Physics.

Proposal for the Degree of Master of Science in Physics
at the University of Minnesota, Duluth

Department of Physics
Division of Science and Mathematics
University of Minnesota, Duluth

March, 1967

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INTRODUCTION

The Physics Department at UMD proposes to establish a Master of Science Plan A program. Prime reasons for proposing a master's program in physics at Duluth are:

- 1) To offer graduate work opportunities in physics research activities already successfully operating on the Duluth campus.
- 2) To provide advanced degree opportunities in physics for those students who elect to live in the Duluth Area.

Among secondary reasons are listed the following: Strengthening of the faculty, stimulation of excellence in the undergraduate physics program, and the beneficial interaction of a master's degree in physics with closely related fields (i.e. chemistry and mathematics).

The proposed degree work will be very similar to the corresponding program on the Minneapolis campus. It will allow students to complete a terminal Master's program or to pursue further graduate work at Minneapolis with little loss in continuity.

We expect to start the program with a small number of students attracted by the research activities now in progress at Duluth. A modest number of students, with undergraduate degrees from state colleges or from other university campuses, could benefit from the opportunity to work in a medium sized department¹. The proposed plan is not conceived as a terminal master's degree program; but those

1. Physics Manpower 1966, American Institute of Physics, p. 66. The average staff size of physics departments offering master's degrees, but not the doctorate, in West North Central United States is six. In the country as a whole, it is eight. Our proposal suggests a total of a minimum of nine, of whom seven would be actively engaged in the graduate work itself.

who do not plan to go directly to work on a doctorate would find advantages in starting work in a department not primarily geared to the production of PhD's.

The proposed MS program is limited to Plan A at present for two reasons: 1) the UMD Physics faculty is oriented toward experimental, rather than theoretical physics, and it is to the students' advantage to become directly involved in the research work underway; 2) the number of advanced courses we can offer initially would allow little selection in a Plan B program. Well-prepared students will have an opportunity to become involved in a research project immediately; those who require makeup work or lack sufficient maturity will still be able to begin research work in the second year. Current research projects in the department are in the fields of atmospheric physics, solid state physics, and atomic physics.

1. Admission

To apply for admission to the Plan A Master's program in Physics at UMD, a student will have to satisfy the usual Graduate School requirements and will have taken two years of physics on a calculus level. It is recommended that the first candidates accepted in the program be chosen from students who have not completed their undergraduate work at UMD. It is suggested that a joint admissions policy with the School of Physics can be worked out. The level of excellence expected of entering physics master's degree candidates would be the same at Duluth as at Minneapolis.

2. Language Requirements

A student must demonstrate a reading knowledge of French, German or Russian according to procedures established by the Graduate School.

3. Minor Fields

Permissible minor fields will be Mathematics or Chemistry. For graduation, 9 quarter credits are required in either field.

4. Major Field

Students will be required to take Mathematical Physics 170A-170B-170C (9 cr) and 9 credits of electives chosen from the courses that are numbered above 120. Students with inadequate preparation will be required to take Phys 113-115-117 in addition to the 18 credits above.

5. Comprehensive Examination

All students will be required to pass a written comprehensive examination covering all fields in undergraduate physics. The comprehensive examination will be given at least once each year. It will be identical to

that given on the Minneapolis campus and will be conducted simultaneously.

6. Thesis & Oral Examination

Each student will prepare a thesis on his research work and will be required to defend the thesis in an oral examination. This examination will also cover the graduate physics work taken at UMD.

FACULTY

At present, there are seven full-time faculty members in the UMD Physics Department. We are submitting a request to the administration to add two new PhD's to help carry some of the added responsibilities associated with an MS program. Thus, with the new members, the departmental faculty would number nine (see p. 1, note 1), of whom six would hold the PhD degree. The present staff members and their research activities are listed below.

1. Howard G. Hanson, Professor and Head. PhD, Univ. of Wisconsin 1948.
Research in atomic fluorescence.
2. John L. Gergen, Assoc. Prof. and Acting Head of UMD Computer Center.
PhD, Univ. of Minnesota 1960. Research in atmospheric physics,
computer systems analysis.
3. John L. Kroening, Asst. Prof. PhD, Univ. of Minnesota 1963. Research
in atmospheric physics.
4. Michael Sydor, Asst. Prof. PhD, Univ. of New Mexico 1964. Research
in cosmic rays, photoconductivity of crystals.
5. Donald W. Olson, Asst. Prof. MS, Univ. of Wisconsin 1950. Research
in nuclear instrumentation, atmospheric electricity.

6. J. Gordon Likely, Instructor. MA, Univ. of Toronto 1949.

7. Lewis W. Oakland, Instructor. MS, Univ. of Minnesota 1962.

Requests for appointment of four of the present staff at the Graduate School A-3 level are being submitted together with this proposal. A list of publications and indications of research activity accompany the requests for A-3 status.

One of the new men added should definitely be theoretically inclined. The present proposed program requires the addition of such a man to our staff to teach Physics 180A-180B-180C Introduction to Quantum Mechanics. The second man would be needed to help carry the increased departmental teaching load.

NEW COURSES

The new physics courses for the master's program are listed below.

Required of all candidates.

Phys 170A-170B-170C. Mathematical Physics.

