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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Museum of Northern Arizona

8 December 1976

Dr. David J. Rogers
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Dr. Rogers:

I am interested in assessing the feasibility of a computer retrieval system such as TAXIR for the herbarium here at the Museum of Northern Arizona. The approximately 25,000 specimens represent the best and most complete collection for the region of Northern Arizona. These are used extensively for the many ecological research projects pursued by the biology staff and visiting scientists. In particular, species lists for study sites or regions and plant distribution records are often required and presently a person must go through the entire herbarium to glean the desired information. A computerized program of important data on plants of the riparian zone of the Grand Canyon has already proved very valuable and we would like to extend the coverage to the entire region.

Dr. Crovello recommended that I inquire about the TAXIR system in use at your institution to see if it could be applied to our situation here. I would appreciate your advice and any information which is available on the system, including the hardware which is necessary. Also, I am interested in finding a source of funds to implement such a program and would welcome any suggestions on this aspect.

Thank you for your consideration.

Sincerely,

Arthur M. Phillips, III

Arthur M. Phillips III
Research Botanist

jp

ROUTE 4 BOX 720 FLAGSTAFF, ARIZONA 86001 (602)774-5211

UNIVERSITY OF COLORADO
AT
BOULDER, COLORADO 80309

Department of Environmental,
Population and Organismic Biology

December 23, 1976

Dr. Stephan R. Taub, Chairman
Department of Biology
George Mason University
Fairfax, Virginia 22030

Dear Dr. Taub:

David Zegers, who is applying for your position as Assistant Professor, has asked me to supply a letter of reference for him. I am pleased to do so. I have known Mr. Zegers for two years, in one graduate level course (data management for biology) and in one special project undertaken under the direction of one of my assistants. In the latter, Dave worked with another graduate student to develop a computer-aided instruction program for one segment of undergraduate ecology. This program was tested by a number of students and professors and judged to be outstanding. It was also considered by several local computer experts to be of sufficient merit to be submitted for a prize from the Association for Computing Machines. I do not know whether they carried it out or not.

Dave is an excellent teacher. He was a teaching assistant for me in our general introductory principles of ecology course. In that capacity he demonstrated a good grasp of the subject matter, a pleasing method of delivery, and innovative methods to explain the subject matter. He was prompt, completed his work on time, and beat all deadlines well in advance. He was fair and even handed with students, and I never had a student complaint (150 students in class).

Zegers also rates well with his fellow graduate students. He was a leader among them, in a large group of students. He served as a graduate student representative on several departmental committees that I chaired, and in this capacity, his contributions were well conceived, reasonable, and useful. He has good "presence" and does not get flustered in his presentations, either formally or informally.

In addition, I like Dave as a person. He has a good sense of humor, and a pleasant, easy, personality. I recommend him highly.

Sincerely,

David J. Rogers
Professor

DJR:js

UNIVERSITY OF COLORADO
AT
BOULDER, COLORADO 80309

Department of Environmental,
Population and Organismic Biology

December 13, 1976

Dean R.C. Johnson
Office of International Education
Campus

Dear Curt:

At this time of year, when annual reports are due, I feel that I owe one to the Office of International Education, and to you. I want to be certain that you know that I appreciate the continuing, outstanding assistance that you and your staff have extended to me, even though I have not had a "program" in international education.

My efforts towards an international educational program in biological information management have, unfortunately, come to a grinding halt. This was due to circumstances beyond my control, and not as a result of lack of interest and assistance on the part of OIE. Over the past few years, you have found through your own skills that the data management system that I had built was useful in a number of settings. You attempted, through various contacts, to foster continuation of this work both within the university, the state, nation, and internationally. You consistently kept information coming to me about possible opportunities for assistance, you consistently represented my interests in Washington, you spoke in my behalf at any number of offices here and elsewhere. You provided interpreter service on short notice when I had foreign guests. You provided assistance to me on my own foreign travels, making contacts in Japan that made my work there much more productive and enjoyable. You did these things with the almost certain knowledge that there would be very little opportunity for a "quid pro quo". You have been a consistent and continuing champion of interdisciplinary work, not just giving lip service to it, but actually accomplishing interdisciplinary tasks, and I appreciate that, knowing that actually doing interdisciplinary work is much harder than talking about it.

Thank you for yours, and your assistants' help. The Office of International Education is a vital, important function on this campus and abroad.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR:js

The University of Birmingham

DEPARTMENT OF PLANT BIOLOGY
The University of Birmingham, P.O. Box 363, Birmingham B15 2TT
Telephone 021-472 1301

Mason Professor of Botany J G Hawkes Sc D

JGH/SED

8th December 1976

Professor D.J. Rogers,
Dept. EPO Biology,
University of Colorado,
Boulder,
Colorado 80309,
U.S.A.

Dear Dave,

Thank you very much for your letter commenting on the draft Collectors' Manual. I have sent a copy of this to Robert Pichel and I am sure he will be pleased to know it has your general approval.

Turning to another matter now, you will be glad to know I am sure, that IBM have agreed to provide the fellowship for someone from my department to work under your guidance for four months. Two slight difficulties have arisen, however. One is that Trevor Williams has asked me for a further year's leave of absence to continue working in the IBPGR secretariat. Therefore, he will not be able to go and I am now going to nominate Brian Ford-Lloyd, who has taken his place in the department and who is developing a very strong interest in data management. I hope that this change will not make any difference to your offer.

The second difficulty is due to some faulty information which I picked up at F.A.O. to the effect that not only had you resigned as director of GR/CIDS but I was told that you were now in Japan. Furthermore, I was told that Dr. Macmillan was now director of GR/CIDS. Therefore, thinking that you were no longer in Colorado I wrote to him about the acceptance of Dr. Ford-Lloyd at the Unit for the four month's fellowship. I have not yet heard from Dr. Macmillan, and perhaps his name was incorrect for all I know. I would really be most grateful if you could sort this out for me, since I would like to send Ford-Lloyd to Boulder at the beginning of February if possible.

With best wishes to you and Connie for Christmas and the New Year.

Yours ever,

Jack

Professor J.G. Hawkes

ans. 12/27

Rogers

TO: EPOB Graduate Students and Faculty

FROM: Marc Bekoff, for Graduate Committee

Attached is an abstracted version of the guidelines for graduate students. Please read through it and keep it. If there are any questions, errors, etc., please contact me or Dorothea Slater. There are a number of points that should be stressed. First, all coursework must be at the 500 level or above. Furthermore, courses taken to make up deficiencies cannot count toward your graduate degree. Please also note that there is an examination schedule and this must be followed. In certain situations, a student's major professor with the advisory committee's consent can petition for special treatment. The petition should go directly to the chairperson of the graduate committee. We also would like to suggest that no exams be scheduled during pre-registration weeks.

One more thing — the graduate committee is working very hard to organize and re-organize graduate student life around EPOB. Any comments etc. that you may have would be gratefully welcome. Thank you.

TO: The Graduate Students
FROM: Dorothea

This version of the Graduate Regulations was an effort to clarify the rules pertaining to M.A. and Ph.D. degrees. Please take the time to read these few pages, it will help avoid any problems which may arise in the future. Of special interest or importance are those passages underlined or marked with an asterisk. Also, please pay special attention to the "Schedule of Deadlines..." which appear at the end of the M.A. section and the end of the Ph.D. section.

If you have any questions, please do not hesitate to come and see me.

EPO BIOLOGY GRADUATE REGULATIONS -- AN ABSTRACTED VERSION

Master's Degree

Plan I: At least 24 hours must be completed including at most 6 hours thesis and not less than 4 hours thesis. The coursework must be 500 level or above. Courses taken to make up deficiencies cannot count toward your graduate degree.

Advisory Committee: 3 members from EPO Biology faculty.

Course Requirements: No departmental requirements except 2 seminar courses.

Admission to Candidacy: Applications for admission to candidacy can be obtained from the graduate secretary in Ramaley 110 and must be filed 10 weeks prior to the Master's Comprehensive Exam.

Transfer of Credit: 8 hours of graduate credit may be transferred from recognized graduate schools. The request form can be obtained from the graduate secretary in Ramaley 110.

Comprehensive Exam: Given by the three-person Advisory Committee.
Material based on four of the subject areas designated in the list used for Ph.D. Preliminary Exams. General Biology must be one of the subject areas. Additional areas are decided upon by the student and the Advisory Committee.
Exam questions are to be prepared and approved by all members of the Advisory Committee.
Written Exam - two 3-hour sessions
Oral Exam may be required by the Advisory Committee usually 3 hours in length.
Committee will rate the performance as "satisfactory" or "unsatisfactory."
The exam may be repeated only once and within 6 months of the date of the original exam.
*The student must take the Comprehensive Examination within two years of beginning graduate work.

The Thesis: Must follow "Thesis Specifications" of the Graduate School. A copy is available in Ramaley 110 for inspection.
The thesis must be approved and signed by the three designated readers.
Two copies must be filed at the Graduate School and two copies with the department (one of which is for the advisor).

Oral Defense of Thesis: Advisory Committee conducts oral defense.
It is advisable to hold the defense at least 30 days prior to the thesis submission date set by the Graduate School.
The thesis should not be in final form, so that the Advisory Committee may suggest changes and corrections.

SCHEDULE OF DEADLINES FOR MASTER'S CANDIDATES

Advisory Committee appointed	At least by the end of the first semester.
Deficiencies	Should be removed after first semester, but no later than second semester.
Comprehensive Examination	As soon as possible, but no later than fourth semester.
Application for degree candidacy	At least 10 week prior to Comprehensive Exam.
Final Examination (Thesis defense, Plan I students only)	About 6 week sprior to end of session when degree is to be awarded. *Specific deadline dates are set up each academic year by the Graduate School. Therefore check with the Graduate Secretary in Ramsley 110 for information relevant to the semester when the degree is to be awarded.
*COMPLETION OF ALL REQUIREMENTS FOR DEGREE	With THREE YEARS for full-time students; 5 years or 7 successive summers for part-time students.

Plan II: At least 30 hours of coursework (500 level and above) must be completed. No thesis required. There are no established guidelines available at this time.

Ph.D. Degree

Admission Requirement: A student who was accepted for and completed an M.A. must reapply for acceptance as a Ph.D. student. See the Graduate Secretary in Ramaley 110 for information on this procedure. Courses taken to make up deficiencies cannot count toward your graduate degree.

Advisory Committee: Shall be composed of 5 members of the Graduate Faculty: At least three (including the advisor) from EPOB faculty. At least one who is not wholly or partially appointed in EPOB.
*As of Fall, 1976 no outside member may be from off campus. When the thesis advisor is not a member of EPOB, a co-advisor must be appointed from EPOB.

Course Requirements:

Course Credits: 30 hours coursework (500 level or above)
16 hours thesis, but not more than 24 hours (no more than 8 in any one semester). 8 hours may be taken before the Comprehensive Examination, the remainder after the exam.
10 hours of graduate level work may be transferred from another school or from work done as an undergraduate which was not counted towards the B.A. (500 level or above). Transfer petitions may be obtained in Ramaley 110 from the Graduate Secretary.
6 hours of independent study may be taken. Any in excess of six should be approved by the Advisory Committee.
All coursework in EPOB must be at the 500 and 600 level to be counted toward the degree. Courses taken outside of EPOB must be approved by the Advisory Committee
Four seminar courses involving student presentations must be taken.

Foreign Language Requirement: Rules of the Graduate School currently specify that all Ph.D. candidates demonstrate a proficiency in one language. This requirement may be satisfied by:
1. Completing fourth semester of an undergraduate course with "C" or better.
2. Passing the GSFLT language examination.
3. Other demonstrations of similar proficiency.

Teaching Requirement: All graduate students pursuing the Ph.D. in EPOB are required to complete at least one year of teaching in Biological Sciences at the secondary level or above.

Preliminary Examination: Taken within one year by any student entering with a Master's degree, and within 3 semesters by those entering with a bachelor's.
4 half-day sessions for writing followed within approximately 10 days by a half-day oral examination.
Subject areas: 1. General Biology (must be taken by all).
2. Biology of Special Taxa (choose one area).
a. Animals (invertebrates, vertebrates)
b. Plants (non-vascular, vascular)
c. Microorganisms (procaryotic, eucaryotic)
3. Anatomy, Morphology & Physiology (choose one area)
a. Plant
b. Animal
c. Microorganisms
4. Genetics & Evolution
5. Taxonomy & Systematics
6. Animal Behavior
7. Ecology (including limnology)

One subject area for each half day.
Questions are prepared & selected by the Advisory Committee and no questions are to be given to the student in advance. However, the student is to be advised well in advance as to the nature of the exam (i.e. objective, subjective, combination).
After the Advisory Committee members have read the student's answers, they will administer the oral exam which may include material from the written examinations as well as other subject matter.
*Rating of superior complies with Ph.D. requirements. When appropriate it also complies with M.A. I Comp. Exam. Rating of satisfactory on the Ph.D. Preliminary fulfills the requirement for M.A. I Comp. but not for the Ph.D. Prelim.
An exam may be repeated only once and within 3 to 6 months of the first attempt.

Ph.D. Comprehensive: Covers areas related to the student's field of research.
Half-day oral exam conducted by the Advisory Committee.
The student must submit a written copy of a thesis research proposal to each member of the Advisory Committee at least one week prior to the oral examination. Discussion of the research proposal is part of the examination.
The research proposal should include:
Demonstration of knowledge of pertinent literature
Rationale for proposed research
Relevant preliminary research already completed or in progress (if any)
Experimental design including proposed analysis of data

*Two weeks prior to the Comprehensive Exam Orals complete an application for candidacy. This may be obtained from the Graduate Secretary in Ramaley 110.

At least one week prior to the Ph.D. Comprehensive Exam report the date, time, and committee members to the Graduate Secretary in Ramaley 110. An examination form will be ordered from the Graduate School on which the outcome of the orals will be reported as satisfactory (satisfactory with provision may also be reported) or unsatisfactory with the signatures of the committee members.

If a student receives a rating of unsatisfactory the exam may be repeated only once 3 to 6 months after the first exam.

*The student must register every semester (not including summer) after the Comp. is passed until the Final Exam is passed.

*If a student does not complete all requirements for the Ph.D. within four years of the date of the Comprehensive, a second Comprehensive must be taken similar to the first. This second Comp. may be repeated only once.

The Thesis: Must be based upon original investigation and must show mature scholarship and critical judgment as well as familiarity with tools and methods of research. It should be a contribution to knowledge in the student's special field.
It must follow the specifications set forth by the Graduate School. A copy of the thesis manual is available from the Graduate Secretary in Ramaley 110 for inspection.

Final Examination: The student must contact the Graduate School six weeks prior to the Final Examination for information on completing several forms.
Final Examination - Part I: Evaluation of a penultimate draft of the thesis. A copy of the draft must be approved by the advisor before submission to the Advisory Committee at least 2 weeks before the defense.
The Advisory Committee may want to review the final draft or give the advisor the power to verify any necessary alterations recommended. Preparation of final draft must be completed before the public seminar.
Final Examination - Part II: Formal 50-min. public seminar. The student discusses results of thesis research.
One copy of the finalized thesis (signed by not fewer than two members of the Advisory Committee) along with two abstracts of the thesis must be submitted to the Graduate School. One copy must be given to the department.

Publication of Thesis: Not required, but strongly recommended
If a substantial part of the thesis has not been accepted for publication within three years, the advisor has the option of using the data for publication under joint authorship.

When publishing thesis material whole or in part, the author should indicate their address as EPO Biology, University of Colorado, Boulder. Colorado. A reprint should be sent to the department.

SCHEDULE OF DEADLINES FOR PH.D. STUDENTS

Advisory Committee	By end of the first semester.
Preliminary Examination	*Without M.A., by 3rd full-time semester after enrollment; with M.A. by end of 2nd semester.
Language Exam	During first year.
Seminars	Begin first year and by usually uninterrupted registration thereafter until complete.
Application for Candidacy	Two weeks prior to Comp. Exam.
Comprehensive Exam	Prior to beginning in depth research on thesis topic.
Penultimate draft of thesis available to Committee	**At least 14 days prior to Final Examination
Final Examination (Defense of Thesis and Public Seminar)	At least 4 weeks prior to Commencement. *Specific deadline dates are set up each academic year by the Graduate School. Therefore check with the Graduate Secretary in Ramaley 110 for information relevant to the semester when the degree is to be awarded.
Thesis filed in Graduate School	At least 2 weeks prior to Commencement. Check deadlines with Graduate Secretary.
*COMPLETION OF ALL DEGREE REQUIREMENTS	Within 4 years after admission with an M.A. degree, 6 years if no M.A. degree sought.

TO: Advisors
FROM: EPOB Office

The new SMC forms are to be effective for May '77 graduation. These forms are to be picked up by the students from Hellems 131 and filled in by them and then brought to the Dept. The deadline for this is February 1. The departmental representative needs to check the courses (from the student's transcript) in the 2nd to last column, if required for the major, and note his/her comments (if any) in the last column. They would also like you to calculate the GPA if you think the students is a borderline case (1.93) or an honors students. However this is not mandatory. After you have signed and completed the form please ask the student to being the completed form back to us (EPOB office) so we can xerox a copy and keep it for the department.

Dr. David Rogers
Hale 114

College of Arts & Sciences
APPLICATION FOR DEGREE CANDIDACY
Part III

Date____________________

Name____

Major______________________________ Student number____________________

List below all courses you expect to use in your major. Include those courses transferred from other colleges. For those courses in progress write IP in space for grade. For those courses yet to be taken write an E in the space for the grade.

Sem Year	Institution other than CU	Title of course in major field	CU Dept. course no.	Sem hrs.	Grade	Check if UD	Reserved for Department: Check if req.	Reserved for Department: Dept. comments

Total Hrs._____

____
Student Signature

Grade Pt. Total ______ GPA________

Excess hours in Major Dept.______________

Departmental Representative____________________________________
Signature

TO: All Faculty Dec. 8, 1976

RE: General Biology Proposal

FROM: Ron Duke

The current proposal for the General Biology laboratory program is to teach the complete course in one semester, with two labs per week. This course would be taught each semester, as I understand it, and the student would be given a choice regarding which semester he could enroll. I have listed below a few of the problems which I foresee in such a program.

1. If there are no prerequisites for the course, then students taking the laboratory the first semester will be trying to understand second semester labs without the benefit of lectures. To adequately prepare students for the lab, teaching assistants would have to spend a great deal of valuable laboratory time giving an introductory lecture. While this is certainly possible, it severely limits the time students spend in investigatory processes.