- ✓ Application of advanced mathematical techniques to selected problems in mechanics, acoustics, electromagnetism, and heat flow. (3 cr per qtr; prereq 117) Text level, Sommerfeld: Lectures on Theoretical Physics, Vols. I, III, VI. Gergen (Physics 180A-180B-180C below may be allowed instead of Physics 170A-170B-170C for candidates who are especially well prepared in mathematical physics.)

Elective courses to complete major.

✓ Phys 125. Intermediate Electronics. Analysis and design of circuits using vacuum tubes, transistors, and other solid state devices; emphasis on special circuits used in physics research. (3 cr; prereq 97. 2 lec, 3 hr lab per week) Text level, Littauer: Pulse Electronics. Gergen

Phys 130. Introduction to Atmospheric Physics. Atmospheric composition and structure; thermodynamics; radiative transfer; atmospheric electricity; chemistry; origin of the earth's atmosphere. (3 cr; prereq 117) Text level, Craig: Intro. to Atmospheric Physics. Gergen, Kroening

✓ Phys 140-141. Fluid Dynamics. First principles, hydrostatics, barotropic flow, thermodynamics, selected topics in wave phenomena and incompressible viscous flow. (3 cr per qtr; prereq 117) Text level, von Mises: Fluid Dynamics. Kroening.

✓ Phys 150. Intro to Solid State Physics. Solid structure, thermal and electric properties of crystals, semiconductor characteristics. (3 cr; prereq 117) Text level, Moll: Physics of Semiconductors. Sydor

- ✓ Phys 160. Molecular Spectra. Diatomic vibrational and rotational band structure; electron configurations, coupling schemes, potential curves and transition probabilities for diatomic molecules. (3 cr; prereq 110 or 117) Text level, Herzberg: Spectra of Diatomic Molecules. Hanson
- ✓ Phys 199. Seminar. Selected Topics. (cr ar [may be repeated for cr]; prereq #) Staff
- ✓ Phys 200. Research in Physics. (cr ar [may be repeated for cr]) Staff
- * ✓ Physics 180A-180B-180C. Introductory Quantum Mechanics. Schrödinger equation, angular momentum, spin; electromagnetic interactions, scattering; applications to beta decay, nuclear structure, solid state. (3 cr per qtr; prereq 110 and 117) Text level, Schiff: Quantum Mechanics.

COURSE SCHEDULING

The list of proposed courses includes a total of 36 credits plus the arranged hours for research and seminar. Physics 170A-170B-170C, Mathematical Physics, would be offered every year. The scheduling of the remaining electives would, of necessity, depend on the interests of the relatively small group of candidates who begin the program.

* To be offered as soon as staff is available.

Students lacking sufficient background will be required to take Phys 113-115-117 and/or any other prerequisite courses designated by the department from the list below in addition to the 18 credits required under Plan A. These courses are currently offered each year in our undergraduate program.

Phys 113-115-117. Theoretical Physics. Theoretical course in mechanics, electricity, and magnetism to prepare students for advanced work. (3 cr each; prereq 51, Math 153, or consent of instructor.)

Phys 106-108-110. Modern Physics. Selected topics in modern physics including elements of quantum mechanics. (3 cr each; prereq 51, Math 153, or consent of instructor.)

Phys 99. Seminar. Practice in the preparation and oral presentation of reports on articles from the literature or on senior research. Two reports required. (1 cr)

Phys 95-96-97. Network Theory and Electronics. DC circuits, transients, AC circuits, networks; vacuum tube and transistor fundamentals, graphical analysis, equivalent circuits of interest to physicists. (3 cr each; prereq 51; 2 hrs lect, 3 hrs lab)

Phys. 94. Senior Laboratory. Experimental problems of special interest to the student. (2 cr; prereq 51 or #; 4 hrs lab ar)

Phys 93. Modern Physics Laboratory. Experiments in modern physics; microwaves, radioactivity, photoelectric effect, ionization of gases, and optical spectra. (2 cr; prereq 51; 4 hrs lab ar)

Phys 92. Optics Laboratory. Lenses, mirrors, single and multi-slit diffraction, prismatic refraction, spectroscopy, and applications. (2 cr; prereq 51; 4 hrs lab)

Phys 78. Physical Optics. Fundamentals of physical optics. (3 cr; prereq 51)

Phys 76. Kinetic Theory. Kinetic theory of gases and statistical mechanics. (3 cr; prereq 74 or #)

Phys 74. Thermodynamics. Principles of thermodynamics and applications. (3 cr; prereq 51)

FACILITIES

1. Space

The Physics Department currently occupies the first floor of the Science Building and two offices in the Math-Science Building. It will expand into part of the second floor of the Science Building when the Biology Department moves to the new Life Science Building in 1967. Our current space and expanded space are as follows (in square feet):

	current	expanded
a) Offices	790	978
b) Class Labs	2987	5177
c) Research Labs	943	1421
d) Storage	691	1864
e) Shops	810	1078
f) Library	<u>240</u>	<u>347</u>
	6461	10865

In addition to these, the Physics Department shares lecture rooms and auditoriums with other departments.

2. Shops

We are currently operating two shops, a well-equipped machine shop and a student shop. The machine shop is staffed by a full-time machinist who constructs equipment from specifications (sketches, blueprints, etc.) and imposes a charge at cost for labor and materials. This shop is equipped with lathes, milling machines, drill presses, bandsaws, welding and heliarc equipment, and sheet metal presses and brakes.

The student shop is minimally tended and is open to any student working on an approved project. The equipment is old but adequate, and includes a lathe, drill press, and woodworking equipment.

When the Biology Department moves in 1967, we plan to add a small electronics shop.

3. Library

The Physics Department maintains a departmental library which currently contains 750 volumes plus bound editions of the 48 journals to which we subscribe. We are severely pressed for space and infrequently used books are kept in the stacks of the main UMD library. The main library currently contains over 120,000 volumes but it is impossible to specify how many of these are pertinent to physics. The journals we currently receive are listed in Table I.

Over the past five years, the library has spent an average of \$750/year for the acquisition of new physics books (approx. 60 books/year). We feel that our holdings are still inadequate, especially in graduate level texts, and we intend to request special assistance to upgrade our library.

4. Computer

The UMD Computer Center operates an IBM 1620 computer system. The computer uses card input, card and line printer output, and has a disk drive for bulk storage. Unit record machines (keypunches, sorter) are also available. The system is operated under a Monitor, which contains a symbolic assembler and a FORTRAN compiler. Students and faculty are allowed to run problems personally. Time on the computer is billed at a rate of \$17.77/hour but some funds are available to defray computer costs of unsponsored research. A full-time programmer is available to help organize operations and assist in programming problems for computer solution.

5. Special Research Equipment

The Physics Department operates a balloon launch and telemetering facility at the Duluth International Airport; balloon experiments in atmospheric physics are conducted there and at other sites as Churchill, Canada. There are also atmospheric electricity experimental stations throughout the city of Duluth and at Roseau, Minnesota.

Table I. Department journal subscriptions - Physics Library

Am. J Phys.	NBS, J. Res.
Am. Phys. Soc. Bulletin	a) Math & Math. Phys.
Annals of Phys.	b) Phys. & Chem.
Appl. Optics	Nucl. Inst. & Meth.
Appl. Phys., Jnl.	Nucleonics
Appl. Phys. Letters	Nuovo Cimento
Appl. Spect.	Opt. Soc. Am., Jnl.
Atmos. Ter. Phys., Jnl.	Phys. Rev.
Bell System Tech. J.	Phys. Rev. Letters
Chem. Phys., Jnl.	Phys. Soc. Japan, Jnl.
Contemp. Phys.	Phys. Abstracts
Electronics	Phys. Chem. of Solids
Geophys. Res., Jnl.	Phys. Teacher
IEEE Proceedings	Phys. Today
IEEE Spectrum	Rev. Sci. Inst.
IEEE Transactions:	Rev. Geophys.
a) Circuit Theory	Rev. Mod. Phys.
b) Inst. & Meas.	Roy. Met. Soc., Q. J.
c) Nuclear Science	Roy. Soc. London, Phil. Trans.
ISA, Transactions	Science
Math. Phys., Jnl.	Sci. Inst., Jnl.
Molecular Phys.	Sov. Phys., Solid State
Mol. Spect., Jnl.	Tellus
	Vac. Sci. Tech.
	Z. Phys.

APR 25 1967

UNIVERSITY OF *Minnesota*

4-67

INSTITUTE OF TECHNOLOGY
SCHOOL OF MATHEMATICS • MINNEAPOLIS, MINNESOTA 55455

April 20, 1967

Dean Bryce L. Crawford
Graduate School

Dear Dean Crawford:

At its meeting of April 6, 1967 the Physical Sciences Group Committee considered the proposal from Duluth for a Plan A Master's program in Physics.

The committee approved the proposal and recommends that it be adopted. There were certain reservations on the part of the committee, not serious enough to cause rejection or even revision of the program, but which the committee feels should be set forth.

1. There should be a clearer definition of the admission policy.
2. We recommend that at the start at least, committees nominated under this program include a member from the Minneapolis campus.
3. Granted the intention to have content and level of the course work the same as at Minneapolis, there is still concern that this can be realized, given the staff and students at Duluth.

This particular letter has been delayed so that the Physics Department might have an opportunity to examine the program. A copy of Professor Winckler's report of the action of the meeting of the Physics Department is enclosed.

Sincerely,

Warren S. Loud

Warren S. Loud

WSL:bk

Enclosure

APR - 7 1967

COLLEGE OF LIBERAL ARTS
LIBRARY SCHOOL • MINNEAPOLIS, MINNESOTA 55455

April 6, 1967

Dr. Bryce Crawford
Dean of the Graduate School
University of Minnesota

Dear Dean Crawford:

I am happy to supply you with additional data regarding our proposal for a program and a specialist certificate in library science teaching. I realize that the proposal as presented to the Graduate School lists only three specific courses to be taken by all Teaching Fellows. Actually, we also required in 1966-1967 that each fellow take some instruction in library mechanization and/or information retrieval, and that each fellow engage in library research. There were, thus, five specific requirements for this year's fellows, and in Part B, attached, you will see that all five are included in the U. S. C. E. program proposed for 1967-1968.

For additional illustration of what the Teaching Fellows did in 1966-1967, I am enclosing as Part C, the specific study and research programs of all five fellows.