2. If, as has been suggested, a semester or year of lecture is required as a prerequisite for the laboratory, this presents a series of problems. First, it means there will be a semester or more when 10-15 TA's are out of work, and the laboratory is shut down waiting for students to complete the prerequisites. Additionally, the students will lose the reinforcing quality of a laboratory exercise which is in at least the same general time frame as the lecture. They also will be detained for that additional length of time, unable to enter other Biology courses.

3. Moving the laboratories to Eckaley East involved committing the TA's to teaching 3 labs a week with 16 students per section. With each lab section meeting twice a week, the TA's would either have to take 2 sections of 16 students for a total of 12 hrs. lab time or 1 section for a total of 8 hrs. lab time. Considering the additional preparation time required for teaching 2 separate labs per week, the first alternative is entirely too much work for the TA. However, with the second alternative, each TA would only be handling 16 students per semester. With a minimum of 300 students enrolled, this would require 19 TA's. This is 5 more than had been foreseen with the move and 9 more than are employed currently.

4. The Eckaley labs have been committed 9 hours a day, four days a week to handle projected lab enrollment. This leaves 1 day for preparation. Setting up two separate labs each week would be virtually impossible given the personnel and facilities available. Without cancelling scheduled lab sections.

While these problems are not necessarily insurmountable, they are certainly formidable. The benefits of such a program are really not clear and considering the problems involved, do not seem sufficient to warrant the change.

Finally, on a philosophical basis, I would appeal to the faculty to retain a format which would allow some small correction between the content of lecture and lab. While the discussion of a well-coordinated lecture and lab is no longer pertinent, it is still possible to present the same general material in the same time fram in lecture and in lab.

In short, the procedural and administrative problems outlined here could seriously hinder the department's goal of improving the General Biology instructional program.

TO: ad hoc Ecology Curriculum Committee

Terrestrial Ecologists - (Marr, William, C. Bock, J. Bock, Cruz, Bernstein, Webber, Aye, Grant)
Aquatic Ecologists - (Bushnell, Lewis, Windell)
Other Ecology Types - (Bonde, Gregg, Nichols, Rogers, Shushan, Crumpacker
Students -

FROM: J.T. Windell - Committee Chairman
Subject: Minutes of Meeting
Date: December 7, 1976

1. A list of department course offerings in Ecology and related areas taken from the 1976-77 College Bulletin was distributed (see attached) and briefly discussed. It was stated that the numbering system does not reflect a single undergraduate sequence and that considerable student confusion exists.

2. It was pointed out that the current structure of general biology does not include ecology.

Problem Discussed. It was generally agreed that,

1. The department currently offers a large array of ecology courses. Concern was expressed that all faculty are required to teach several courses which has resulted in a continuous proliferation of courses as the size of the faculty increases. It was mentioned that esoteric courses should be eliminated.

2. There seems to be serious overlap of course content which is currently ignored.

3. The current ecology curriculum lacks focus on applied ecology and therefore penalizes students that move into the job market.

4. It was felt that the most serious problem is the lack of a departmental ecosystem i.e., laboratories, space needs, equipment needs, stockroom. A desperate need exists for a place of central focus for ecology and ecologists.

5. Department lacks an "Ecology Organizer" i.e., a director to be responsible for the undergraduate curriculum, majors, equipment, space needs, grant proposals, an intern program, summer job opportunities for undergraduates, volunteer service opportunity, and recruitment of the best high school students, etc.

Recommendations for Improvement of Undergraduate Program.

1. Reduce overlap of course content.

2. Strongly consider course integration (i.e. combining courses), alternate year teaching, preparation of lecture and laboratory syllabus (so that everyone knows what is being taught and how).

3. Create an ecology program (on paper). List courses, list faculty teaching interests, list faculty graduate students and titles of their thesis research.

4. Identification of a specific area for ecology lecture, labs, bulletin boards, etc.

5. Initiate efforts to secure teaching and laboratory materials. There is need for a complete inventory of all equipment.

6. It was recommended that the following sequential undergraduate course plans be considered at future meetings.

Current Plan

Freshman	Sophomore	Junior	Senior
Gen. Biol. 101-110 (No Ecol.) 202 (No Ecol.)	Principles of Ecology (Non-environ. majors only) Animal Ecology Plant Ecology	See Current List	See Current List

Proposed Plan I

Freshman	Sophomore	Junior	Senior
Gen. Biol. (No Ecol.)	Prin. of Ecol. (no lab) Required of all EPOB majors (a rigorous lect. course)	Adv. Ecol. I This is a series of courses - 1. vertebrate 2. montane 3. desert 4. limnology 5. etc.	Adv. Ecol. II This is a series of applied topics - 1. Environ. Law 2. Water Pollution 3. etc.

Advanced courses would be limited to 20-25 students, taught by individual faculty. Would give students personal contact with faculty.

Proposed Plan II

Freshman	Sophomore		Junior	Senior
Gen. Biol. (No Ecol.)	Ecol. I No lab	Ecol. II Lab but separate	Specialty courses but applied. Emphasis on methodology	

Proposed Plan III

Freshman	Sophomore	Junior	Senior
Gen. Biol. (No Ecol.)	Prin. of Ecol. no lab (Required of all majors)	Animal Ecol. Lab Plant Ecol. Lab	Specialty courses but emphasis on methodology

7. Consideration should be given to the possibility of creating a Master's degree program in applied ecology.

EPOB Bulletin 1976-1977 - Ecology and related listings

341-3 Princples of Ecology - (Williams)
345-3 Intro. to Arctic and Alpine Environments (Ives & Nichols)
376-3 History of Biological Communities (Nichols)

418/518-3 Limnology (Lewis)
421/521-3 Dynamics of Mountain Ecosystems (Marr)
425-3 to 4 Microbial Approaches to Environmental Problems (Segal)
429/529-3 Stream Biology (Windell)
435-3 Ecology for Man (Bushnell)
441/541-4 Plant Ecology (Marr)
443/542-4 Animal Ecology (C. Bock, Bernstein)
445-3 Aquatic Invertebrate Zoology (Bushnell)
476/576-3 Palynology and Environmental History (Nichols)

510-3 Avian Communities of Colorado & New Mexico (Williams)
512-3 Animal Geography (Gregg)
514-3 Population Dynamics (Williams)
519-2 Techniques in Aquatic Ecology (Lewis)
522-3 Tundra Ecology (Marr)
523-2 Aquatic Botany (?)
524-3 Tropical and Insular Biology (Cruz)
539-1-3 Indep. Res. in Environmental Biology (Staff)
548-3 Biology of Fish Populations (Windell)
558-2 Seminar Ecophysiology & Alpine & Arctic Plants (Bonde)
583-3 Ecological Genetics (Linhart)

Graduate Bulletin - Lists above 500 level courses in addition to the following.

For graduate students only.

613-3 Benthic & Aufwuchs Ecology (Bushnell)
615-2 Seminar Recent Advances in Animal Ecology (Bernstein)
621-3 Ecological Plant Physiology (Bonde)
624-2 Quantitative Ecology (Webber)
625-2 Seminar: Ecology of Fungi (Shushan)
626-2 Seminar: Plar Ecology (Marr)
628-2 Seminar: Advanced Vertebrate Ecology (C. Bock)
630-4, 631-4 The Arctic and Alpine Environments (Ives)
633-2 Environmental Biology Seminar
635-Var. Cr. Adv. Environmental Biology
642-2 Seminar: Environmental Physiology (Winston)
655-2 Seminar: Ecoenergetics (Windell & Williams)

UNIVERSITY OF COLORADO
AT
BOULDER, COLORADO 80309

Department of Environmental, Population and Organismic Biology

December 6, 1976

Dr. Lewis Branscomb
Vice President and Chief Scientist
IBM Corp. 3A-55
Old Orchard Road
Armonk, New York 10504

Dear Lew:

I have several things that need discussing, and will try to order them up in what I consider my priority. The first deals with emergency interim funding to retain my technical assistant until such time that I can pick up other funds (Bill Lawless suggested that I write you about this); the second deals with what I learned from my Japanese trip, and thirdly, what implications this has for world-wide activities concerning data management of genetic resources.

I had hoped that I could retain my technical assistant on funds from the International Board, from that segment marked as "research", but I guess that my severance from that activity has prevented that from coming about. At least, I've been told that the advisory committee had ear-marked those funds for other purposes. So, I need to find additional funds from other places, or I lose a well-trained assistant. The "other places" are either those interested in my botanical research directly, or NSF. The latter cannot be forthcoming for some time, and the former is unexplored territory. One possibility would be the big liquor companies that own and control the grape and wine industry. Bill Lawless can explain more of what I mean there, because I spoke to him about it. I need about $15,000.00 for the coming year, just to pay the salary and fringe benefits of my assistant. Do you have any suggestions?

Secondly, on my impressions of the agriculturally-related work in Japan: I have written a short report on what I did in Japan to Charlie McIntosh (Academic Affairs Mgr., World Trade Americas/Far East, in North Tarrytown), but this did not include any interpretation of what I think this means for the rest of the world. I was very impressed with the speed that the Science Center in Japan had picked up on the work being done by agricultural sciences in Japan, and with the speed that they had got up and put to use our EXIR system. There is seemingly considerable enthusiasm on the part of both the ag. scientists and the Science Center personnel. I think the Japanese are probably equal or better than their American equivalents (at least in the discipline of plant breeding, which I observed most closely). The Japanese seem to be competent and familiar with programming, and have written some of their own programs to do things associated with genetic resources data management. They have,

for example, an IR subsystem they attached to EXIR with which they can trace the pedigrees of the various crosses they make in crop improvement, and they have a seed inventory program which they use for keeping track of the specimens (samples) in their seed storage facility. Having accomplished these, they should be able to share them with others through IBM resources, and this can no doubt be accomplished more readily through the various Science Centers around the world.

I have also observed the activities of the Science Centers in Italy, Mexico, and Peru. In each case, the assistance given to agricultural science is impressive, and I believe that data management techniques are coming up all around the world as a result. And what this really means to me is that the best way for improvement in data management is going to take place via such contacts and activities as those where each science center can make some direct, face-to-face contact with the ag. scientists. This further leads me to think that a single center, such as the one that was to be developed here, is out of the question--we cannot make the contact that the science centers can. It seems evident to me that each of the international agricultural centers is going to pursue its own course for data management. The experiences in Mexico, South America, the Philippines, and in India point in this direction. Each of the centers has chosen its own computing hardware and relations with other types of institutions to get their needed support, and what each one wants is somewhat different from what each of the others want. I cannot see a time ahead when common computing capability will exist in all of these centers. Then, when we add to the international centers each of the national centers, we add even more complexity to the situation.

I cannot see how there can be any single direction given to data management by the International Board of Plant Genetic Resources. That body was and is set up to fail. There is no staff for them--FAO has demonstrated its incapacity to provide any, and there is nothing in the Consultative Group that indicates a desire to establish their own permanent staff. Under these conditions, the establishment of a formal network cannot succeed. As far as I am concerned, the major linkage for genetic resources data will have to be through the influence of the IBM Science Centers. I do not mean by this that the work will be carried out by the Science Centers. Rather, they will provide the major stimulus to the various local groups of ag. scientists who desire to put one together and communicate between groups that are already functioning.

It may be that some means (or legislation by CGIAR) may cause the international centers to adopt common approaches to data management, but I do not know of any means to secure the inclusion of national systems. Actually most of the data are gathered by ag. scientists within nations, and only a very small portion by the international centers. Therefore, I see little hope for a formalized network. Apparently networks exist only where some control from above is available. This gets to be more of a legal problem than a scientific one, and that certainly is beyond my ken.

With these thoughts, it becomes even more apparent why I felt compelled to return to more teaching-research orientation. I am convinced that the stimulus for change must come out of biologically-oriented work, and that is what I will pursue from now on.

Sincerely,

David J. Rogers
Professor

DJR:js

Dr Jane Bock

12/1/76

Dear Jane:

A number of things have changed for me this fall, causing a rethinking of all my activities, and attempting to make a more rational approach to that which has interested me through all the past efforts, namely, systematic economic botany. I have severed my connections with the international community, and the project there has been partially picked up, at least temporarily, in the business school. I'm dropping the term taximetrics for my laboratory, inasmuch as all the needed computer packages are now available, and to continue that title would only cloud the issue.

I come to the further conclusion that real interdisciplinary efforts simply cannot be brought about as long as we have structures in the university which clearly oppose such efforts. Departments simply do not want any infringement on their rights, much less separate colleges, and to try to force a connection between them only causes misery--I know, because I've had it.

The above considerations make it more reasonable to consider something that does not cause perturbations in the present system, and I think that we have something in EEOB that makes good sense in these days and times, and has an opportunity to succeed, provided we can get agreement amongst us in the department. The "something" I have in mind is a center for ethno- economic botany, or for the study of plants and man. There are several of us interested in such studies, you certainly prominent amongst us. Though Yan has not been quite so outspoken in his statements in this direction, he probably feels pretty strongly about it. Soo Bye is certainly involved. With me, then, there are at least four of us who might be mutually interested in fostering such a center. To my knowledge, there is no other department in the US with that number of professionals who are working on some aspect of economic botany or other, and in that we have a unique opportunity to develop a research and teaching center that could surpass anything else. In these days and times, I think students want something that they feel contributes to mankind's benefit.

The purpose of this letter is to ask if you are interested in the development of a "center" or "laboratory" or someother designation, for ethno- economic botany, or some other designation. But I think we know enough about these terms to imply something to each other, and will need to think carefully about a designation that might carry more precise meaning to those not of our bent. Do you want to participate? My own interest, as you know, lies with the classification of cultivated plants, but clearly this is not the only way to look at the area--it could be as well other types of effort, with other plant-man relationships.

If you are concerned, and want to join in putting together something that our department will recognize, please let me know at your earliest convenience. I must, personally, get on with this idea fairly soon, having disengaged from two other activities recently.

Sincerely,

Dave

TERM PAPER

(A Short Summary of "Plants and Man")

315 EPOB

Plants are the basis of life as we know it.
If the plants are concerned about that, they don't show it.
They have funny names, some Linnaean, some cuneiform.
They're genetically based, and they're dangerously uniform.

In the Orient, I'm told, we are sure that there lies a
Proponent or two of the genus Oryza.
And from these proponents' success, we derive a
Dangerous dependence on species sativa.

The "soak-it-two-hours, don't-eat-it-right-now-pea,"
Is called by the African natives, the "cowpea."
The botanists call it V. unguiculata.
(In Africa, see, it is usually hottah.)

Most manihot
I think is not
Eaten (at least as esculenta)
Except near its diversity centah.
Which means (and this is even sillier),
You eat it only in Brasilier.
Elsewhere (at least so goes the joke)
The folks don't care for manioc.
In fact, it usually makes them choke.

Maize
Pays.
Unless, of course, by mutation or spasm,
It's based uniformly on T cytoplasm.

But aestivum
Is the best of 'em.
The best of whom?
Why, triticum.
So when your brother believes that you're really his keeper,
Be glad that McCormick invented the reaper.

And the history we know about most of these species
Is what we find out by examining feces.
Which we duly report in our Ph.D. theses.

As a botanist
I'm the rottenest.

But I enjoyed the course.

Oct. 28, 1976

To: Wilson Crumpacker
From: Dave Rogers
Subject: Genetic Resources

I was pleased by the vote on Hersh at the Faculty Meeting yesterday (Oct. 27). I think it does reflect the Department's feeling, as reported by you to me last spring (that my efforts were "too production-oriented"). That comment weighed very heavily in my consideration of dropping the whole international activity, and I trust that my decision to do so will be brought to the attention of those who made that comment in the first place. You can do this best, of course.

However, I do not wish to drop the whole matter of genetic resources conservation. I, and hopefully all of us as biologists, am mightily concerned with genetic resources in the broad sense of the term, not restricted to cultigens alone. We should, therefore, command respect for our interests on this campus.

You may know that I have just been appointed to a committee on national genetic resources problems that was formed by the National Research Council. This committee, composed of a dozen biologists around the country, has been charged with examination of all genetic resources conservation problems, and I feel that our department is honored in that I am included in the deliberations of such a group. I do not know what ~~which~~ recommendations will be made by this committee, but I do feel that we, as a department, must not be divorced from that group of functions being examined by the committee, and I do not want my actions as a committee member to be looked on as an isolated single-professor interest, but something of definite benefit to the whole department. I want departmental recognition for my efforts. Could we talk about this sometime? I think it would be nice to have some consensus from the department about genetic resources conservation in our area, and I would be pleased to present the ideas either to the Ex. Comm., or to the faculty, or both.

I definitely do not want to have my ideas stolen and put to use in the Business School, particularly if they can benefit the department. But the department should take a positive stand, not a negative one as has happened in the past.

Yours,

Dave

October 27, 1976

To: Wilson Crumpacker, Chairman of E.P.O. Biology

Please record the following:

When I moved into Room 109, Hale Building, (as a favor to the individuals in charge of space arrangements on campus), I requested that a permanent repair of the roof over this room be made to stop the serious leaks. It might be said parenthetically that the problem of leaks in this room goes back at least to 1938 (fide Pennak). Since the history has been consistent that the administration refuses to do anything useful about this problem, may I respectfully submit a requisition for at least nine large wastebaskets which are needed only on the occasions when the rain or snow has been continuing for some time. I submit that this request is the most effective means for coping with the problem as presently existing.

We, of course, understand that some staff member will have to come over to the building evenings and weekends to empty the buckets to avoid overflow damage to the room below. Perhaps we can assign this as a staff function with the understanding that time and a half will be paid. A job description might be submitted to the Personnel Department giving them a chance to advertise an opportunity for unique employment catagory.

Thank you for your serious consideration for this serious problem, brought to you by the undersigned undistinguished Professor of Biology, Taxidermy, Taximetrics and other scurrilous pursuits.

With sincere affection and deep gratitude,

David J. (for James) Rogers

DJR:js

cc: Dean William A. Briggs
Director of the Physical Plant
Vice Chancellor for Research and Dean of the Graduate School
Chancellor Mary Berry

UNIVERSITY OF COLORADO
Taximetrics Laboratory
Department E.P.O. Biology
Boulder, Colorado 80302
Phones: 492-6909
492-8598

To: Hersh Oct. 22, 1976

From Rogers

Subject: Annual report

1. Several weeks ago I directed April to prepare an annual report, which he has not done.

2. I did not ask you to prepare an annual report, but to prepare a summary of the expenditures for the IPGR contract, which you have not done.

3. I learned indirectly that you had arbitrarily inserted your decision to postpone preparation of the annual report, even though your were not invited to do so.

4. There is no reason to delay preparation of this report, since the events that have transpired have transpired, and merely need reporting.

5. Since you have taken on this activity, I suggest that you prepare the report immediately, to be delivered to me by Wednesday, October 27. At the same time you should have prepared the financial statement requested earlier.

1776 Garland St.
Lakewood, Colo. 80215

Oct. 21, 1976

Dr. David J. Rogers
Taximetrics Lab., EPO Biology
Univ. of Colorado
Boulder, Colo.

Dear Dave,

I would like to take this opportunity to thank you personally and the Taximetrics Lab. more generally for supporting my recent trip to the meetings of the Numerical Taxonomy group in Lawrence, Kansas. I am attaching a copy of the program and of the roster of those in attendance. In general it was a worthwhile experience and perhaps this letter can serve as an infomal report of my impressions.

Overall the conference seemed to be interested in a much wider spectrum of topics than was the case at the last one which I attended - in Boulder in the summer of 1973. There most of the emphasis was on statistical techniques. Here most of it was on application of techniques particularly to problems in population genetics and ecology. There was one interesting discussion in which the relation between the genetic information on populations from electrophoretic and chromosomal studies and the more usual phenetic measurements on populations was considered. Several made the point that the connecting link here - the development of the individual - lies in developmental studies. As you can imagine this was personally gratifying!

The mathematically inclined papers were bread in scope. The one on"Flat Clustering" was well done - based on Jardine and Sibson largely. The one on measuring shape changes was very exciting to me. He reported a new transformation which enables one to interprat the shape diagrams on coordinates of D'Arcy Thompson, something which has long interested me.

You should know - though you may not be pleased to know - that there was considerable interest in and attention paid to phylletics. In fact Ferris (who I think is sort of the "enfant terrible" of the group) went so far as to say that cladistic classifications give more stable results than phenetic. While this didn't gain universaal support, there was much talk on using cladistics as a technique and much needed method for determining history.

Once again my thanks for a stimulating and interesting time.

Sincerely,

Lois Ann Abbott

INTERNATIONAL CONFERENCE ON NUMERICAL TAXONOMY

TENTH ANNUAL MEETING

THE UNIVERSITY OF KANSAS

OCTOBER 17-19, 1976

SUNDAY, October 17

8:00 p.m. RECEPTION for members and guests of the conference: Ramada Inn.

MONDAY, October 18 -- All sessions in Jayhawk Room, Kansas Union.

8:30 a.m. REGISTRATION - Jayhawk Room (Fifth level)

9:00 PAPERS SESSION NO. 1: *ARNOLD J. KLUGE*, Moderator.

1. "The Meaning of Optimal Phenetic Classifications", *JAMES S. FARRIS*, SUNY, Stony Brook, NY.
2. "Population Phenetics", *ROBERT R. SOKAL*, SUNY, Stony Brook, NY.
3. COFFEE AVAILABLE - Third level
4. "The Measurement of Shape Change", *FRED BOOKSTEIN*, University of Michigan, Ann Arbor, MI.
5. DISCUSSION. Led by *ARNOLD J. KLUGE*, University of Michigan, Ann Arbor, MI.

1:30 p.m. PAPERS SESSION NO. 2: *JOSEPH FELSENSTEIN*, Moderator.

1. "Common = Primitive", *GEORGE F. ESTABROOK*, University of Michigan, Ann Arbor, MI.
2. "Three Parsimony Methods and How They Grew", *JOSEPH FELSENSTEIN*, U. of Washington, Seattle, WA.
3. COFFEE
4. "The Evolution of Secondary Structure in 5s RNA", *DAVID SANKOFF*, U. de Montréal, Quebec.
5. DISCUSSION. Led by *JAMES S. FARRIS*, SUNY, Stony Brook, NY.

6:30 ANNUAL BANQUET: Eldridge House, Lawrence. Business meeting.

Evening Address: *JEFFRY B. MITTON*, University of Colorado, Boulder, CO.

TUESDAY, October 19

9:00 a.m. PAPERS SESSION NO. 3: *ROGER L. KAESLER*, Moderator.

1. "Flat Clustering", *WILLIAM H. E. DAY*, SMU Institute of Technology, Dallas, TX.
2. "Dissimilarity Analysis", *JOHN C. TIPPER*, Kansas Geological Survey, Lawrence, KS.
3. COFFEE
4. "Synthesis of Additive and Seriative Models From Incidence Matrices: Conodonts and Graves", *JOHN H. DOVETON*, Kansas Geological Survey, Lawrence, KS.
5. DISCUSSION. Led by *F. JAMES ROHLF*, SUNY, Stony Brook, NY.

11:15

1:30 p.m. PAPERS SESSION NO. 4: *JOHN C. TIPPER*, Moderator.

1. "Community Hypotheses in Ecology and Paleoecology: Tests of Significance", *CHARLES W. HARPER, JR.*, University of Oklahoma, Norman, OK.
2. "A Genotypic Distance Based on Mean Electrophoretic Mobility", *R. KENT LENNINGTON*, University of Missouri, Kansas City, MO, and *R. H. PLAKE*, University of Texas, Austin, TX.
3. ~~COFFEE~~
4. ~~"Variability and Evolutionary Rates", MARY MICKEVICH, SUNY, Stony Brook, NY.~~
5. "Ecological and Morphological Congruence in Butterflies", *WAYNE MOSS*, Academy of Natural Sciences, Philadelphia, PA, and *JAMES SCOTT*, Colorado State University, Fort Collins, CO.
6. DISCUSSION. Led by *F. JAMES ROHLF*, SUNY, Stony Brook, NY.

4:30 p.m. CONCLUDING SESSION: Conference Summary-*PETER H. A. SNEATH*, U. of Leicester, Leicester, England.

6:30 p.m. POSTPRANDIAL POOLSIDE POSTMORTEM: Meadowbrook West Complex Swimming Pool, *EDWARD O. WILEY*.

NT-10
Numerical Taxonomy
Conference
Oct. 17-19, 1976

ROSTER

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James S. Farris
SUNY - Stony Brook
Stony Brook, NY

Joel Cracraft
Dept. of Anatomy
University of Illinois
Chicago, IL

Shirley J. Thompson
Dept. of Ornithology
Royal Ontario Museum
Queens Park
Toronto, Ontario, Canada

MEMO

TO: Dave Rogers

FROM: Gil Hersh Gil

DATE: October 19, 1976

RE: Fiscal Information for Annual Report

In response to your memo of October 6, 1976 and in accordance with Susan Wilson's telephone conversation with you on October 18, 1976, the fiscal information for the annual report will be available to you no later than October 29, 1976.

Lewis M. Branscomb
Old Orchard Road, Armonk, New York 10504

October 15, 1976

Dear Dave,

I was sorry to hear that you have decided to leave the Taximetrics Lab. You have made significant contributions to the Lab and to the accomplishment of its mission. You will be sorely missed.

Please let me wish you the best of luck. I hope to see you in the not too distant future.

Sincerely yours,

Lewis

Professor David J. Rogers
Dept. EPO Biology
University of Colorado
Boulder, Colorado 80309

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

SECRETARIAT:
Crop Ecology and Genetic Resources Unit
Plant Production and Protection Division
F A O
Via delle Terme di Caracalla
00100 Rome, Italy

14 October 1976

If you do not quote our code and date in your reply, the delivery of your correspondence may be delayed.

Dear Dave,

On my return from India I learned that you are resigning from the post of Directorship of the GR/CIDS Programme.

May I say personally how sorry I am in view of your pioneer work in this field and the importance of the work to so many people around the world.

I hope there have been no difficulties. If there have been I sympathise.

Best wishes to Connie,

Yours sincerely,

J.T. Williams

Dr. D.J. Rogers
Taximetrics Laboratory
University of Colorado
1229 University Avenue
Boulder, Colorado 80309
U.S.A.

Cables: FOODAGRI ROME Telex: 61181 FOODAGRI Telephone: 5797

The University of Reading

Professor of Agricultural Development Overseas:
A. H. Bunting CMG MSc DPhil LLD FIBiol

Your ref:

Our ref: A/823.4041

Plant Science Laboratories
University of Reading
Whiteknights
Reading England
RG6 2AS

Telephone: (0734) 85123 Ext: 7907

Telex No. 847813

13 October 1976

PERSONAL

Airmail

My dear Dave,

Your letter of September 24 was waiting for me when I came back from my holiday: it was as painful for me to read as it must have been for you to write.

Let me say straight away that I understand, and I think the report of our Advisory Committee reflects, the difficulty which has confronted you so starkly. I can consequently understand the pressures which you found within you and accept the decision which you felt obliged to take. In a way I took a somewhat similar decision, though in the opposite direction, when I decided to stop being Professor of Agricultural Botany and become Professor of Agricultural Development Overseas at the end of 1973. Like me, you will no doubt continue to some extent to feel torn, but you have taken a decision which you had to take and all of us will respect it and do our best to help you in any way we can in the tasks you have chosen to prefer.

In the time you have devoted to genetic resources activities for the Board, you have done a tremendous amount. For me, not the least part of this has been the contribution you have made to my education; but even more than that I have come to admire your searching habits of mind and to enjoy your company. I hope very much that our friendship will continue: for my part I shall do my best to ensure that it does.

For the rest, the work you have begun will have to be continued, since without it the international endeavour in plant genetic resources would be futile.

.../2

Thank you for beginning it: we shall hope for your good wishes and encouragement as we continue it.

I shall hope to meet you and Connie when next I come to Boulder. I hope that by that time the tensions attendant upon so large a decision as you have had to make will have been released and that you and I will be able to continue to talk over a beer, or better, about our many common interests and attitudes.

With warmest good wishes to you both,

Yours ever,

A. H. Bunting
Professor

Professor David J. Rogers,
Department of E.P.O. Biology,
University of Colorado,
Boulder,
Colorado 80309,
U. S. A.

vjn

10-12-76

NATIONAL SCIENCE FOUNDATION

PROPOSAL RATING SHEET

Reviewer Dr. David J. Rogers
Professor
EPO Biology
University of Colorado
Boulder, Colorado 80309

Proposal No.: DEB 7624333
Investigator: BRECKON, Gary J.
Institution: U. of Wisconsin
Please return to Systematics
If possible by: 10-20-76

Comments *(Continue on additional sheet if necessary)*

This is an excellent proposal for a group of plants that sorely needs revisionary, monographic studies. Since I prepared the generic monographic work for the nearest neighbor genus, Manihot, I can testify that the first, and greatest need, is for new collections of the material. The PI has, therefore, put the emphasis in the right place, and apparently, has done his homework to discover what areas, and what types of habitats that he must explore. His general knowledge of the classificatory status is also good.

The only problem that I see with the investigator's proposal is his failure to mention any connection to the present Brazilian Flora Project. Perhaps he is not aware of that effort, though he should be, if he has the close contact with Brazilian taxonomists indicated. It seem reasonable that he cooperate with the Brazilians, not only with shared herbarium materials, but also with respect to data about all specimens of interest to the Brazilians. Preparation of data banks on specimens is part of the Flora Project, and the help of monographers on this vital effort is critical.

OVERALL RATING

- ☒ EXCELLENT 1.5
- ☐ VERY GOOD
- ☐ GOOD
- ☐ FAIR
- ☐ POOR

Signature of Reviewer: DJR

Other suggested reviewers *(optional)*

Verbatim but anonymous copies of reviews will be sent only to the principal investigator/project director on request. Subject to this NSF policy and applicable laws, including the Freedom of Information Act, 5 USC 552, reviewers' comments will be given maximum protection from disclosure.

NSF Form 173, Jan 1976

NATIONAL SCIENCE FOUNDATION

PROPOSAL RATING SHEET

Reviewer

Proposal No.: DEB 7624333
Investigator: BRECKON, Gary J.
Institution: U. of Wisconsin
Please return to: Systematics
If possible by: 10-20-76

Comments *(Continue on additional sheet if necessary)*

OVERALL RATING

- ☐ EXCELLENT
- ☐ VERY GOOD
- ☐ GOOD
- ☐ FAIR
- ☐ POOR

NSF Form 173, Jan 1976

Signature of Reviewer:

Other suggested reviewers *(optional)*:

Verbatim but anonymous copies of reviews will be sent only to the principal investigator/project director on request. Subject to this NSF policy and applicable laws, including the Freedom of Information Act, 5 USC 552, reviewers' comments will be given maximum protection from disclosure.

NATIONAL SCIENCE FOUNDATION

WASHINGTON, D.C. 20550

10-12-76

Dr. David J. Rogers
Department of Botany
Colorado State University
Fort Collins, Colorado 80521

Dear Dr. Rogers: Ref: BRECKON

We would greatly appreciate your help in evaluating the enclosed proposal. In order to obtain a fair and critical review for every proposal, the Foundation relies heavily on the advice and guidance of experts in each field. Please comment on the scientific merit of the project, including the significance of the objectives and the adequacy of the experimental procedures. Consider the capacity of the investigator to conduct the project as evidenced by his or her knowledge and related published work, training, and previous research contributions. Note the adequacy of the facilities described.

The Foundation receives proposals in confidence and is responsible for protecting the confidentiality of their contents. For this reason, we ask that you refrain from copying, quoting or otherwise using material for this proposal. If you believe that a colleague can make a substantive contribution to the review, please consult me before disclosing either the contents of the proposal or the applicant's name. When you have completed your review or if, for some reason, you find yourself unable to respond to this request, please destroy the proposal.

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Be sure to enter your overall rating of the scientific merit of the proposal at the bottom of the rating sheet. Budgetary aspects are not to enter into the rating, but your comments on the budget are welcome. Duplicate rating sheets are enclosed, together with a pre-addressed envelope for the return of one of these sheets to us by the date stamped in the upper right hand corner. You may retain the other sheet if you wish. We would like to thank you in advance for your help in making our proposal review process a judicious one.

Sincerely yours,

Ellen Kirg /

for Janice C. Coffey
Associate Program Director
Systematic Biology

Enclosure

SYSTEMATIC BIOLOGY PROGRAM

GUIDELINES TO NUMERICAL RATING SYSTEM FOR PROPOSALS

1 EXCELLENT	Highly meritorious and deserving of top priority for funding. This rating should be reserved for truly excellent proposals, but should be used without hesitation when warranted.
2 - VERY GOOD	Proposals considered superior, both for the intrinsic merit of the project and the ability or potential of the investigator, but with secondary priority.
3 = GOOD	Quality sufficiently high to warrant consideration for support, but definitely with tertiary priority. When funds are scarce, such a proposal will seldom be funded.
4 = FAIR	Unsupportable in present form; might merit consideration for support if resubmitted with major changes.
5 POOR	Unsupportable.

Important Note: Ratings range from 1.0 through 5.0, but you are encouraged to use fractional ratings in your evaluation; e.g., 1.2 indicates a rating just below the very top, 1.5 indicates an evaluation halfway between first and second priority, etc. When using fractions, please indicate by writing in the number as well as by location of your "X" in the rating column.

76-24333

Application to the

NATIONAL SCIENCE FOUNDATION

for a grant for support of research on

Revision of the South American species of

Cnidoscolus (Euphorbiaceae). I.

Application is hereby made for a grant in the amount of $57,631.00 for the two-year period beginning July 1, 1977, and ending June 30, 1979.

FROM

Gary J. Breckon, Principal Invesitgator
Department of Botany, College of Letters and Science
The University of Wisconsin
Madison, Wisconsin 53706

Gary J. Breckon - Principal Investigator

Gerald C. Gerloff - Chairman
Department of Botany

Robert W. Erickson, Director of Research
Administration - Financial

INTRODUCTION

The combination of a rapidly expanding human population and technological development in Latin America is resulting in the rapid destruction of the natural vegetation and the consequent extinction of irreplaceable genotypes (Anonymous 1974; Collver 1965; Demeny 1974; Iltis 1972a and b; Terborgh 1974). The pressing need for basic research in the "underdeveloped" countries can be argued for on both intellectual and practical grounds: the flora and fauna of the areas should be cataloged before the organisms are gone - a necessity if we are to understand the extent of the earth's biological variation. A more pragmatic view is that genotypes of potential value to man may be lost if we fail to explore and sample at this time (Nat'l Acad. Sci. 1975; Wilkes 1971). Either argument can be advanced for the study of the South American species of Cnidoscolus: they are poorly cataloged and understood taxonomically and they are economically important (see text of proposal for references).

BACKGROUND TO THE PROPOSED PROJECT

Cnidoscolus is a New World genus of the Euphorbiaceae that consists of perhaps 50 species (McVaugh) extending from the tropical to the subtropical and warm temperate regions of both hemispheres. Despite a long history of cultivation for ornament and food

(Constantin and Fallvad 1906; McVaugh 1944; Bondar 1942; Ingram 1955; Nat'l Acad. Sci. 1975) and sporadic interest in it for latex production (McVaugh 1943; Lundell 1944, 1945; Williams 1962) and vegetable oil (Bondar 1942), as well as the negative economic impact of some of the weedy species (Johnson 1966), the genus remains poorly understood taxonomically, with considerable confusion as to the circumscription and nomenclature of its taxa. In part the problem is due to a paucity of collections: the abundant, fierce-stinging hairs and often succulent, difficult-to-dry stems, tend to discourage many collectors. The necessity of having all reproductive stages to determine the taxa seriously compounds the problem.

Although species now assigned to Cnidoscolus were known from pre-Linnean times, and both Houstoun (1871) and Rafinesque (1814) had erected genera encompassing the species, Pohl (1827) was the first worker to satisfactorily circumscribe the genus. Müller Argoviensis later monographed the group for the Prodromus as a subgenus of Jatropha (Müller Arg. 1865, 1866). Müller's retention of Cnidoscolus within Jatropha strongly influenced later workers and misrepresented the affinities of the two genera. There is now abundant evidence to demonstrate that Cnidoscolus is quite distinct from Jatropha and most closely related to Manihot (McVaugh 1944; Miller and Webster 1962; Webster 1967; Breckon and Webster 1974). The most recent, and only other, comprehensive treatment of the genus (again as a subgenus of Jatropha) is that of Pax and Hoffmann for Das Pflanzenreich, in 1910. Attempts to use their monograph gives mixed success at best, and in most cases it is not possible to satisfactorily determine a species:

too often important characters are misunderstood (McVaugh 1944; Lourteig 1954; Breckon 1975), the keys often stress trivial features, there are numerous nomenclatural problems, and finally a number of new taxa have been described since 1910.

To date, 116 species and subspecific taxa (plus five species and six subspecies still in manuscript, Breckon 1975) that are assignable to Cnidoscolus have been described, and allowing for homotypic synonyms and invalid names these taxa encompass a total of 204 combinations. Table I treats the number of described taxa by geographical region.