To answer your other question as to who would advise students on this specialist certificate program, I have personally accepted this responsibility for 1966-1967, and I intend to do it for 1967-1968. On their first day on campus in September, 1966, I spent five hours with the group. On their second and third days I held individual conferences with them. I have met them for $1\frac{1}{2}$ to 2 hours as a group almost every week during the academic year, and will have been with them as a group about 28 times during the year. I am keenly motivated to try to increase the supply of library science teachers who are better oriented to the history and trends of library education and to higher education in general than are most library practitioners who have not been in the academic world.

Please note, in the sample programs attached, that all Teaching Fellows are given an opportunity to audit courses during the year that they will teach during the summer following their fellowship study and research. We consider this an important part of the program. Three of this year's fellows will teach in our Library School in the summer of 1967. One will teach at Moorhead State College, and one will not be gaining this experience.

Sincerely yours
DK Berninghausen
David K. Berninghausen

Enc. Part A. PROPOSAL FOR A SPECIALIST CERTIFICATE PROGRAM
Part B. PROGRAM CONTENT FOR U. S. C. E. PROPOSAL OF 1967-1968
Part C. SPECIFIC PROGRAMS OF THE FIVE CURRENT TEACHING FELLOWS
Part D. LIBRARY SCHOOL BULLETIN



UNIVERSITY OF MINNESOTA
LIBRARY SCHOOL

PROPOSAL FOR A SPECIALIST CERTIFICATE PROGRAM

The following program of advanced work leading to the specialist certificate in library science teaching is proposed by the faculty of the Library School for consideration and adoption by the Graduate School of the University of Minnesota.

The first year of professional study for librarianship is at the Master's degree level. The prerequisite for this program is a bachelor's degree from an approved college or university. The two year program leading to the Master's degree provides a broad introduction to the field of librarianship and some opportunity for preliminary specialization. To meet the growing demand by librarians with a few years experience for further specialization, the first professional degree in such areas as administration, information sciences, school library supervision, and library science teaching, special sixth year programs leading to a specialist's certificate have been instituted in other library schools such as University of Wisconsin, University of Illinois, University of Pittsburgh, and Vermont State University.

At the present time, our library school is preparing a specialist certificate program only in library science teaching.

SPECIALIST CERTIFICATE IN LIBRARY SCIENCE TEACHING

Introduction

To help meet the great demand for library science teachers, the Library School proposes a sixth year program of study which is designed to provide future library science professors with the necessary knowledge and skills for college or university teaching.

The shortages in all fields of librarianship are critical. The 66 M.A. degrees granted at the University of Minnesota this January to December 1976 do not begin to meet the demand represented by the 1976 statistics received in this library school's placement office alone. Unless adequate numbers of librarians can be prepared to fill these vacancies, however, more library school faculty must be recruited and advanced. Librarianship administrators at all levels must recognize the relative size of the demand for undergraduate college and graduate school professors of library science. Miss Sarah Reed, Library Education Specialist for the U.S. Office of Education states:

"...For at least eleven years library schools had had a greater unfilled demand for teachers than any other field. In 1965, based upon the per cent that demand is of supply, the index of faculty need in library science was 107 compared to 117 for the second ranking field (General Science). The evidence of this shortage which reaches back for more than a decade are conclusive."

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The University of Minnesota Library School placement office has received nearly 90 formal, written requests for library science professors in the past two years, although Minnesota does not offer a Ph.D. with a major in library science. In addition, we have received 9 requests for recommendation of candidates to fill positions as library school deans.

Miss Reed's article, 'Library Education Report', in the Journal of Education for Librarianship, Spring, 1965, states that the total deficit in library science teachers at graduate and undergraduate levels is 630, or over 180 per cent of the total number of full-time teachers.

Library education in the united states is of two kinds, and both are badly handicapped by the lack of faculty. Library instruction is given in:

- (1) Graduate library schools accredited by the American Library Association. There are 36 such schools, preparing librarians for all kinds of library work in public, school, academic, research, and special libraries. More graduate library schools are needed, but there are not enough faculty for those now in operation.
- (2) Undergraduate Colleges. About 300 colleges now offer a program in library science at the undergraduate level.

The doctoral degree is an important qualification for the faculties in both kinds of programs. Yet, in 1963, only 74 of the 231 professors of library science in the schools accredited by the American Library Association held the doctorate. With so few library science teachers with doctorates now available and with only eleven schools having progress at the doctoral level, it is inevitable that all library science programs will continue to be staffed for the next decade, as they have for the past two years, by people without the doctorate. The specialist certificate program in library science teaching is being proposed to give experienced librarians, who are being recruited into the field of library education, more preparation for teaching, especially in the undergraduate programs.

Although the specialist certificate program will be considered a complete program in itself, students who later wish to pursue a doctorate in a subject field with a library science minor may be able to apply the courses taken for the certificate to the doctoral program.

Admission Requirements

To be eligible for the six-year advanced graduate program leading to the specialist certificate in library science teaching applicants must meet the following requirements:

1. Graduation with a fifth year degree from a library school accredited by the American Library Association.
2. Three or more years of recent experience in a library or as a teacher of library science shall have been completed.
3. Admission to the Graduate School of the University of Minnesota.
4. Satisfactory performance on the graduate form of the Miller Analogies Test.