Table I. Number of species or subspecific taxa assignable to Cnidoscolus that have been described from different regions. Taxa in rows IV and V were considered to occur in more than one region by Pax and Hoffmann (1910). The eleven taxa in parenthesis are in manuscript

	Region	Recognized in Pax and Hoffmann	Described since 1910	Total described
I.	North and Central America	14	24 (+11)	47 (+11)
II.	South America	50	5	59
III.	West Indies	3	6	12
IV.	Region I and II	3	0	3
V.	Region I, II and III	3	0	3
	Total	73	35 (+11	116 (+11)

The obvious question raised by the data in Table I is why so few new taxa have been reported from South America since 1910, especially given the relatively large number of species subsequently described from the other two regions. Three possible explanations can be offered: 1, the genus was better sampled in South America than in North America by 1910; 2, the South American species still are not well collected and the number of taxa will increase with more intensive field work; or 3, the taxonomic concepts in the South American element of the genus are so muddled that one cannot be sure if a collection represents an undescribed taxon or not.

No doubt, all three factors are involved, but to what degree will only be known after extensive field and herbarium studies. If the findings from my revision of section Calyptosolen in Mexico and Central America are indicative, then one can expect a moderate amount of synonymy and a number of previously undescribed taxa in the South American Cnidoscolii: of the 31 previously described species and subspecific taxa in Mexico and Central America, 12 were heterotypic synonyms - and of the 30 taxa recognized, eleven were previously undescribed. But equally as important as the possible presence of undescribed taxa is the clarification of the taxonomic concepts, the nomenclature and the affinities within the genus.

Problems in typification, identification and nomenclature exist at all taxonomic levels within the genus, especially among the South America elements (see Appendix I). In examining herbarium specimens of Cnidoscolus from South America, one finds that the majority of the sheets are determined as one of four species: C. urens, C. vitifolius,

C. tubulosus or C. albomaculatus, and accepting the determinations at face value one is confronted with four remarkably heterogeneous species. The other South American species of Cnidoscolus appear to be much rarer, often only known from the type material.

As discussed in detail in Appendix I, there are major problems in typification in all four of the commonly applied names. Jatropha vitifolia Mill. was described from a Columbian plant, but Pohl (1827) and all subsequent workers have applied the name to plants from southern Brazil-northern Argentina (McVaugh 1944) and indeed have described eight subspecific taxa in "J. vitifolia" from the region. Whether a type of Miller's species exists and whether the Columbian plants are conspecific with those from Brazil and Argentina needs to be determined. If McVaugh's contention is correct, i.e. that J. vitifolia Mill. is in section Calyptosolen, then section Vitifoliae is without a type species (McVaugh 1944).

Jatropha urens L., for which a lectotype has yet to be selected, is described as occurring in South America, Central America, Mexico and the Caribbean. But no one subsequent to Pax and Hoffmann's 1910 monograph has done a systematic, comparative study of the plants assigned to the species to determine their conspecificity. Of the seven varieties of J. urens recognized by Pax and Hoffmann five were from Brazil; the other two (C. herbaceus (L.) I. M. Johnstn.; C. stimulosus (Michx.) Engelm. and Gray) varieties are distinct species whose affinities to C. urens are questionable (Breckon unpubl.).

Both J. tubulosa Müll. Arg. and J. albomaculata Pax were treated by their authors as consisting of three varieties each - none of which were designated as variety "genuina", which was their usual custom. Jatropha tubulosa sensu Müll. Arg. has proven to be a heterogeneous taxon circumscribing plants now assigned to at least four different species (Breckon 1975). Here, the problem is not just one of correct nomenclature, but it also affects the delimitation of the taxonomic concepts within the genus. On the other hand, from the original description, J. albomaculata Pax appears to be a more homogeneous taxon - indeed the distinctiveness of its varieties are questionable.

McVaugh (1944), in his subgeneric classification of Cnidoscolus, recognized three sections that were characterized by having palmately veined leaves and ca. 10, ± biverticillate stamens. Section Calyptosolen included plants having simple leaves, mammiform petiolar glands and monadelphous stamens; section Jussieuia was defined by having simple leaves, papilliform petiolar glands and free filaments in the outer or in both staminal whorls; section Platyandrae included only a single Cuban species that had eglandular, palmately compound leaves.

My studies in sections Calyptosolen (1975) and Jussieuia (unpubl.) show that McVaugh's criteria result in unnatural groupings. Cnidoscolus texanus (Müll. Arg.) Small, which was assigned by McVaugh to section Jussieuia, has papilliform petiolar glands; but it also has monadelphous stamens and shows close affinities to the C. angustidens complex of section Calyptosolen sensu McVaugh. Similarily; the Peruvian members of J. tubulosa sensu Müll. Arg. have papilliform petiolar glands and monadelphous stamens. Further, they show close affinities to other South American plants that are characterized by having a syntepalous

perianth with an enlarged, persistent basal flange. This character was first noted by Pax and Hoffmann (1910) who used it to define section Calyptosolen; McVaugh (1944) demonstrated that the character is absent in the North American members of the section and Lourteig (1954) showed it to occur in South American plants with affinities to "C. urens". As a result, both workers rejected the character. But my preliminary observations on the South America plants strongly suggest that the feature is consistent at the species level and may prove important at the section-subsection level. On the other hand, several distinct elements can be recognized in the North American species of section Calyptosolen sensu McVaugh and it is apparent that a revision of the subgeneric classification is needed. Studies now in progress indicate that pollen morphology, wood anatomy, inflorescence type and growth habit may be important criteria for demonstrating subgeneric affinities. But any revision of the subgenera and sections must await study of the South American and West Indian taxa.

While the study of loans from other herbaria is an essential phase of any revision, the necessity of field studies in Cnidoscolus cannot be over-emphasized: any revision of the genus based solely on existing herbarium specimens will be inadequate (Breckon 1975). Aside from a few notable exceptions, the majority of collections of Cnidoscolus are low in information and could only be evaluated after becoming familiar with the plants inthe field. The ferocity of the stinging hairs discourages the careful arrangement of the specimens, and few collectors note such important features as growth habit, bark characteristics, nature of the stinging hairs and whether short

shoots are present or not. General collectors rarely visit a site more than once so that it is rare to have material from the same population with all reproductive stages present. Yet determination of a collection or the evaluation of a taxon's rank and affinities are not possible without the above data. Thus, when Pax and Hoffmann (1910) discussed the reproductive structures of their 47 taxa, they listed all these stages for only 3 species; pistillate flowers, fruits, and seeds are almost always lacking.

PROJECT OBJECTIVES

It is proposed to develop a four-year program that will result in a completion of a detailed revision of Cnidoscolus. Revision of the mainland North American and Central American element of the genus has now been completed and is being prepared for publication. The present funding request is for two years to support intensive collecting in South America and for laboratory studies of the resulting specimens. The second phase of the program would involve a final series of field studies based on information gathered during the first phase, a trip to salient European Herbaria (see Appendix III) and examination of loans. Secondary objectives of the present proposal include:

1. The gathering of general collections of plants in the areas visited in sets of 8 for distribution to major herbaria, especially those involved in monographic or floristic studies.

2. Extensive collecting of other Euphorbiaceae, especially members of subfamily Crotonoideae Pax, for systematic studies.
3. The obtaining of propagules of Cnidoscolus for dispersal to botanical gardens or to other cultural institutions and specialists concerned with possible economic uses.
4. The training with field experience in tropical and subtropical vegetation for graduate students.

TRAVEL

South American field work will involve two trips, one of a two-month and one of a four-month duration by the principal investigator and a graduate student research assistant. The areas to be visited will be primarily type localities with secondary sites based on other herbarium records. Major herbaria of the countries involved will be visited, especially those in Rio de Janeiro, São Paulo, and Bogota.

The fact that most of the species of Cnidoscolus are dormant during the dry season - from ca. April through September - necessitates field work during the Northern Hemisphere school year.

The first trip is planned for December 1977 to January 1978 and will result in missing two weeks of instruction which other faculty have agreed to cover. This trip will concentrate on: a) the State of Bahia in northeast Brazil and adjoining semi-arid and arid regions, and b) on the arid coastal areas of Columbia (see maps and summary of localities at the end of Appendix I).

The second trip, for a four month period, will involve field work in southern Brazil, from Rio de Janeiro and southern Matto Grosso south to São Paulo and Paraguay.

The actual itinerary will depend somewhat on availability of local transportation and possibly on the political situation. Therefore, for the purposes of this proposal, exact itinerary figures, mileage, etc. have not been included, although various routes and alternates have been worked out. The Herbarium at the University of Wisconsin has a long history of favorable interaction with Brazilian taxonomists and every attempt will be made to have them or their graduate students accompany us into the field. Such an arrangement should prove mutually beneficial.

LABORATORY STUDIES

Present research indicates that in Cnidoscolus epidermal features of the lamina (i.e. presence or absence or adaxial stomata, presence, type and extent of cuticular ridges or striations, nature of the anticlinal walls and to a lesser extent, stomata size) are of great taxonomic value at the species level. At the subgeneric and sectional level, pollen morphology (i.e. pore number) and wood anatomy appear to be significant. While the scanning electron microscope give high quality resolution of the cuticle and pollen, it does not favor samplings of large numbers of specimens, this is possible only with the light microscope. But both the cuticular features and pore number show enough variation that large

samples are needed. The scanning electron microscope will be used primarily for illustration of selected samples.

A high quality dissecting microscope is needed for the study of specimens and photomicrography of salient characters.

BIOGRAPHICAL SKETCH OF THE PRINCIPAL INVESTIGATOR

Gary J. Breckon, Assistant Professor of Botany. Born: Weiser, Idaho; April 5, 1940. B.A. San Francisco State College, California, 1966. M.A. San Francisco State College, California, 1968. Ph.D. University of California-Davis, 1975. Research Assistant for H. D. Thiers (Fungal Herbarium, San Francisco State), G. L. Webster (Plant collecting/identification for University of California-Davis Arboretum), J. M. Tucker (SEM studies of leaf surfaces), M. G. Barbour (vegetation of Pacific Coast beaches). Botanist, Strybing Arboretum, San Francisco (1967-1969). Television writer—teacher 1968-1969. N.S.F. Traineeship, 1968-1972, University of California-Davis. N.S.F. Dissertation Improvement Grant, University of California-Davis. Tropical field experience in Mexico, Guatemala, Panama and Costa Rica. Teaching Assistant at San Francisco State College, University of California-Davis, and O.T.S. for a total of five years. Instructor in Botany, University of California-Davis, 1973-1973. Assistant Professor of Botany, University of Wisconsin-Madison, 1974---. Professional Societies: Botanical Society of America,

American Society of Plant Taxonomists, California Botanical Society, Sigma Xi, American Institute of Biological Sciences.

PUBLICATIONS

1975 Geography and evolution of Cnidoscolus sect. Calyptosolen (Euphorbiaceae) in Mexico. Am. Jour. Bot. 62 (suppl.): 50 (abstract).

1975 Botany, a laboratory manual. Wiley and Sons. 263 pp. (To accompany An Introduction to Plant Biology, 5th ed.).

1974 Structure and function of the Crotonoid pollen type. Am. Jour. Bot. 61 (suppl.): 54 (abstract).

1974 Review of North American Pacific Coast beach vegetation. Madrona 22: 333-360.

1974 External spore morphology and taxonomic affinities of Phylloglossum drummondii Kunze (Lycopodiaceae). Am. Jour. Bot. 61: 481-485.

1972 External spore morphology of Lycopods. Amer. Jour. Bot. 59: 675 (abstract).

RESEARCH GRANT PROPOSAL

Budget

July 1, 1977 - June 30, 1979

	1977-78	1978-79
A. Salaries and Wages		
1. Senior Personnel		
Principal Investigator: Gary J. Breckon		
@ 2/9 AY (2FTEMM/yr)	$ 3,200	
Sept. - Dec. 1978 (4 FTEMM)		$ 6,800
2. Other Personnel (non-faculty)		
a. Research Assistant		
50% (6FTEMM/yr)	5,150	5,390
b. Student hourly help		
($2.50/hr)	630	630
c. Secretarial (technical)	300	500
Subtotal for Salaries	$ 9,280	$13,320
B. Fringe Benefits		
1. Principal Investigator's Salary		
(20.4% of salary)	$ 653	$ 1,526
2. Research Assistant		
(5.6% of salary)	288	$ 332
3. Secretarial (technical)		
(27.6% of salary)	81	152
Subtotal for Fringe Benefits	$ 1,022	$ 2,010
TOTAL Salaries	$10,302	$15,330

Research Grant Proposal Budget (July 1, 1977-June 30, 1979) continued.

	1977-78	1978-79
C. Expendable Supplies and Equipment		
1. Film and photo supplies	$ 300	$ 300
2. Xeroxing	100	100
3. Microtechnique equipment	350	350
4. Rental on scanning electron microscope (20 hrs @ $10/hr)	200	200
Total for Expendable Supplies	$ 950	$ 950
D. Permanent Equipment		
1. Wild Heerbrugg Zoom Stereomicroscope Model M8 with Binocular Body	$ 3,705	
2. Accessories required for Photomicrography with M8	$ 1,535	
3. Pressing and field equipment	150	150
4. Three herbarium cases ($310 each)	930	
Total Permanent Equipment	$ 6,320	$ 150
E. Publication Costs		
1. Page charges	$ 200	$ 500
2. Reprints	200	300
Total Publication Costs	$ 400	$ 800

Research Grant Proposal Budget (July 1, 1977 - June 30, 1979) continued.

	1977-78	1978-79
F. Travel		
1. Airfare for two persons, South America 2. Airfare for two within South America	$ 2,950	$ 2,600
3. Auto rental within South America (average 200 mi/day)	750	1,500
4. Per deim for Principal Investigator ($20/day)	$ 1,000	$ 2,000
Total Travel Costs	$ 4,700	$ 6,100
G. Total Direct Costs	$22,672	$23,330
H. Indirect Costs		
1. On campus (59% of Salaries)	$ 5,475	$ 2,787
2. Off campus (38% of Salaries)	-0-	3,267
I. Total Costs	$28,147	$29,384
J. Total Estimated Request to National Science Foundation	$57,531	

The University of Wisconsin-Madison will cost-share in accordance with current N.S.F. policy.

APPENDIX I

The following appendix is a listing of the South American species and subspecific taxa in Cnidoscolus, with a discussion of their typification and nomenclatural status. Also included are some taxa from outside South America where nomenclatural or typification problems exist. The species are listed more or less chronologically; the number of the taxon in the listing corresponds to the location numbers on the dot maps at the end of the appendix. Where possible, the type localities have been described with latitude and longitude coordinates taken from the Official Standard Names Gazetteers, United States Board on Geographic Names, Department of the Interior, or from the American Geographical Society 1:1,000,000 map of Latin America. Urban's listing of itineraries in Martius (1906) was consulted repeatedly for locations of probable collection sites.

1. Jatropha herbacea L., Spec. Pl. ed. 1: 1007, 1753.

   TYPE: MEXICO: Veracruz: sandy grounds about the town of Veracruz (26°02'N, 97°58'W), Houstoun s.n.

   DISCUSSION: Linneaus cites only Houst. Amm. herb. 256. According to Heller (1957) the reference is to a name taken by Amman from Houstoun's herbarium and notes in the Sloane Herbarium, now at BM. Miller (1768) obviously confused J. urens and J. herbacea. The description and location given by Miller of the former species fits that of Cnidoscolus herbaceus (L) I. M. Johnst.

2. Jatropha urens L., Spec. Pl. ed. 1: 1007, 1753.

TYPE: BRAZIL: None yet designated.

DISCUSSION: As pointed out by both Mueller Arg. (1866) and Webster (1967), the material in the Linnean Herbarium (LINN) is labeled Jatropha Kunthiana Müll. Arg. From the microfiche, the specimen appears to be Cnidoscolus aconitifolius (Mill.) I. M. Johnst. ssp. aconitifolius. Stearn (1957) discusses the unreliability of the present Linnean Herbarium for typification. The type must then be selected from one of the five references given by Linneaus, which are as follows:

a. Hort. cliff. 445 (Linnaeus, C. 1738. Hortus Cliffortianus. Amsterdam.)

b. Hort. ups. 290 (Linnaeus, C. 1748. Hortus Upsaliensis. Vol. 1. Stockholm.)

c. Roy. lugdb. 202 (Rouen, A. van. 1740. Florae Leydensis Prodromus. Leyden (Lugd. Bat.))

d. Comm. hort. I. p. 19. t. 10. (Commelin, J. 1697. Horti medici Amstelodamensis rariorum Plantarum Descriptio et Icones. Pars I. Amsterdam.)

e. Pluk. alm. 320. t. 220. f. 3 (Plunkenet, L. 1696. Almagestum botanicum. London.)

The most logical choice for the type would be the specimen in Hortus Cliffortianus (BM). According to Lourteig (1954), who quotes a note from the late Mr. N. Y. Sandwith of Kew:

"The type (of J. urens) is the specimen in Hortus Cliffortianus, in Herb. Mus. Brit.; since there is no preliminary diagnosis,

and the Hort. Cliff. reference is the leading one. This specimen consists of 2 leaves only, with petioles rising out of a printed jug! No inflorescence or fruits. Petioles densely shortly softly pilose and long retrorsely stinging setose. Leaves deeply 5-lobed to a little beyond the middle, densely softly pubescent especially beneath where they are almost velvety to the touch, sparsely setose; lobes more or less sinuate-toothed but not properly lobed. The leaves are deeply cordate at the base with a relatively narrow and deep sinus."

The description fits the foliage of at least a half dozen or so species of Cnidoscolus so that it may not be possible to match with any certainty the Hort. Cliff. specimen with other Brazilian plants. Thus, it may be best to select a type from one of the other references given by Linneaus. Possibilities would include the illustrations in Plukenet, Commelin or Marcgravis (Pisonis and Marcgravi 1648, p. 79 f. 2; the reference is in Hort. Cliff.). Webster (1967) notes that the Commelin illustration agrees rather well with the plant later described as C. marcgravii Pohl. If so, this would be a poor choice for a type of J. urens. Not having seen the Marcgravis illustration, I am unable to comment on it. However, the Plukenet Herbarium is at BM (Stafleu 1967) and an annotated copy of Plukenet's works exists that provides a guide to the specimens from which they were drawn (Stearn 1957)

3. Jatropha quinquelobata Mill., Gard. Dict. ed. 8. n. 2, 1768.
TYPE: CUBA: HABANA: Habana (23°08'N, 82°22'W, map), Houstoun s.n.
DISCUSSION: Miller grew the plant from seeds sent him by Houstoun from Havana. The plant is known only from Miller's description and has not been collected in recent times (Leon 1953). Mull. Arg. (1866) sites Miller ! in hb Mus. Londin., Ramon de la Sagra #1 (G-DC). Since Houstoun also visited Veracruz and Campeche, (Pennell 1945) it may be that the seeds came from a Mexican plant. The only way to resolve the problem is to locate the specimen in Miller's or Sloane's Herbarium at BM.

4. Jatropha aconitifolia Mill., Gard. Dict. ed. 8. n. 6, 1768.
TYPE: MEXICO: VERACRUZ: Veracruz (26°02'N, 97°57'W), Houstoun 1730 (Holotype: BM, hb Miller, Bailey Hortorium neg. 5286).

5. Jatropha vitifolia Mill., Gard. Dict. ed. 8. n. 5, 1768.
TYPE: COLUMBIA: CARTAGENA (10°25'N, 75°32'W, map 1), Robart Millar.
DISCUSSION: Miller described the species from material cultivated in England that was grown from seeds sent from "Carthagena, New Spain" by Robart Millar. Lawrence and Meyer photographed the Miller Herbarium (BM) and failed to locate any specimen of J. vitifolia (F. G. Meyer, personal communication).

McVaugh (1944) argues, that, based on the description and type locality, Miller's species is most likely a member of section Calyptosolen from the Northern Hemisphere. The former Spanish Viceroyalty of New Spain included the southwest U. S., Mexico, Central America north of Panama and the West Indies (as well as the Philippines). A survey of old maps and gazetteers failed

to show any Carthagena in the Northern Hemisphere. Cartagena, Columbia is often spelled with an "h" and was an important port during the 17th and 18th centuries. Further, while J. vitifolia may be in section Calyptosolen, this does not rule out Columbia as the origin of Millar's plant since other species of the section occur there (Breckon 1975).

Pohl, Müller Argoviensis, Pax and others have applied Miller's name to southern Brazilian-northern Argentinian plants, and whether these are actually conspecific with the Columbian species is doubtful. It would appear, then, that the earliest valid name for J. vitifolia sensu Pohl, etc. is C. cnicodendron Griseb. (McVaugh 1944). Field work in Columbia and a study of the BM herbarium may reveal Miller's species.

6. Jatropha quinqueloba Sessé apud Cerv., Gaz. Lit. Mex. 3: suppl. 3, 1794.

TYPE: NUEVA ESPANA (Mexico or Guatemala): Sessé and Mociño (Holotype: MA, Isotype G) Field Mus. neg 24392 (G).

DISCUSSION: J. tubulosa Müll. Arg. var septemloba Müll. Arg. (of this listing) is based on the G specimen of the Sessé and Mociño collection. Since the specific epitat is already pre-occupied in Cnidoscolus (C. quinquelobus Pohl), Müller's name must be used (McVaugh 1945). McVaugh (l.c.) argues logically that the Sessé and Mociño specimen be designated the type for Jatropha tubulosa Müll. Arg. The problem is that I am unable to match their collection with any other Mexican or Central American Cnidoscolii

(Breckon 1975); and while this does not restrict it from being taken as the lectotype for the species, it certainly reduces the desirability of doing so.

7. Jatropha napaeifolia Desv., Lam. Encycl. IV: 15, 1797.
TYPE: Not yet located. Probably at P-LA. (Stafleu 1967).

8. Jatropha stimulosa Michx., Fl. bor. amer. II: 216, 1803.
TYPE: Not yet located.
DISCUSSION: All types for Flora boreali-americana are at P and kept separate as a herbier historique with duplicates at BR, G, LIV and in the general herbarium at P (Stafleu 1967).

9. Jatropha palmata Willd., Spec. pl. 4: 562, 1805. (non Sessé apud Cerv. 1794, nec Velloza, nec C. Wright).
TYPE: HONDURAS: CORTES: Puerto Caballos (= Puerto Cortes, 15°48'N, 87°56'W, map ,), Karsten #12. (B ?, Willdenow's herbarium is still extant at B (Stafleu 1967).

10. Jatropha fragrans H.B.K., Nov. gen. et spec. II: 83, 1817.
TYPE: CUBA: REGLA: bei Regla (23°08'N, 82°20'W, map), Humboldt and Bonpland.
DISCUSSION: As with C. quinquelobatus (Mill.) Leon, Kunth's species has not been recollected and is only known from the original description and type. From the description it would appear to belong in section Calyptosolen sensu McVaugh, which is otherwise known only from the mainland.

11-22. A problem in the typification of Pohl's species arises from his practice of never citing his own collections directly; but from the location data given by later authors citing Pohl's material, it is evident that his species were often based on his own collections.

12. Cnidoscolus lobatus Pohl, Pl. Brazil. icon et descr. I:62, 1827.
TYPE: BRAZIL: BAHIA: Catinga vom S. Francisco bis Sincora (Pax and Hoffmann 1910), (Sincora = 13°37'S, 41°04'W, map 2), Martius: Janipha phyllacantha Martius in sched., ex parte.
DISCUSSION: See the discussion for Jatropha phyllacantha, number 34 of this listing.

13. Cnidoscolus repandus Pohl, Pl. Brazil. icon et descr. I62, 1827.
TYPE: BRAZIL: BAHIA: Habitat in desertis, Martius; Janipha phyllacantha Martius in sched., ex parte.
DISCUSSION: See the discussion for Jatropha phyllacantha, number 34 of this listing.

14. Cnidoscolus quercifolius Pohl, Pl. Brazil. icon et descr. I:62, 1827.
TYPE: BRAZIL: BAHIA: in aridis graniticis desertis inter Villam de Caxoeira et Villa Jacobina (Villa Jacobina, 9°54"S, 40°30'W, map 2), Martius: Janipha phyllacantha Martius ex sched, ex parte.
DISCUSSION: See the discussion for Jatropha phyllacantha, number 34 of this listing.

15. Cnidoscolus Marcgravii Pohl, Pl. Brazil. icon et descr. I:58 t. 50, 1827.

CITED: BRAZIL: RIO DE JANEIRO: monte Corcovado (22°54'S, 43°14'W, map 3), Mikan; Schott. MINAS GERIAS: river margins. GOIAS: river margins.

DISCUSSION: Müller Arg. (1866, 1874) cites Schott #1665, 4108 and Mikan s.n. from the monte Corcovado location and gives Pohl s.n. for the Minas Gerais region. There is no collection citation in Pohl or in the later treatments for the Goias location given by Pohl. Webster (1967) suggests using the Commelin illustration of J. urens for the type of C. Marcgravii Pohl since it accords rather well with it. I see no value in this choice since herbarium material cited by Pohl is in existance.

16. Cnidoscolus Michauxii Pohl, Pl. Brazil. icon et descr. I:62, 1827.

TYPE: None given; Pohl cites Jatropha stimulosa Michaux, J. urens Walt. and Bivonea stimulosa Rafinesq. as synonyms. The latter two are synonyms of Jatropha stimulosa Michaux, and Pohl obviously meant his name as a substitute for Michaux's epithet.

17. Cnidoscolus neglectus Pohl, Pl. Brazil. icon et descr. I:60, t. 51, 1827.

TYPE LOCALITY: BRAZIL: GOIAS: circa Villa Boa (15°56'S, 50°08'W, map 2).

DISCUSSION: Pohl gives no specimen citations, but Müller Arg. (1866) cites Pohl #3918 and gives Pohl's original locality data; Pax and Hoffmann (1910) cite both Pohl #1665 and #3918 from the type area.

18. Cnidoscolus obtusifolius Pohl, Pl. Brazil. icon et descr. I:62, 1827.

TYPE: BRAZIL: BAHIA: inter Caxoiram et Villa de Jacobina (Villa de Jacobina, 9°54'S, 40°30'W, map 2) et versus Malhacta (= 9°29'S; 37°58'W or 9°34'S, 43°22'W), Martius: Janipha arborea Martius in sched, ex parte, Field Mus. neg. 6630, hb Monacense.

DISCUSSION: C. pubescens Pohl, number 19 of this listing.

19. Cnidoscolus pubescens Pohl, Pl. Brazil. icon et descr. I:62, 1827.

TYPE: BRAZIL: BAHIA: inter Caxoiram et Villa de Jacobina (Villa de Jacobina, 9°54'S, 40°30'W, map 2) et versus Malhacta (= 9°29'S, 37°58'W or 9°34'S, 43°22'W), Martius: Janipha arborea Martius in sched, ex parte.

DISCUSSION: Pohl differentiated between C. obtusifolius and C. pubescens by the amount of pubescence on the leaves; the two species are probably conspecific and one will have to be relegated to synonymy. Müller's reduction of C. pubescens to a variety of Jatropha obtusifolia and his recognition of a variety genuina lends some weight to retaining C. obtusifolius as the binomial for the species.

20. Cnidoscolus osteocarpus Pohl, Pl. Brazil. icon et descr. I:63, 1827.

TYPE: See the discussion.

DISCUSSION: Pohl gives a location for a collection he made in Minas Gerias (ad flavios prope Arayal S. Miguel ad Rio Jequitinhona) but notes that his specimen rotted. He then cites a fragmentary specimen of Schott's (Jatropha osteocarpa Schott in sched.)" in hb Musei C. R." Müller Arg. in 1866 cites Schott, specimen incomplete for the species, while in 1874 he cites Schott #4107 from

Rio de Janeiro and Pohl s.n. from Pohl's original locality. Since Müller does not indicate in Flora Brasilensis whether he examined the cited material or not, one can not be sure of an extant Pohl collection. Pax and Hoffmann (1910) saw and cite Schott #4107, and cite, without having seen, Pohl s.n. There probably is not a Pohl collection for the species and the original collection site should be revisited.

21. Cnidoscolus quinquelobus Pohl, Pl. Brazil. icon et descr. I:63, 1827.
TYPE: None cited; Pohl places Jatropha urens L. et plurim auctor and Janipha urens Poir. in synonymy with his name. Clearly, he means his name to replace J. urens L.

22. Cnidoscolus hamosus Pohl, Pl. Brazil. icon et descr. I:57, t. 49, 1827.
TYPE LOCALITY: BRAZIL: MINAS GERIAS: Praja Grande et Inhumas flamins Rio Jequitinhonha (Inhumas, 16°09'S, 41°24'W, map 2).
DISCUSSION: Pohl does not cite any collections but Müller Arg. in 1866 gives Pohl #3229, and in 1874 cites Pohl #1664 and #3229. Pax and Hoffmann (1910) cite and saw Pohl #1664. All three references give a condensed version of Pohl's original location data.

23. Cnidoscolus Michauxii Schlechtd., Linnaea V; 87, 1830. I have not yet located the needed volume of Linnaea to check on Schlechtendal's name; Pax and Hoffmann (1910) place in synonymy with J. herbacea L. Pohl.

24. Jatropha aculeatissima Colla, Herb. Pedem. 5:112, 1836.

TYPE: Neither the type nor the description have been located yet. According to McVaugh (1944), the name is based on a Brazilian plant collected by Pedro d'Agoa and is deposited at TO.

25. Jatropha stipulosa Steud., Nomencl. ed. 2:800, 1840.

TYPE: Neither the type nor the description have been located yet. Pax and Hoffmann (1910) placed the name in synonymy with J. urens var. stimulosa.

26. Jatropha horrida Müll. Arg., Linnaea 34:210, 1865.

TYPE: BRAZIL: Sellow in hb Berol. (probably no longer extant), Field Mus. neg. 5391 (B).

DISCUSSION: Sellow's specimen is the only one cited by Müller in 1865, 1866, and 1874.

27. Jatropha Kunthiana Müll. Arg., Linnaea 34:211, 1865.

TYPE: VENEZUELA: SUCRE: Cumana (10°28'N, 64°10'W, Map), Humboldt and Bonpland #109.

DISCUSSION: Müller gives no description of the species but refers to Kunth's description of Jatropha urens (J. urens H.B.K., Nov. gen. et spec. II:84, 1817). While several other collections are cited by Müller it is obvious that the species is based on the Kunth description of the Humboldt and Bonpland plant.

28. Jatropha pavoniana Müll. Arg., Linnaea 34:210, 1865.

TYPE: PERU: LIMA: Acotama. Pavon (G, nunc hb Boiss; Field Mus. neg. 8495).

DISCUSSION: Müller, in 1866 citing the same specimen, changed the name to J. peruviana, number 33 of this listing.

29. Jatropha tubulosa Müll. Arg., Linnaea 34:212, 1865.
TYPE: No type or variety genuina was given for the species, rather three varieties were recognized in the species. The type for J. tubulosa will have to be selected from one of the Ruiz and Pavon collections from Peru.

30. Jatropha tubulosa Müll. Arg., var. septemloba Müll. Arg., Linnaea 34:212, 1865.
TYPE: NUEVA ESPAÑA (Mexico and Guatemala): Sessé (Holotype: G nunc hb Pavon; Isotype: MA, G).
DISCUSSION: See the discussion under J. quinqueloba Sessé apud Cerv., number 6 of this listing.

31. Jatropha tubulosa Müll. Arg. var. quinqueloba Müll. Arg., Linnaea 34: 212, 1865.
TYPE: PERU: Ruiz And Pavon (hb. Pavon).
DISCUSSION: Pavon's collection becomes the lectotype for the variety by default: the other two collections cited by Müller (Andrieus #111, Jurgensen #599) have been assigned to other species (Breckon 1975).

32. Jatropha tubulosa Müll. Arg. var. triloba Müll. Arg., Linnaea 34: 212, 1865.
TYPE: PERU: Ruiz and Pavon (Holotype G, nunc hb Pavon; Isotype: MA, nunc hb Ruiz).

33. Jatropha peruviana Müll. Arg. DC. Prodr. XV (2):1096, 1866.
TYPE: Homotypic with J. pavoniana Müll. Arg., number 28 of the listing. Müller used this name in 1866 as a direct substitute for J. pavoniana of 1865.

34. Jatropha phyllacantha Müll. Arg., DC Prodr. XV (2):1098, 1866.
TYPE: None designated.
DISCUSSION: Pohl's three species, C. quercifolius, C. repanda, and C. lobata were based on Martius' collections of Janipha phyllacantha Martius, ex sched. In resurrecting Martius' herbarium epitat Müller failed to give a type or variety genuina for the species, but instead recognized Pohl's species as varieties of Jatropha phyllacantha. Martius' specific epithet cannot be transferred to Cnidoscolus since Pohl's species preempt the types in the genus. Although Pax and Hoffmann (1910) follow Müller's treatment of J. phyllacantha, they justifiably question the distinctiveness of the three taxa.

35. Jatropha vitifolia Mill. var. obtusifolia Müll. Arg. DC. Prodro. XV (2):1097, 1866.
SYNTYPES: BRAZIL: BAHIA: catinga between Villa Nova da Rainha and Joazeiro (9°25' - 9°54'S, 37°07' - 40°30'W), Martius; in Brazilia meridionali, Sellow.

36. Jatropha vitifolia Mill. var. maritima Müll. ARg. Fl. Brazil. II (2):498, 1874.
TYPE: BRAZIL: in provinciis maritimis Braziliae orientalis, Martius.

37. Jatropha ferox Müll. Arg. Fl. Brazil. II (2):496, 1874.

TYPE: BRAZIL: eastern Brazil at Pedra Agoa, Princeps Neuwied.

DISCUSSION: Pax and Hoffmann (1910) consider J. ferox to be conspecific with J. horrida Müll. Arg.

38. Jatropha oligandra Müll. Arg., Fl. Brazil. II (2):502, 1874.

TYPE: BRAZIL: RIO DE JANEIRO: Canta Gallo (= ? Cantagalo, 21°58'S, 42°22'W, map 3), Peckolt #173.

DISCUSSION: If the above coordinates are correct the locality now is in adjacent Minas Gerais.

39. Jatropha urens L. var. brachyloba Mull. ARg., Fl. Brazil. II (2): 500, 1874.

TYPE: BRAZIL: Martius.

40. Jatropha peltata C. Wright, Sauv. Anal. Acad. Ci. Habana 7:155, 1870. non Sesse apul. Cerv. 1794, nec H.B.K. 1817, nec Wright 1850.

TYPE: CUBA: Wright #3689.

DISCUSSION: Wright's collection is also the type for J. rangel Gomez de la Maza (1894) and J. platyantha Pax (1910). I have not yet located a copy of the journal with Wright's description, but, if he simply misapplied the name from an earlier author, Cnidoscolus rangel (Gomez de la Maza) McVaugh becomes the earliest correct name for the species. However, if Wright had described a new species, then a transfer of the specific epithet to Cnidoscolus results in a new combination using an earlier epithet than Gomez's (Bot. Code Art. 66, Note 2).

41. Cnidoscolus vitifolius Mill. var repandus Griseb., Griseb. Abh. Ges. Wiss. Göttingen XXIV:53, 1879.
TYPE: ARGENTINE: SALTA: Juramento (25°09'S, 64°57'W) map 4), Lorentz #329.

42. Cnidoscolus cnicodendron Griseb., Abh. Ges. Wiss. Göttingen XXIV: 53, 1879.
SYNTYPES: ARGENTINE: SALTA: Juraneto (25°09'S, 64°57'W, map 4), Lorentz #328, #413; Oran (27°10'S, 65°33'W, map), Lorentz #355.
DISCUSSION: If McVaugh (1944) is correct in his contention, this is the name that should be applied to the plants from southern Brazil-northern Argentine that are now being called J. vitifolia Mill. Pax (1910) recognized two taxa from Lorentz's collections and treated them as varieties of J. vitifolia: J. v. var cnicodendron (syntypes: Lorentz 355, 413) and J. v. var grisebachii (type: Lorentz 328).

43. Jatropha rangel Gomez de la Maza, An. Soc. Esp. Hist. Nat., Madrid, xxiii. Mem., 51, 1894.
TYPE: CUBA: C. Wright #3689.
DISCUSSION: Gomez's species is homotypic with J. peltata C. Wright, number 40 of this listing, and J. platyantha Pax, number of this listing.

44. Jatropha maracayensis Chodat and Hassler, Bull. Herb. Boissier 2, serv. V:613, 1905.

TYPE: PARAGUAY: ALTO PARANA: iter ad Yerbales Montium "Sierra de Maracayu" (= Cordillera de Mbaracayu, 23°57'S, 55°01'W, map 4), Hassler #4931. Field Mus. neg. 24387, G.

45. Jatropha vitifolia Mill. var. genuina Chodat and Hassler, Bull. Herb. Boissier 2. ser. V:613, 1905.

CITED: PARAGUAY: CENTRAL: Gebusche am See Ypacaray (Lago Ypacari, 25°17'S, 57°20'W), Hassler #573, #3285.