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Requirements for the Specialist Certificate in Library Science Teaching

1. The student must offer a minimum of 45 credits of graduate study beyond the fifth year degree. At least 30 credits must be taken in residence at the University of Minnesota. A research paper will be required.
2. A grade point average of 3.0 in all course work offered on the specialist certificate program will be required. No credit will be allowed for course work of D quality.
3. The candidate will take an oral examination with a committee of three or more faculty members, at least two of whom are on the Library School faculty. This examination will cover the areas focused upon by the student in his course work and research paper.

Curriculum

Programs will be planned according to the background and special needs of each student and will draw on the graduate offerings of the entire University as well as the Library School. Three courses will be required of every student unless he has taken an equivalent course. These are:

Lib 220: Seminar in Library Education, 3 cr; Berninghausen
Ed C.I. 250: Higher Education in the United States, 3 cr; Eckert
Ed C.I. 252: Effective College Teaching, 3 cr; Eckert.

FELLOWSHIP PROGRAM
Higher Education Act of 1965 (P.L. 89-329)

A grant for five fellowships for 1966-67 was received from the Office of Education, U. S. Department of Health, Education, and Welfare. These fellowships are presently held by five graduate students who are preparing themselves as teachers of library science. The award is tuition free and carries a stipend of \$5,000 per year.

Since these present fellowship holders will complete the program described herein for the certificate -- Specialist Certificate in Library Science Teaching -- the Library School seeks authorization to award the certificate to these people upon completion of their studies. In addition, awarding of the certificate is requested for any students who wish to pursue this program of preparation individually as well as for any future fellowship holder.

(B)

USOE PROPOSAL for 1967-1968

OBJECTIVES
A
TEACHING
FELLOWS

Educational Objectives for the program covered by this proposal:

1. To recruit five librarians who wish to become teachers of library science and help them to prepare themselves for careers in library education by giving them a year of advanced study of higher education, learning theory, curricular trends in library education and documentation, or in any other subjects which will help them to become effective professors of library science. (Some of these fellows would be working toward a Ph.D. and some would be studying as post-masters students.)
 2. To assist two experienced librarians to prepare themselves as library specialists (not as teachers of library science) by giving them a year of advanced study tailored to meet their specific needs. (Post-masters)
 3. To recruit twenty-five new librarians and give them the career-entrance library education to prepare them for beginning positions in public, special, school, or academic libraries. (M.A. level)
- B. Program Content and program changes for grant year:

The Library School at the University of Minnesota was established in 1928. The attached bulletin and the mimeographed "Directions to Graduate Students" describe the programs offered by the Library School.

The following information supplements that in the bulletin by describing special features of the programs for advanced study available in the Graduate School and the Library School.

PROGRAM
TEACHING
FELLOWS

1. Program for Library Science Teachers

In 1966-1967 the basic program of the five sixth year fellows included the following:

- Seminar in Library Education
- Higher Education in America
- Effective College Teaching
- Library Mechanization
- Library Research

In addition to these five areas of instruction, each student selected, with the advice of the Director of the Program, those courses in library science or in other subjects which will be of value in his future career as a teacher of library science. The Graduate School of the University of Minnesota offers a wide variety of courses which are of value in providing the knowledges and skill needed.

PROGRAM
TEACHING
FELLOWS
(continued)

Under the Graduate School's regulations, professors of anthropology, psychology, history, economics, political science, sociology, mass communications, philosophy, English, mathematics, education, etc., are always ready to welcome graduate students in library science.

Because of the desirability of preserving great flexibility in planning individual study programs, there will be no changes in the requirements of the program. However, students who have not studied Research Methods in Librarianship or learning theory will be encouraged to fill in these gaps in their backgrounds.

Another change will be in the timing of one feature. In 1966-1967 each student was encouraged to choose a basic introductory course (Reference, Selection, Administration, Cataloging, or History of Libraries) and prepare to teach it. This was not done until the spring term, and for 1967-1968 it will be encouraged in the fall term.

Actual teaching experience will be provided during the summer of 1968 for all five fellows, as was planned for 1966-1967 fellows.

Although it is not precisely a change in the program, there will be a change in emphasis in selection of fellows. For 1967-1968 preference will be given to applicants who have been admitted to the Graduate School to work toward a doctorate in a subject field, (with a library science minor and a dissertation related both to librarianship and the major subject.)

2. Advanced Study in Library Science (Sixth Year Program)

This feature of the Library School's program is new. The purpose is to provide opportunities for librarians who have a fifth year degree in library science to specialize and prepare themselves for special library activities (other than teaching). The willingness of all departments in our Graduate School to accept library science students is especially useful in this program. For example, a school librarian preparing for school library supervision might take courses in the Library School in "School Library Supervision", "Children's Literature," "Non-print Media for the School Library," "Library Mechanization," and in the College of Education might take courses in reading, curriculum trends, audio-visual education, etc.

3. M.A. Program (Career Entrance)

The attached Library School Bulletin lists courses available and describes the M.A. program in detail. The mimeographed "Directions to Graduate Students" provides additional information about the operations of the Library School.