DISCUSSION: Neither Müller Arg. nor Chodat and Hassler included Millar's material in their specimens of J. vitifolia var. genuina (see number 4 of the listing).

46. Jatropha vitifolia Mill. var. genuina f. nana Chodat and Hassler, Bull. Herb. Boissier 2. ser. V:613, 1905.

SYNTYPES: PARAGUAY: CONCEPCION: prope Concepción (23°21'S, 52°17'W, map 4), Hassler #7396. CORDILLERA: Valenzuela (25°37'S, 56°51'W), Hassler 7090.

DISCUSSION: Pax (1910) treated Hassler #7396 as a heterogeneous collection with Hassler #7396a the type for J. albomaculata Pax var. nana (Chodat and Hassler) Pax (see number 50 of this listing) and Hassler #7396 the type for J. a. var, subcuneata Pax (number 53 of this listing). Hassler #7090 is a syntype of J. Hassleriana Pax (number 56 of this listing).

47. Jatropha vitifolia Mill. var. genuina f. stimulosissima Chodat and Hassler, Bull. Herb. Boissier 2. ser. V:613, 1905.

TYPE: PARAGUAY: SAN PEDRO: San Estanislao (24°39'S, 56°26'W, map 4), Hassler #4182.

DISCUSSION: Pax (1910) treated F. stimulosissima as a variety of J. albomaculata Pax.

48. Jatropha vitifolia Mill. var. genuina f. subintegra, Chodat and Hassler, Bull. Herb. Boissier 2. ser. V:613, 1905.

TYPE: PARAGUAY: sandige Orte bei Chololo im Thale des Y-aca (unable to locate), Hassler #6908.

DISCUSSION: Pax and Hoffmann raised the form to species, citing only Hassler #6908.

49. Jatropha tepiquensis Costatin and Gallaud., Rev. Gen. Bot. 18:391, 1906.

TYPE: MEXICO: NAYARIT: Figures 1 and 2 in Costantin and Gallaud (1906) are cited in lieu of the type. It is most probable that the description and figures are based on a Diguet collection at P (Breckon 1975).

50. Jatropha bahiana Ule var. bahiana, Engler's Bot. Jahrb. XLII:220, 1908.

TYPE: BRAZIL: BAHIA: Caatinga bei Calderao (= Caldeirao, 9°19'S, 64°35'W, map 2), Ule #7056, Field Mus. neg. 5380 (B).

DISCUSSION: Ule's main collection was deposited at B (Lanjouw 1945) and is no longer extant. Other herbaria will have to be consulted for a possible lectotype.

51. Jatropha bahiana Ule var. rupestris Ule, Engler's Bot. Jahrb. XLII: 220, 1908.

TYPE: BRAZIL: BAHIA: Felsen des Morr da Lagoa de Pedra bei Maracas (13°26'S, 40°27'W, map 2), Ule #7032.

52. Jatropha albomaculata Pax, Pflanzenreich IV. 147:90, 1910.

TYPE: None cited.

DISCUSSION: Pax gives no type or variety genuina for J. albomaculata, rather he recognized three varieties: 1. var. subcuneata Pax (number 53 of this listing), 2. var. stimulosissima (Chodat and Hassler) Pax (number 47 of this listing), and 3. var nana (Chodat and Hassler) Pax (number 46 of this listing).

53. Jatropha albomaculata Pax var. subcuneata Pax, Pflanzenreich IV. 147:91, 1910.

TYPE: PARAGUAY: CONCEPCION: prope concepcion (23°21'S, 57°17'W, map 4), Hassler #7396 ex parte, Field Mus. neg. 5378 (B).

DISCUSSION: See J. vitifolia var genuina var. nana, number 46 of this listing for a discussion.

54. Jatropha campanulata Pax, Pflanzenreich IV. 147:91, 1910.

SYNTYPE: ARGENTINE: TUCUMAN: La Cruz (26°36'S, 64°57'W), 4) Lorentz and Hieronymus #1170. PARAGUAY: Kuntze of Sept 1892, Field Mus. neg. 5383 (B).

55. Jatropha cordifolia Pax, Pflanzenreich IV. 147:107, 1910.

TYPE: GUATEMALA: SANTA ROSA: Santa Rosa (14°24'N, 90°18'W), Heyde and Lux #3474.

DISCUSSION: The only specimen of the Heyde and Lux collection I have seen (GH) is a mixed one with C. jurgensenii (Briq.) Lundell and another undetermined species.

56. Jatropha Hassleriana Pax, Pflanzenreich IV. 147:91, 1910.

SYNTYPES: PARAGUAY: CORDILLERA: Valenzuel (25°37'S, 56°51'W, map 4), Hassler #7090. CENTRAL: Ypacaray (= Lago Ypacari, 25°17'S, 57°20'W, map 4), Hassler #573, #3285. PRESIDENTE HAYES: Villa Occidental (= Villa Hayes, 25°06'S, 57°34'W, map 4), Lorentz of Jan 29, 1879, Field Mus. neg. 5389 (B).

DISCUSSION: Lorentz's collections from Paraguay were deposited (only?) at Berlin (Lanjouw 1945) and are probably no longer extant. I have not found any evidence yet of where, if at all his exsiccate are. The Hassler collections were all assigned to other taxa by Chodat and Hassler (1905) as follows: Hassler #573, #3285 as J. vitifolia Mill. var genuina Chodat and Hassler number 45 of this listing; Hassler #7090 as J. vitifolia var genuina f. nana Chodat and Hassler, number 46 of this listing.

57. Jatropha hypoleuca Pax, Pflanzenreich IV. 147:96, 1910.

TYPE: PERU: AMAMONAS: Thal des Maranon bei Tupen (° ' , ° ' , map), Weberbauer #4797, Field Mus. neg. 5392 (B).

DISCUSSION: To date I have not been able to locate other possible herbaria having Weberbauer's material. It may be necessary to use the field photo in lieu of a type.

58. Jatropha loasoides Pax, Pflanzenreich IV. 147:92, 1910.

TYPE: ARGENTINE: CORRIENTES: Puerto del Paso de la Patria (27°19'S, 58°35'W, map 4), Niederlein #83.

59. Jatropha longipes Pax, Pflanzenreich IV. 147:106, 1910.

TYPE: COLUMBIA: MAGDALENA: Santa Marta (11°15'N, 74°13'W, map), H. H. Smith #1478.

60. Jatropha paucistaminea Pax, Pflanzenreich IV. 147:110, 1910.

TYPE: BRAZIL: MATTO GROSSO: bei Curumba (19°01'S, 57°39'W, map 3), Endlich #230, Field Mus. neg. 5398 (B).

61. Jatropha platyandra Pax, Pflanzenreich IV. 147:110, 1910.

TYPE: CUBA: C. Wright #3689.

DISCUSSION: C. Wright #3689 is the type for J. peltata C. Wright (number 40 of this listing) and of J. rangel Gomez de la Maza (number 43 of this listing). A discussion of the typification is given under number 40.

62. Jatropha pubescens Pax, Pflanzenreich IV. 147:110, 1910. non Cnidoscolus pubescens Pohl 1827.

TYPE: BRAZIL: RIO DE JANEIRO: Rio de Janeira (22°54'S, 43°14'N, map 3), Glaziou #14245.

DISCUSSION: The epithet for Pax's species cannot be transferred to Cnidoscolus since C. pubescens Pohl preempts the combination.

63. Jatropha pyrophora Pax, Pflanzenreich IV. 147:101, 1910.

TYPE: PERU: CAJAMARCA: unterhalb Santa Cruz (° ' , ° ' , map), Weberbauer #4129, Field Mus. neg. 5400 (B).

64. Jatropha Ulei Pax, Pflanzenreich IV. 147:88, 1910.

TYPE: BRAZIL: BAHIA: Caatinga bei Calderao (= Caldeirao, 9°19'S, 64°35'W, map 2), Ule #7036.

65. Jatropha urnigera Pax, Pflanzenreich IV. 147:104, 1910.

TYPE: BRAZIL: BAHIA: In der Bergcatinga bei Calderao (= Caldeirao, 9°19'S, 64°35'W, map 2), Ule #7041.

DISCUSSION: Due to the free stamens McVaugh (1944) suggested a possible closeness between J. urnigera and the related genus Manihot There is no record of the plant being recollected and given its possible phylogenic importance it should be studied.

66. Jatropha vitifolia Mill. var. Grisebachii Pax, Pflanzenreich IV. 147:88, 1910.

TYPE: ARGENTINE: SALTA: am Juramento (25°09'S, 64°57'W, map), Lorentz #328.

67. Jatropha appendiculata Pax and Hoffmann, Pflanzenreich IV. 147: 92, 1910.

TYPE: PARAGUAY: CAAGUAZU: campospflanze bei Caaguazu (25°26'S, 56°02'W, map 4), Hassler #9144.

68. Jatropha basiacantha Pax and Hoffmann, Pflanzenreich IV. 147:

TYPE: PERU: LIMA: Matucana an der Lima-Oroya Bahn (° ' , ° ' , map), Weberbauer #1694, Field Mus. neg. 5381 (B).

69. Jatropha leuconeura Pax and Hoffmann, Pflanzenreich IV. 147:94, 1910.

TYPE: PARAGUAY: CAAGUAZU: bei Caaguazu (25°26'S, 56°02'W), 4 Hassler #8982a.

DISCUSSION: See J. serrulata, number 72 of this listing.

70. Jatropha lofgrenii Pax and Hoffmann, Pflanzenreich IV. 147:107, 1910.

TYPE: BRAZIL: SAO PAULO: Araraquara (21°47'S, 48°10'W, based on itinerary by Urban, in Martius (1906), map 3), Lofgren #4300.

71. Jatropha sellowiana Pax and Hoffmann, Pflanzenreich IV. 147:90, 1910.

SYNTYPES: BRAZIL: MINAS GERAIS: am Rio das Velhas (18°21'S, 48°40'W, by itinerary by Urban in Martius (1906), map), Sellow #2065, #2103, Field Mus. neg. 5401 (B), the number of the collection is not given.

72. Jatropha serrulata Pax and Hoffmann, Pflanzenreich IV. 147:94, 1910.

TYPE: PARAGUAY: CAAGUAZU: bei Caaguza (25°26'S, 56°02'W, map 4), Hassler #8982.

DISCUSSION: Pax and Hoffmann treated Hassler #8982 as a mixed collection with #8982a being the type for J. leuconeura (number 69 of this listing). From the descriptions the two species appear to differ only by the stimulose perianth of the staminate flower of J. leuconeura and ovary pubescence. These are trivial characters.

73. Jatropha tenuifolia Pax and Hoffmann, Pflanzenreich IV. 147: 107, 1910.

TYPE: PARAGUAY: GRAN CHACO: Loma Clavel (unable to locate), Hassler #2490, Field Mus. neg. 5402 (B).

74. Jatropha adenophila Pax and Hoffmann, Pflanzenriech (Heft 63) IV. 147, VII:400, 1914.

TYPE: PANAMA: PANAMA: Chepo (° ' , ° ' , map), Pittier #4740.

DISCUSSION: Webster (1969) treated J. adenophila as a synonymy of J. urens.

75. Jatropha diacantha Pax and Hoffmann, Pflanzenreich (Heft 63), IV. 147, VII:399, 1914.

TYPE: PERU: Rio Apurimac, between the mouth of Rio Pachachaca and Pampas (° ' , ° ' , map), Weberbauer #5903.

76. Jatropha jaenensis Pax and Hoffmann, Pflanzenreich (Heft 63) IV. 147, VII:400, 1914.

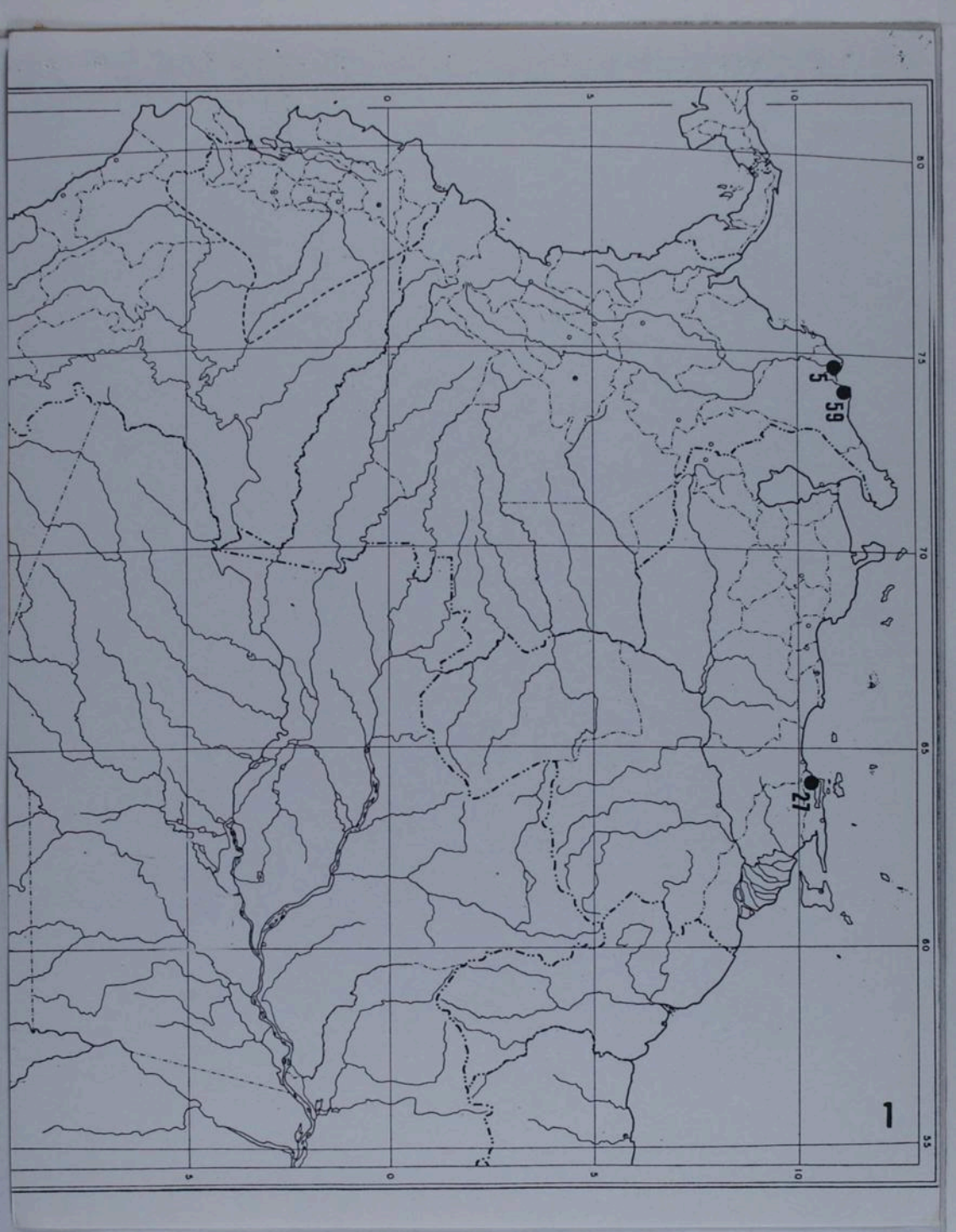
TYPE: PERU: CAJAMARCA: Jaen, Tal des Shumba, Gebusch. (° ' , ° ' , map), Weberbauer #6234.

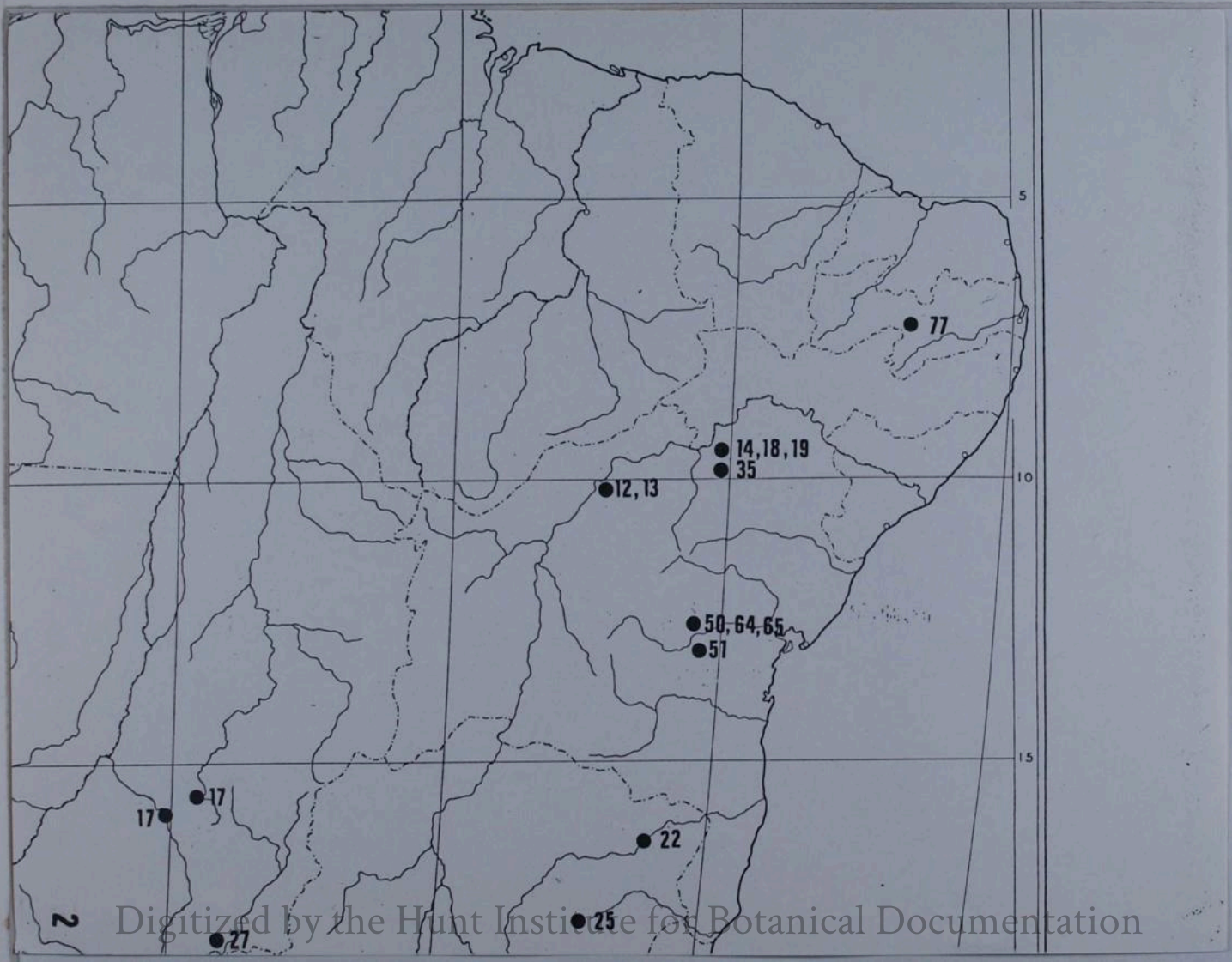
77. Cnidoscolus infestus Pax and Hoffmann, Pflanzenreich IV, 147, XVII: 193, 1924.

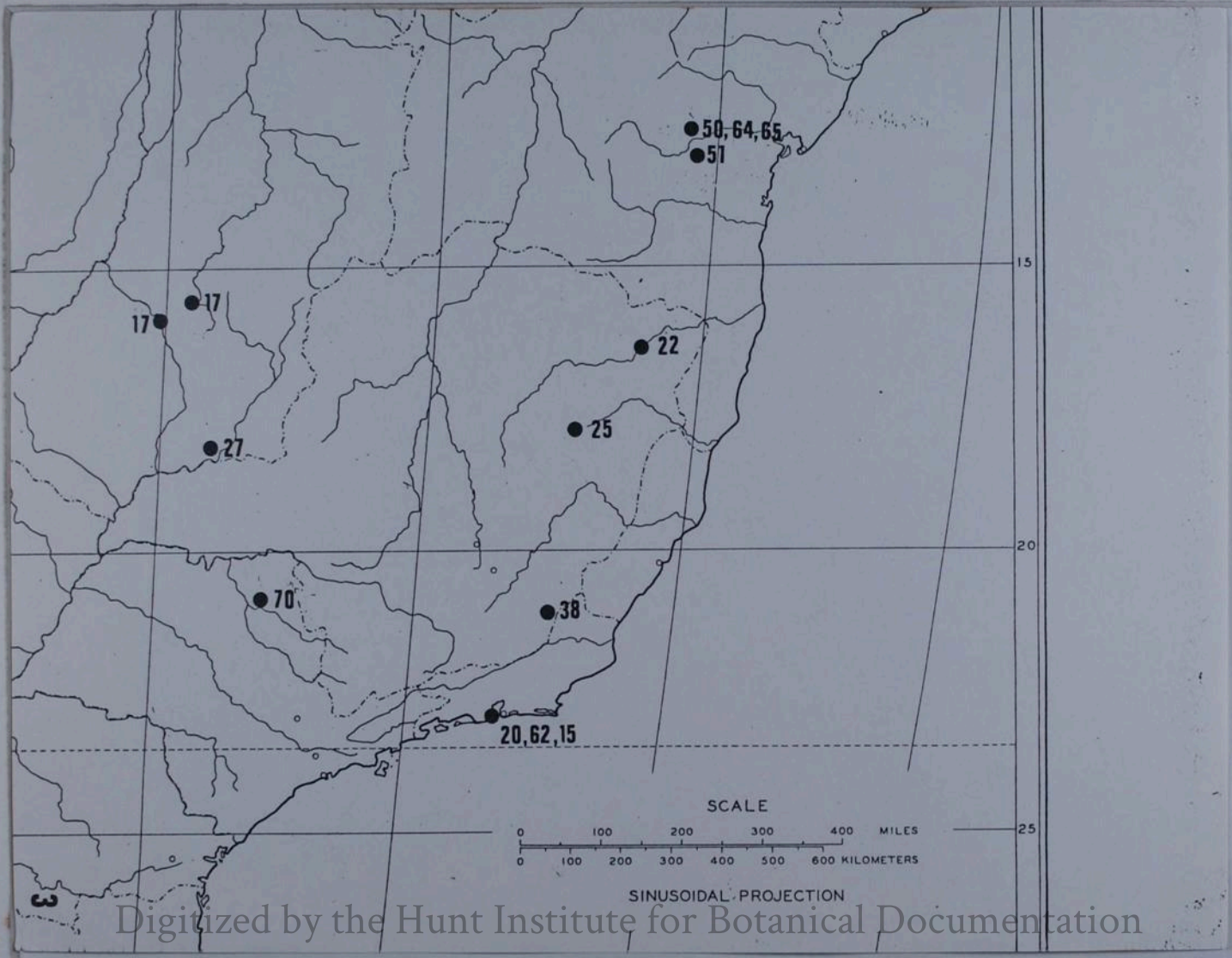
SYNTYPES: BRAZIL: PARAHYBA DO NORTE: Serra d' Olho d' Agua (7°22'S, 37°28'W or 8°17'S, 38°12'W, map 2), Lutzelburg 12661; Serra Borborema (= Serra da Borborema, 7°10'S, 37°00'W, map), Lutzelburg #12428.

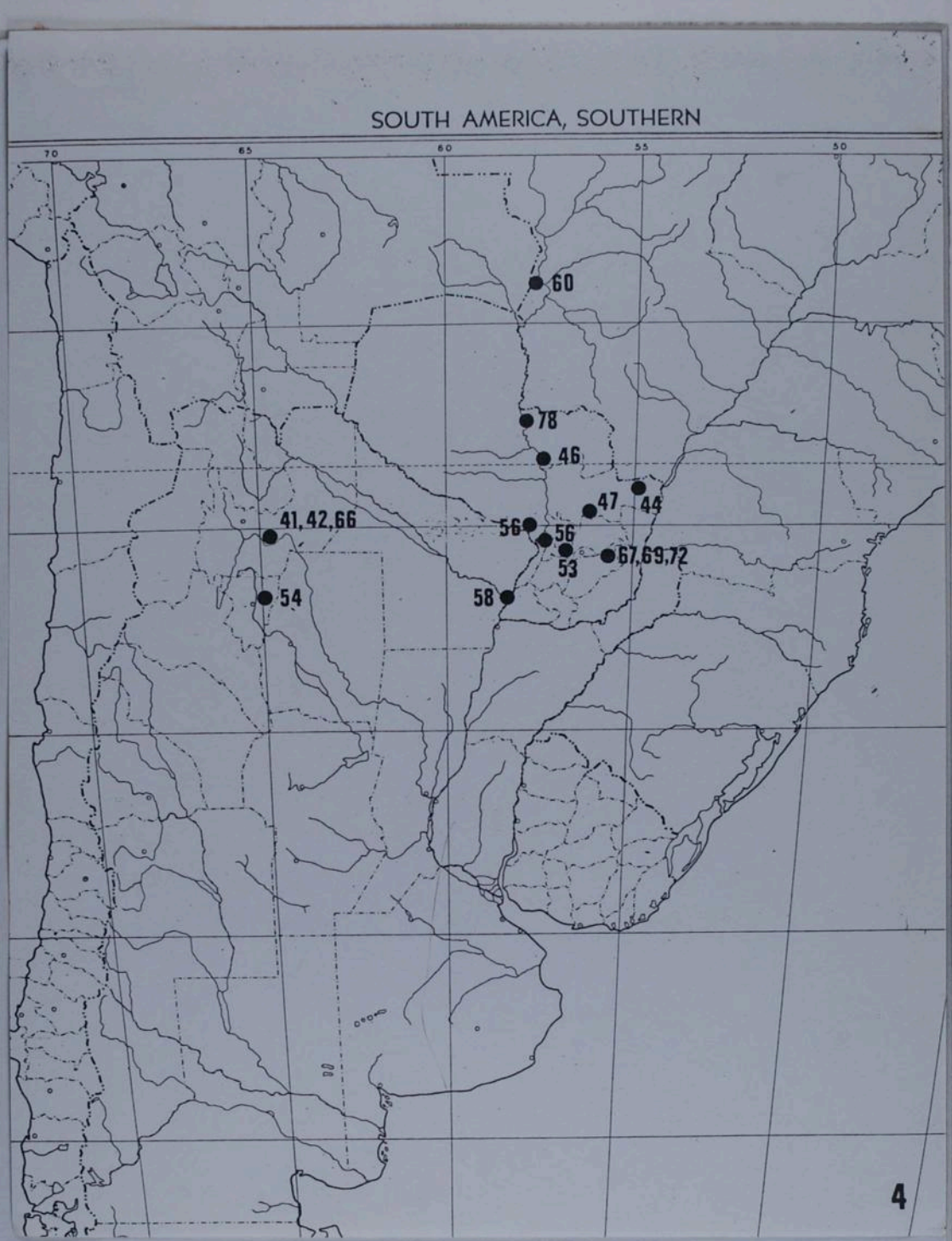
78. Cnidoscolus tetracyclus Pax and Hoffmann, Pflanzenreich IV, 147, XVII:193, 1924.

TYPE: PARAGUAY: Rio Apa, Colonie Risso (22°21'S, 57°50'W, map 4), Malme #1084.









APPENDIX II.

SUMMARY OF TYPES AND SYNTYPES BY LOCATION

Country	Collector	Taxon	List #
ARGENTINE			
Corrientes	Niederlein 83	J. loasoides	58
Salta	Lorentz 328	J. vitifolia var. Grisebachii	66
	Lorentz 329	J. vitifolia var. repandus	41
	Lorentz 328, 413, 355	J. cnicodendron J. cnicodendron	42
Tucuman	Lorentz & Hieronymus 1170	J. campanulata	54
BRAZIL	Sellow s.n.	J. vitifolia var. obtusifolia	35
	Sellow s.n.	J. horrida	26
	Martius s.n.	J. vitifolia var. maritima	36
	Martius s.n.	J. urens var. brachyloba	39
	Neuwied s.n.	J. ferox	37
	Pedro d' Agoa s.n.	J. aculeatissima	24
Bahia	Ule 7056	J. bahiana var. bahiana	50
	Ule 7032	J. bahiana var. rupestris	51
	Ule 7036	J. Ulei	64
	Ule 7041	J. urnigera	65

	Martius s.n.	J. vitifolia va var. obtusifolia	35
	Martius s.n.	C. pubescens	19
	Martius s.n.	C. obtusifolius	18
	Martius s.n.	C. quercifolius	14
	Martius s.n.	C. repandus	13
	Martius s.n.	C. lobatus	12
Goias	Pohl 1665, 3918	C. neglectus	17
	Pohl, reported	C. marcgravii	15
Matto Grosso	Endlich 230	J. paucistaminea	60
Minas Gerais	Sellow 2065, 2103	J. sellowiana	71
	Pohl 1664, 3229	C. hamosus	22
	Pohl, reported	C. osteocarpus	20
	Pohl s.n.	C. marcgravii	15
Parahyba do Norte	Lutzelburg 12661, 12428	C. infestus	77
Rio de Janeiro	Peckolt 173	J. oligandra	38
	Glaziou 14245	J. pubescens	62
	Schott 4107	C. osteocarpus	20
	Mikan s.n.	C. marcgravii	15
	Schott 1665, 4108	C. marcgravii	15
São Paulo	Lofgren 4300	J. Lofgrenii	70
COLUMBIA			
Cartagena	R. Miller s.n.	J. vitifolia	5
Magdalena	H.H. Smith 1478	J. longipes	59

PARAGUAY	Kuntze s.n.	J. campanulata	54
	Hassler 6908	J. vitifolia var. genuina f. subintegra	48
Alto Parana	Hassler 4931	J. maracayensis	44
Boqueron	Malme 1084	J. tetracyclus	78
Caaguazu	Hassler 8982	J. serrulata	72
	Hassler 8982a	J. leuconeura	69
	Hassler 9144	J. appendiculata	67
Central	Hassler 573, 3285	J. vitifolia var. genuina	45
	Hassler 573, 3285	J. hassleriana	56
Concepción	Hassler 7396	J. albomaculata var. subcuneata	53
	Hassler 7396	J. vitifolia var. genuina f. nana	46
Cordillera	Hassler 7090	J. hassleriana	56
	Hassler 7090	J. vitifolia var. genuina f. nana	46
Gran Chaco	Hassler 2490	J. tenuifolia	73
Presidente Hayes	Lorentz s.n.	J. hassleriana	56
San Pedro	Hassler 4182	J. vitifolia var. genuina f. stimulosissma	47
PERU	Weberbauer 5903	J. diacantha	75
	Ruiz & Pavón	J. tubulosa var. quinqueloba	31
	Ruiz & Pavón	J. tubulosa var. triloba	32
Amamonas	Weberbauer 4797	J. hypoleuca	57
Cajamarca	Weberbauer 6234	J. jaenensis	76
	Weberbauer 4129	J. pyrophora	63

Lima	Ruiz & Pavón	J. pavoniana	28
		(J. peruviana)	28
	Weberbauer 1694	J. basiacantha	68
VENEZUELA			
Sucre	Humboldt & Bonpland 109	J. Kunthiana	27

APPENDIX III

Appendix III gives the collectors of types or syntypes for South American Cnidoscolii and a listing of herbaria where their collections are deposited. The main source for the herbaria is Lanjouw (1945), with Stafleu (1967) a secondary source. The Pax, Pax & Hoffmann, and Ule' types were at Berlin and are no longer extant making location of isotypes important.

Endlich, R.: B, L.

Glaziou, A.F.M.: A, B (large set), BM, BR (large set), BRG, C, COLU, F, FI, G, GH, K, L, LE, MA, MPU, NY, P (herbarium and types), R, S, STR, U, US, WRSL.

Hassler, E.: A, B, BM, C, E, F, G, GH, K, L, MO, NY, P, SI, US, W, WRSL.

Humboldt, A. von & A. Bonpland: B (in hb Willdenow), L, P. (original set, kept separate).

Kuntze, O.: B, E, F, G-BOIS, K, L, MO, NY (original set and types), US.

Lofgren, A.: C, B, GH, NY, S, SP (original set), U.

Lorentz, P.G. & G. Hieronymus: B, BA, BM, BR, CORD (original), E, G, K, L, M, NY, SI, W, WRSL.

Lutzelburg, Ph. von: B, F, M (original), NY, W, WRSL.

Malme, G.O.A.: no data

Martius, K.F.P. von: AWH, B, BM, BR (includes types of species of many other authors), CGE, E, F, FI, G-DC, G-DEL, GH, K, KIEL, L, LE, M (original, and with the types of most of his Brazilian species), MO, NY, P, S, U, W, WB, WU.

Mikan, J.C.: herbarium and types W, duplicates at BR in hb Martius.

Neuwied, : no data

Niederlein, G: B, NY, PH.

Peckolt, T: BR, W.

Pohl, J.B.E.: B, BM, BR, F, G-DC, K, KIEL, L, LE (some types), M (some types), MO, NY, P, PR, PH, U, W (original herbarium and most types).

Ruiz, H. & J. Pavon: B, BM (large set), CGE, F, G-DEL (large set), K, FI, MA (herbarium and types), OXF (large set), NY, P, US (large set).

Schott, H.W.: B, BP (general herbarium), BR, L, U. W (herbarium and types).

Sellow, F.: B (original, now extinct), BM, BR, CGE, G-BOIS, G-DEL, GH, K, KIEL, L, LD, LE, LISU, NY, P, R, S, U, UPS, US, W, WU.

Smith, H.H.: A, B, BM, BR, E, G-DEL, GH, K, L, LE, MO, NY, O, P, PH, S, U, US, R, W.

Ule, E: B (original, now extinct), BM, BP, F, G, GOET, HBG, K, L, LE, NY, P, PR, R, U, US, W, WRSL.

Weberbauer, A: B (original, now extinct), F, G, GH, K, NY, S, US.

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ROGERS TAXIMETRICS LABORATORY

UNIVERSITY COLORADO

BOULDER COLORADO

FAOB35043 PLEASE SEND URGENTLY VERY SHORT PROGRESS

REPORT LENGHT LIMITED FEW PAGES FOR CONSIDERATION EXECUTIVE

COMMITTEE MEETING IN ROME STOP ALSO EXPECTING URGENTLY

STATEMENT PROGRAMME OF WORK AND BUDGET 17 ACCORIDING

TO THE RECOMMENDATIONS OF THE DAVISORY COMMITTEED REPORT

FOR PREPARATION FAO CONTRACT 1977 REGARDS;

PICHEL FOODAGRID ROME """ NNNN
-- FAXGRAM -- -- VIA GRAPHNET --

October 8, 1976

Mr. Trevor Sykes
Via Odoardo Beccari 14/1
00154 Rome, Italy

Dear Trevor:

Perhaps by now Pichel has shared with you the news that I am resigning from the work on the contract for the International Board as of the end of this contract year. The reasons for this are various, but primarily the reasons are that I saw no future in the work. It is apparent to me that FAO does not wish to participate any more. It is further apparent to me that FAO could not take up the data management function; and it is also clear that none of the international institutes feel any responsibility to take on the data management functions for genetic resources. In most cases, they will not do it for their own crops.

Frankly, we have not had a request to us with respect to the data that we already have. And this would indicate to me that nobody cares. The only exceptions to this are the individuals who come to our Laboratory; and after considerable consultation with us, decide that they want to know something. What this means to me is that our communication system, our network, has never functioned. And the likelihood that they will is so remote that I see no reasons why I should continue to expend my energies on an unwanted activity. Perhaps the next generation of scientists will have had sufficient training to desire to make a network go, using computer aided methods; but I am pessimistic about this happening any time before I am "six feet under."

So, your letter sent to me on September 26 does not worry me too much. Actually, I expect to return to full time work of teaching and research in the Biology Department at the University of Colorado where I will continue that which I know I can do best: namely, systematic economic Botany. What will happen to the rest of the work, I do not know; but their fate is in hands of others already.

Give my best regards to Beryl. Love from Connie and me.

Sincerely yours,

David J. Rogers
Professor of Biology

Please tell Pat Hegedus that we mailed her second pen about one month ago. This last one was sent via Pouch, and I hope she receives it.

October 8, 1976

Professor J. G. Hawkes
Department of Plant Biology
The University of Birmingham
P.O. Box 363
Brimingham B15 2TT
England

Dear Jack:

I have your two letters dated September 17 and 24. They arrived within a day of each other.

I am pleased that you have an opportunity to have someone come spend time with us. I am particularly pleased if you indeed have in mind that Trevor Williams can come along. I have talked to several people and found a considerable interest in an opportunity to develop a curriculum in my Department that would give the kind of training you ask for. In the particular case of Trevor, I should think that a period of not more than four months would be necessary for him to gain a sufficient grasp of what I know, so that he could be very useful in your program.

I do not believe that a certified program could be developed that would be satisfactory within the short peiod of time that I suggested for Trevor. I would hope that Trevor would be willing to help us at that time he is also learning by aiding us in the development of an adequate curriculum for say a terminal M.S. degree. I would like to see Trevor come as soon as he possibly can, so that he could take advantage of several people presently with me, but who will be gone by the end of this coming "Spring semester." Perhaps this is too rapid to arrange it, but please try to get as far along as you possibly can.