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New courses which have been approved since the printing of the Library School Bulletin include:

- 194 Non-print Media for the School Library
- 196 School Library Supervision
- 210 Medical Bibliography
- 220 Library Education Seminar
- 269 Government Documents
- 298 Special Problems

C. Qualifications and standards for admission:

1. Program for Teaching Fellows

REQUIREMENTS

- a. Graduation from a fifth year program in a library school accredited by the American Library Association
- b. Three or more years of recent experience in a library or as a teacher of library science
- c. Admission to the Graduate School of the University of Minnesota. (For those fellows intending to study for a doctorate in a subject field admission as a doctoral student by the faculty in that field is required.)
- d. Satisfactory performance on the Graduate Form of the Miller Analogies Test
- e. A written statement of the applicant's intention to seek a position as a teacher of library science

2. Program of Advanced Study

- a, b, c, and d as above
- e. An essay describing the applicant's goals and his plan for preparing himself as a specialist

3. M.A. Program (Career Entrance)

- a. Admission to the Graduate School
- b. Grade point average of over 3.0 (3.0 representing B)
- c. Satisfactory performance on the Miller Analogies Test

ADMISSION
TEACHING
FELLOWS

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EVIDENCE THAT STUDENTS CAN BE RECRUITED

In the spring of 1966 the Library School had 33 applications for fellowships from M.A. level students who met the requirements under 3 above. We had at that time only two fellowships at \$1,000 each.

By April 1, 1967 the Library School had received seven inquiries about the fellowships for library science teachers and forty-four applications for the M.A. level fellowships. In other words, we already have on file more fellowship applications than we request in this proposal. If the \$3,750,000 can be doubled for the following year, the University of Minnesota can use 50 or 60 M.A. level fellowships effectively.

©

The following is the program which I have followed during the 1966-1967 year at the University of Minnesota on the Fellowship Program For the Preparation of Library Science Teachers:

Fall Quarter

Lib 268 - Research Methods in Librarianship - Dr. Lowell Olson
Lib 241 - Library Mechanization - Dr. Simonton
Lib 295 - Library Research - Professor Berninghausen
EdCI 250- Higher Education in the United States - Dr. Corcoran
EdCI 121- Literature for the Elementary School - Dr. Odland

Also audited two or three sessions of Lib 101 - Library Administration, taught by Professor Berninghausen; Mr. Kittilson and I lectured at one meeting of this class.

Winter Quarter

Lib 220 - History of Children's Literature - Miss Kromer
Lib 296 - Library Research - Professor Berninghausen
Anthropology 100 - Cultural Anthropology - Dr. Salovesh
History 140C - Intellectual History of the U.S. - Dr. Noble
Lib 277 - Seminar for Fellows; weekly meetings with Professor Berninghausen and with other members of the Library School faculty. Each meeting centered on some aspect of library education.

Spring Quarter

Lib 276 - Communication Media and the Library - Mr. Ervin Gaines
Lib 297 - Library Research - Prof. Berninghausen
Lib 298 - Independent Study - a planned program of library visits in the twin cities and surrounding area, to include school, college, public and special libraries. Out of town trips to Stillwater, Northfield, and Mankato will be included here.
EQCI 252 - Effective College Teaching - Dr. Eckert
History 141C - Intellectual History of the U.S. - Dr. Noble

Program totals 45 credit hours - all graduate level

Perhaps some rationale for the above program would be in order. The course in Research Methods and the two quarters of Library Research will culminate in a six credit paper, based on a questionnaire type survey. This study is related to undergraduate programs of library education in U.S. colleges, and the extent to which they are becoming involved in programs of teacher education through attempts to acquaint prospective teachers with the function of school libraries, and with the variety of educational media available. Questionnaires were sent to 170 colleges, and a 75 per cent return secured. The results and returns have suggested programs and ideas which I hope to incorporate into our program at Moorhead State College when I return.

XERO COPY XERO COPY

Because I teach an undergraduate education course called Literature in the Elementary School, I wished to take the graduate level course in that area with Dr. Odland, and also the course in the history of children's literature. In the latter course I did a paper which I expect to submit for publication to an appropriate journal in the near future.

The two education courses relate directly to college teaching, hence were most appropriate and helpful.

The two quarter sequence in Intellectual History was chosen as a good general background course. A long paper is required; in this I am combining my interest in children's literature and in American history by examining the works of several of the leading women writers of the 19th Century who also made significant contributions to the juvenile literature of the period.

Bruce Kittilson
April 6, 1967

Fellowship Program

Fall quarter:

Lib. 241 Library Mechanization
EPsy 194 Experimental Analysis of Instruction
EdCI 250 Higher Education in the U.S.
EdCI 252 Effective College Teaching
EdCI 129 Trends and Issues in Secondary Curriculum
Passed Spanish language examination.

Winter quarter:

Lib. 242 Information Retrieval
Lib. 220 Library Education Seminar
EPsy 216 Statistics
EPsy 216A Statistics Lab.
EPsy 195 Experimental Analysis of Instruction

Spring quarter:

EdCI 109 Projected Audiovisual Materials
Lib. 243 Advanced Information Retrieval
EPsy 217 Statistics
EPsy 217A Statistics Lab.
Lib. 298 Independent Study in Librarianship

The Library Education Seminar and the Independent Study in Librarianship courses have been particularly valuable in that they are tailored to meet individual information needs. For the latter course I plan to visit and appraise the "best" audiovisual programs in the state--relating them to the Instructional Materials Center concept.

I have also spent considerable time in preparation for the three courses I will teach at the University this summer, one of which is being offered for the first time. I regard this experience as an important part of the fellowship program.

I am working toward a Ph. D. in audio-visual education, with a minor in library science.

Program of study for Dorothy S. Baird, teaching fellow in library science, University of Minnesota, 1966-67.

Fall quarter, 1966

Lib. Sc. 241 Library Mechanization
Lib. Sc. 265 Advanced Bibliography
Lib. Sc. 268 Research Methods in Librarianship
Lib. Sc. 295 Library Research*
Ed. C. I. 250 Higher Education in the United States

Winter quarter, 1967

Lib. Sc. 220 Seminar in Library Education**
Lib. Sc. 242 Introduction to Information Retrieval
Lib. Sc. 253 History of Books and Printing
Lib. Sc. 296 Library Research*
Ed. C. I. 105 Audio-Visual Materials in Education

Spring quarter, 1967

Lib. Sc. 275 Publishers and Publishing
Lib. Sc. 276 Communications Media and the Library
Lib. Sc. 283 Advanced Cataloging and Classification
Lib. Sc. 298 Individual Study***
Ed. C. I. 252 Effective College Teaching

*Paper dealing with the teaching of the use of the library to college students.

**Conducted one session, devoted to the Knapp study at Monticith.

***Visiting and reporting on findings of activities and physical plants in various college and school libraries in the Twin City area.

PROGRAM OF STUDY

Elizabeth Smith, Teaching Fellow in
Library Science

FALL QUARTER 1966

Lib. Science 241 - Library mechanization
Lib. Science 295 - Library research *
History 100b - History research **
Anthropology - South American Indians
Ed. C.I. - Higher education in the U.S.

WINTER QUARTER 1967

Lib. Science 220 - Seminar in Library education
Lib. Science 242 - Introduction to information retrieval
Lib. Science 296 - Library research *
Lib. Science 257 - School Library Problems
History 101b - History research **

SPRING QUARTER 1967

Lib. Science 261 - Literature of the Humanities
Lib. Science 269 - Government documents
Anthropology 134 - Archaeology of Middle America
History 102b - History research **
Ed. C.I. 253 - Effective college teaching

* Paper dealing with public library development in Mexico

** Compiling a descriptive and critical bibliography of all books dealing with Central America by non-Central Americans which were published between 1820-1870. This will be the first listing of these books and will be published.

Lectured on the regional library movement to a Library Science 101 (Administration) class in Fall quarter.

Will conduct a session in Library Science 104 (Selection of library materials) in Spring quarter.

Will teach two courses in Summer Session II at the University of Minnesota - Library Science 231 (Public library and extension development) and Library Science 104 (Selection of library materials).

PROGRAM

FALL 1966 - SUMMER 1967

Patricia Turner
Teaching Fellow
Library School

Library Science Courses

- LS 105 History of Libraries and Librarianship
- LS 253 History of Books and Printing
- LS 275 Publishers and Publishing

The above courses represent, for me, an increase and broadening of knowledge of books and libraries a "filling in the gaps". Previous courses taken at Indiana University included no specific or detailed coverage in the above subject areas.

- LS 172 Reading Guidance for Adolescents
- LS 277 History of Children's Literature
(See also course number 121 listed under Ed CI below)

These courses represent phases of librarianship in which I have the most experience and particular interest. They both complement and supplement previous courses and experience in work with children; focus attention on new developments, methods of presentation and materials available to teach such courses.

Also in connection with this concentration and interest in library work with children I am preparing a course in storytelling. I have been aided in this work by two teachers of storytelling, one of which I have observed telling stories. For the course LS 275 Publishers and Publishing I am doing supplementary reading in the publishing of children's books.

- LS 220 Seminar in Library Education

Reading and discussion of many aspects of library education and library schools. The courses taught, course content, methods, materials and current trends in library education have been discussed with library school director and other faculty in library school.. American Library Association Standards, research in library education, relationship of library school to the total college or university program, to professional organizations; reports from institutes and conferences are just a few of the many topics pursued and discussed.

- LS 298 Individual Study

Visits of various libraries in Minnesota, not just to observe but to also speak with practising librarians about their work, selection of new books, materials, problems, personnel, etc.

- LS 241 Library Mechanization
- LS 275 Communication Media and the Library

Additional broadening and " filling in the gaps".

Formal and informal discussion with library school faculty on teaching methods, developments and trends in education of librarians. This includes auditing courses LS 102 Reference, LS 104 Selection of Library Materials and LS 101 Library Administration. I am being assisted and directed by faculty who teach or have taught LS 102 for summer school teaching of this course. (ISS, 1967).

Education Curriculum Instruction Courses

- Ed. CI 105 Audio-Visual Materials in Education
- * Ed. CI 121 Literature for the Elementary School
- * Ed. CI 250 Higher Education in the United States
- Ed. CI 252 Effective College Teaching

* Summer 1967

Patricia Turner

UNIVERSITY OF MINNESOTA
LIBRARY SCHOOL

PROPOSAL FOR A SPECIALIST CERTIFICATE PROGRAM

The following program of advanced work leading to the specialist certificate in library science teaching is proposed by the faculty of the Library School for consideration and adoption by the Graduate School of the University of Minnesota.

The first year of professional study for librarianship is at the Master's degree level. The prerequisite for this program is a bachelor's degree from an approved college or university. The one year program leading to the Master's degree provides a broad introduction to the field of librarianship and some opportunity for preliminary specialization. To meet the growing demand by librarians with a few years experience for further specialization beyond the first professional degree in such areas as administration, information sciences, school library supervision, and library science teaching, special sixth year programs leading to a specialist's certificate have been instituted in other library schools such as University of Wisconsin, University of Illinois, University of Pittsburgh, and Western Michigan University.

At the present time, our library school is proposing a specialist certificate program only in library science teaching.

SPECIALIST CERTIFICATE IN LIBRARY SCIENCE TEACHING

Introduction

To help meet the great demand for library science teachers, the Library School proposes a sixth year program of study which is designed to provide future library science professors with the necessary knowledge and skills for college or university teaching.

The shortages in all fields of librarianship are critical. The 66 M.A. degrees granted at the University of Minnesota from January to December 1966 do not begin to meet the demand represented by over 2200 vacancies received in this library school's placement office alone. Before adequate numbers of librarians can be prepared to fill these vacancies, however, more library school faculty must be recruited and educated. Educational administrators at all levels must recognize the relative size of the demand for undergraduate college and graduate school professors of library science. Miss Sarah Reed, Library Education Specialist for the U.S. Office of Education states:

"....For at least eleven years library science has had a greater unfilled demand for teachers than any other field. In 1963, based upon the per cent that demand is of supply, the index of faculty need in library science was 306 compared to 157 for the second ranking field (General Science). The effects of this shortage which reaches back for more than a decade are cumulative."

The University of Minnesota Library School placement office has received nearly 90 formal, written requests for library science professors in the past two years, although Minnesota does not offer a Ph.D. with a major in library science. In addition, we have received 9 requests for recommendation of candidates to fill positions as library school deans.

Miss Reed's article, "Library Education Report", in the Journal of Education for Librarianship, Spring, 1965, states that the total deficit in library science teachers at graduate and undergraduate levels is 630, or over 180 per cent of the total number of full-time teachers.

Library education in the united states is of two kinds, and both are badly handicapped by the lack of faculty. Library instruction is given in:

- (1) Graduate library schools accredited by the American Library Association. There are 36 such schools, preparing librarians for all kinds of library work in public, school, academic, research, and special libraries. More graduate library schools are needed, but there are not enough faculty for those now in operation.
- (2) Undergraduate Colleges. About 300 colleges now offer a program in library science at the undergraduate level.

The doctoral degree is an important qualification for the faculties in both kinds of programs. Yet, in 1963, only 74 of the 231 professors of library science in the schools accredited by the American Library Association held the doctorate. With so few library science teachers with doctorates now available and with only eleven schools having programs at the doctoral level, it is inevitable that all library science programs will continued to be staffed for the next decade, as they have for the past ten years, by people without the doctorate. The specialist certificate program in library science teaching is being proposed to give experienced librarians, who are being recruited into the field of library education, more preparation for teaching, especially in the undergraduate programs.

Although the specialist certificate program will be considered a complete program in itself, students who later wish to pursue a doctorate in a subject field with a library science minor may be able to apply the courses taken for the certificate to the doctoral program.

Admission Requirements

To be eligible for the sixth-year advanced graduate program leading to the specialist certificate in library science teaching, applicants must meet the following requirements:

1. Graduation with a fifth year degree from a library school accredited by the American Library Association.
2. Three or more years of recent experience in a library or as a teacher of library science shall have been completed.
3. Admission to the Graduate School of the University of Minnesota.
4. Satisfactory performance on the graduate form of the Miller Analogies Test.

Requirements for the Specialist Certificate in Library Science Teaching

1. The student must offer a minimum of 45 credits of graduate study beyond the fifth year degree. At least 30 credits must be taken in residence at the University of Minnesota. A research paper will be required.
2. A grade point average of 3.0 in all course work offered on the specialist certificate program will be required. No credit will be allowed for course work of D quality.
3. The candidate will take an oral examination with a committee of three or more faculty members, at least two of whom are on the Library School faculty. This examination will cover the areas focused upon by the student in his course work and research paper.

Curriculum

Programs will be planned according to the background and special needs of each student and will draw on the graduate offerings of the entire University as well as the Library School. Three courses will be required of every student unless he has taken an equivalent course. These are:

Lib 220: Seminar in Library Education, 3 cr; Borminghausen
Ed C.I. 250: Higher Education in the United States, 3 cr; Eckert
Ed C.I. 252: Effective College Teaching, 3 cr; Eckert.

FELLOWSHIP PROGRAM Higher Education Act of 1965 (P.L. 89-329)

A grant for five fellowships for 1966-67 was received from the Office of Education, U. S. Department of Health, Education, and Welfare. These fellowships are presently held by five graduate students who are preparing themselves as teachers of library science. The award is tuition free and carries a stipend of \$5,000 per year.

Since these present fellowship holders will complete the program described herein for the certificate -- Specialist Certificate in Library Science Teaching-- the Library School seeks authorization to award the certificate to these people upon completion of their studies. In addition, awarding of the certificate is requested for any students who wish to pursue this program of preparation individually as well as for any future fellowship holder.