Thank you for your invitation to your EUCARPIA meeting. Unfortunately, I cannot possibly attend that meeting. First, because I am no longer associated with the work of IBPGR, and therefore, have no

funds. So, I must decline your kind offer. The same condition exists with respect to asking a member of my staff to take part in the BAAS meeting, because they will not be able to attend at that time either.

Your letter of September 24 asks for information about a "Compucorp 445 Statistician" for a Polish fellow. (I cannot resist making the pun, "Is his full name Dr. Mea Kulpa?) Unfortunately, I have no information about such a machine and have never encountered anything about it. I do have the Comecon countries "Classifiers" so you do not need to send me copies.

If I find anything about this machine, I will let you know.

I look forward to hearing from you soon in respect to the training program.

Sincerely yours,

David J. Rogers
Professor of Biology

DR:rs

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

SECRETARIAT:
Crop Ecology and Genetic Resources Unit
Plant Production and Protection Division
F A O
Via delle Terme di Caracalla
00100 Rome, Italy

OCT. - 7 1976

PR 3/11 IBPGR GR/CIDS

If you do not quote our code and date in your reply, the delivery of your correspondence may be delayed.

Dear Dave,

With reference to your letter of 24 September, I regret to learn that you have submitted your resignation as Director of the GR/CIDS Programme, effective at the end of this year.

Everybody concerned with genetic information - in FAO, in the IBPGR and in many international and national institutions involved in genetic resources work - will regret your decision because of the outstanding contribution you have made to this most important subject.

I hope that a most competent person will be designated as your successor so as to ensure the successful continuation of the GR/CIDS Programme.

With best personal regards,

Yours sincerely,

R.J. Pichel
Secretary

Dr. D. J. Rogers
Taximetrics Laboratory
University of Colorado
1229 University Avenue
Boulder, Colorado 80309
U.S.A.

DJR

October 6, 1976

Dr. Lewis Branscomb
Vice President for Research
and Chief Scientist
IBM Corporation
Armonk, NY 10504

Dear Lew:

I understand that you have already been informed of my decision to separate from the IBPGR. I enclose a copy of a memo that I wrote to the local committee which indicates the reasoning for having done so.

The more I tried, the less I found possible to make a "marriage" between the University and the demands the function is required to do by the international agricultural community. While one could certainly see that some sort of educational program would be beneficial, I do not see any resources that are willing to pay for such an education, particularly if it meant hiring staff at the University on a continuing basis other than from our line budget. Unfortunately, the direction of activities during the last year have taken a bend that is not what I would necessarily consider useful. So, the best thing is to back out of whatever picture remains.

Thank you for your consideration, concern and extremely great interest in the efforts we have made.

Sincerely yours,

David J. Rogers
Professor of Biology

DR:rs

Enclosure

DJR

October 6, 1976

Dr. William J. Lawless
6 Golden Court
Rowayton, CT 06853

Dear Bill:

I understand that somebody already told you of my decision to resign. I appreciate the fact that they were so happy to see me go, that they could not wait to tell you.

I do not know whether you have received a copy of the letter that I addressed to the local advisory group, so I am enclosing one herewith. You may also be interested in the letter that I wrote to Dick Demuth; a copy of which is enclosed.

Thank you for your counsel and considerable assistance. It was indeed our last conversation that convinced me that I had no place in this activity, and it was best for me to withdraw from it.

Sincerely yours,

David J. Rogers
Professor of Biology

DR:rs

Enclosures 2

CONSULTATIVE GROUP ON INTERNATIONAL AGRICULTURAL RESEARCH

INTERNATIONAL BOARD FOR PLANT GENETIC RESOURCES

SECRETARIAT:
Crop Ecology and Genetic Resources Unit
Plant Production and Protection Division
FAO
Via delle Terme di Caracalla
00100 Rome, Italy

1156 15th Street, N.W.
Washington, D.C. 20005

October 5, 1976

Dr. David J. Rogers
University of Colorado
Department E.P.O. Biology
Boulder, Colorado 80302

Dear Dave:

As I told you on the telephone, I was very sorry indeed to receive your letter of September 24 informing me of your decision to resign from the work you have been carrying out for the IBPGR at the end of the present contract.

I know that you did not reach your decision easily or lightly, and I must, therefore, respect your judgment that this course is the one that you have to follow. I cannot let the occasion go by, however, without expressing my appreciation for the committed leadership which you have provided over the years, to the genetic resources data management work of the Taximetrics Laboratory. I remain optimistic that, over the long term, this work will prove to be of real value in making the world's germplasm collections more readily useful.

I hope that the University authorities will decide to continue their sponsorship of the GR/CIDS project and, indeed, to provide it even greater support than in the past. But your colleagues at the Laboratory and those of us on the Board who have been associated with your work will miss your presence greatly, both professionally and personally.

I wish you all the best as you return to your chosen field of teaching and research within the University.

Sincerely yours,

Dick

Richard H. Demuth
Chairman

Cables: FOODAGRI ROME Telex: 61181 FOODAGRI Telephone: 5797

xxxxxx 80309

Oct. 14, 1976

Dear Jorge:

Thank you very much for your letter of 27 Sept, which arrived here yesterday. Connie and I are both very happy that you are back home again, and that you have the position you do. I'm sure that you are much happier there, doing scientific work again. I recollect the house you're living in, I think, because I believe that that was the one the Dr. Thompson lived in, and that I had a room with them. (or was that house #3).

I have resigned from work for the International Board--what happened was that, as Connie said, a "little FAO" was being set up here under Hirsh's direction, and it lost all meaning to me. So, there may be a continuation under Hirsh, but not as the Taximetrics Lab., but I'm not sure what will happen. Apparently Bunting is much worried about things, and is coming here next week to find out what happened, and what will be the future of the work. It certainly has moved away from anything scientific, and has nothing to do with botany, or taxonomy, or for that matter, even applied things like plant breeding, etc. So, the likelyhood of my coming down to Costa Rica is very small, if it has to be under the work for the international organizations. Of course, I'm still concerned about the data on economic plants, but not in any formal way.

Your quiries about yuca and descriptors is certainly one that brings back fond memories of about twenty years ago, and I'm glad you thought to ask me about your descriptor list . I have a few suggestions. One of the more important types of data to be collected seems to me to be maturation time. There is a wide variation in this phenomemin, and will eventually have great importance. I don't know how to measure maturation in this crop, but it might have to do with the development of starch content. On the other hand, wet and dry season variations make some difference. For example, you might not develop as much starch in one wet season period as you would if you leave the plants for a wet and dry season, and add perhaps one more wet season (for an 18 month's cycle to maturity, but you might get more total product by harvesting at the earlier period, and replanting for the second part of the long cycle. Thus you would have two plantings, and two harvests, with more output at the end, even though for one short-season harvest, the yield would not be as good. All this, in order to explain why this additional character should be scored.

I suppose you expect to add, for each cultivar, its origin, (locality) present growth location, age (or time of planting) and I hope you will use some standard color chart for your description of those organs where color is important. I don't have any specific preference for a color chart, but one that employs the Munsell hues and notation of colors seems to be satisfactory.

Don't worry too much about an international system of data management--nor even the computer moving to San Jose . As long as you keep your data orderly, you can get it into a system. But since there isn't an international one, just go at it as though you had it--call it the CATIE data xxx system!

My love, and Connie's to Maruja.

Dave Rogers

CATIE
TURRIALBA

CENTRO AGRONOMICO TROPICAL DE INVESTIGACION Y ENSEÑANZA
TURRIALBA, COSTA RICA

Cable: CATIE
Teléfonos:
56-01-22 56-01-69

PROGRAMA REGIONAL DE RECURSOS GENETICOS

PRG-CATIE/GTZ-33
27 September 1976

Dr. David J. Rogers
Department of Biology,
University of Colorado,
Boulder, Colorado,
USA.

Dear Dave,

Finally we are settled in Turrialba, at the second house in the first row, immediately next to the former Allee's house. There is a guest room and you and Connie are welcome as always.

The main job now is to restore the old collections. They have been neglected for years, but the losses are few. Among the collection there is a group of cassava, some 160, which were either introductions or mutants obtained by Dr. Moh. To document them, my assistant, Mr. Jan Engels, has prepared a list of descriptors. Before testing it in the field, I would like to have your suggestions. As any piece of documentation, this has to be in Spanish, as the official language of CATIE.

I don't have to tell you how different it is here compared to our former headquarters, in the work and the environment. Although CATIE is a small institution with limited resources, there is a completely different attitude towards people and problems than in FAO.

There are, of course, some problems. The one that worries me more is the moving of the computing facilities to San José. As you know, they belong to IICA and were moved to the new building that IICA built in Coronado, close to San José. In the way I see, we will have to accumulate the information in cards and notebooks until we get a new one set up. I also hope to have your advice on this. I do hope you may visit us during one of your trips to South America.

My best regards to you, Connie and Hertsch.

Yours sincerely,

Jorge León

CATIE
TURRIALBA

CENTRO AGRONOMICO TROPICAL DE INVESTIGACION Y ENSEÑANZA
TURRIALBA, COSTA RICA

Cable: CATIE
Teléfonos:
56-01-22 56-01-69

PROGRAMA REGIONAL DE RECURSOS GENETICOS

Descriptores de Yuca (Manihot esculenta Crantz)

A. PORTE

1.	Altura	: en cm
2.	Altura de la primera ramificación	: en cm
3.	No. de ramificaciones	: a = primaria b = secundaria
4.	Porte (tipo)	: dibujo

B. TALLO

1.	Longitud de entrenudos	: en cm, promedio de 20 cm de tallo
2.	Color del tallo joven	
3.	Color del tallo maduro	
4.	Forma del nudo (tipo)	: dibujo (nudo, yema, ala, cicatriz, base de pecíolo)

C. HOJAS

1.	Forma de la hoja	: dibujo (xerografía)
2.	Forma del lóbulo central	: dibujo (xerografía)
3.	No. de lóbulos	
4.	Forma del pecíolo	: dibujo (xerografía)
5.	Color del pecíolo	: a = base b = medio parte c = parte superior

.../

6. Posición del pecíolo : 3 = inclinado hacia abajo (ángulo con tallo > 90°)
5 = horizontal (=90°)
7 = inclinado hacia ariba (<90)
x = irregular

7. Color de la nervadura : en reverso de la hoja

8. Color del follaje nuevo :

9. Pubescencia (en hoja madura) : 1 = ausente
2 = presente

D. RAICES

1. Forma de las raíces : dibujo

2. Superficie : 1 = lisa
2.= rugosa

3. Color de la epidermis

4. Color del feloderma

5. Color del xilema

6. Contenido de HCN : en mg/kg

7. Contenido de almidón : " "

8. Contenido de proteina : " "

9. Valor culinario : a = sabor
b = textura de pulpa despues cocinar
c = consistencia de pulpa
d = tiempo de cocción

10. No. de las raíces

11. Peso de las raíces : en gramos

12. Posición de las raíces : 1 = horizontal
2 = oblícua
3 = vertical

13. Profundidad de las raíces : en cm.

14. Punto de contacto con el tronco : 3 = sésil
5 = cortamente peduncalada
7 = largamente peduncalada

15. Desarrollo de raíces : 3 = tempranero (6-9 meses)
5 = mediano (10-14 meses)
7 = tardío (more than 15 meses)

E. INFLORESCENCIA

1. Color de sépalo

2. Color de disco

3. Tamaño de sépalo : 3 = grande ($\frac{\text{longitud}}{\text{anchura}} < 3$)
5 = corriente(. $>3 < 4$)
7 = estrellado(. > 4)

4. Color de ovario

5. Color de estigma

6. Cantidad de flores : 1 = ausente
3 = pequeña
5 = intermedia
7 = grande

7. Polen : 1. = ausente
2 = presente

F. FRUTOS

1. Color de cápsula : a = cápsula
b = alas de cápsula

2. Forma de las alas de cápsula : dibujo

3. Tamaño de cápsula : en cm

4. Cantidad de frutos : 3 = pequeña
5 = intermedia
7 = grande
0 = ausente

G. SEMILLAS

1. Tamaño de semilla : en cm

2. Color de semilla : tipo de distribución del color

The Colorado Native Plant Society

"TO ENCOURAGE THE APPRECIATION AND CONSERVATION OF THE NATIVE PLANTS AND ECOSYSTEMS OF COLORADO"

The inspiration for an organization, whose principal aim is the conservation of the Colorado native flora, came in early 1976 through a workshop on threatened and endangered plants jointly sponsored by the U.S. Forest Service and the Audubon Society. As an outgrowth of discussions by concerned individuals, the Colorado Native Plant Society was formed and incorporated on June 10, 1976. Dr. William Weber of the University of Colorado presently serves as President of the Society.

Membership in the Society is open to all individuals concerned with conservation of the native flora. Activities will include efforts to bring public attention to the varied and unique habitats of the Colorado landscape and the need to conserve all elements of the native Colorado flora. Additional benefits of membership will include informative publications and organized field trips in addition to regular meetings. Local chapters will be encouraged to form and conduct activities on a regional basis. The Society can achieve its primary goal only through active participation of all who are interested in an appreciation of native plants.

A "Founder's Day" meeting was held in October. Members of the Society will be informed of future meetings and activities via a regular newsletter.

Schedule of Membership Dues

Life	$250.00	Family	$12.00
Supporting	50.00	Individual	8.00
Organization	25.00	Student & Senior	4.00

MEMBERSHIP APPLICATION

Name: _____

Address: _____

City and State: _____ Zip Code: _____

Membership Desired: _____

Please make checks or money orders payable to "Colorado Native Plant Society"

Membership applications may be sent to Dr. Dieter H. Wilken (Membership), Dept. of Botany and Plant Pathology, Colorado State University, Fort Collins, Colorado, 80523.

THE COLORADO NATIVE PLANT SOCIETY

NEWSLETTER

The publications Committee is actively working on plans with regard to a regular newsletter. Meanwhile, this missive will serve to apprise all members of recent events and information regarding activities of the Society.

THE FIRST ANNUAL (FOUNDER) MEETING - HIGHLIGHTS

The First Annual Meeting of the Society was convened at 7:30 PM at the Denver Botanic Gardens with approximately 170 persons in attendance. Robert Turner, of the Denver Audubon Society, served as Master of Ceremonies. Steve Bissell, of the Colorado Division of Wildlife, gave a brief summary concerning the development and activities of the Society since its inception in March, 1976. Steve also introduced members of the Board of Directors, who served prior to the meeting. Chuck Feddema, of the U.S. Forest Service Herbarium, Ft. Collins, addressed his comments to the achievements and expressed goals of the Society, indicating the need for programs in education and activities related to the conservation of the native Colorado flora. On behalf of the Society, Kim Vories, Treasurer of the Society, presented Honorary Life Memberships to two distinguished Colorado botanists, Dr. Harold Harrington and Dr. William Weber. Dr. Weber, featured speaker of the First Annual Meeting gave an illustrated lecture entitled "Colorado's Circumglobal Flora".

BOARD OF DIRECTORS

Five directors retired from the board as of October 9 and were replaced through an election held among the members at the Annual Meeting. The following is a list of the present Board:

Steven Bissell
Route 3, Box 329-C
Golden Colo. 80401

Genevieve Bryant
1434 Summit View Drive
Ft. Collins Colo. 80521

Chuck Feddema
1137 So. Bryan
Ft. Collins, Colo. 80521

Jon Halverson
2070 Clermont
Denver, Colo. 80207

Bill Harmon
2040 5th Ave.
Greeley, Colo. 80631

John Marr
Dept. EPO Biology
University of Colorado
Boulder, Colo. 80309

*Directors elected at Annual Meeting.

*J. Scott Peterson
BLM, Building 50
Denver Federal Center
Denver, Colo. 80226

Kim Vories
P.O. Box 89
Ft. Collins, Colo. 80522

*Hugo Ferchau
819 No. Pine
Gunnison, Colo. 81230

*William Gambill
790 Gaylord Street
Denver, Colo. 80206

*William Weber
University of Colorado Museum
University of Colorado
Boulder, Colo. 80309

*Dieter Wilken
Dept. Botany & Plant Pathology
Colorado State University
Ft. Collins, Colo. 80523

Hugo Ferchau, William Gambill and William Weber are new members of the Board. Scott Peterson and Dieter Wilken were re-elected. Retiring members of the Board were Karen Hollweg, Peter Mogielnicki and Jean Widman. Their service to the Society during its planning and development are considerably appreciated.

The officers for 1976-1977, as elected by the Board of Directors, are:

President: William Weber
Vice-President: Hugo Ferchau
Secretary: Dieter Wilken
Treasurer: Kim Vories

BOARD OF DIRECTORS MEETING

At the Board meeting immediately following Bill Weber's Address, it was resolved to donate $50.00 to the Denver Botanic Gardens covering expenses incurred during the meetings. The Board wishes to extend its appreciation to the Botanic Gardens for serving so graciously as a host to the First Annual Meeting. Coincidentally, the Botanic Gardens served as host to the Threatened and Endangered Species Workshop, sponsored by the U.S. Forest Service and Audubon Society in March, an event which led to the development of the Society.

Appreciation is also extended to Jean Widman and Lois Webster, who jointly organized the refreshments at the Annual Meeting and to Bob Turner, who graciously accepted the draft to serve as Master of Ceremonies.

The Board of Directors resolved to hold two (2) meetings prior to January 1. These meetings will be open to all interested members. Time and Place are:

7:30 PM, Monday November 1, University Club, Euclid Street, University of Colorado Campus, Boulder
7:30 PM, Monday December 6, " " " " " "

Matters of discussion will include Committee activities and a general membership meeting tentatively scheduled for January, 1977.

COMMITTEES

The Society Bylaws allow for the establishment of a number of committees, which are designed to foster the principal aims of the Society. The following is a list of Society Committees, including descriptions of duties and members of the Society who have volunteered to participate.

MEMBERSHIP

This committee will attempt to contact and solicit individuals for membership in the Society. The membership committee will be in charge of maintaining accurate membership rolls with regard to classification of membership and eligibility for voting purposes.

Board Member: Dieter Wilken

Volunteers: Sue Martin
4700 Venturi Lane
Ft. Collins 80521

Beth Painter
224 E. Elizabeth
Ft. Collins 80521

FIELD TRIP

This committee will organize Society sponsored field trips. Regional field trips will be encouraged so that a good geographic representation of the Colorado flora will be accomplished. It is hoped that this committee will communicate closely with members of the Education Committee for maximum effectiveness in providing information.

Board Member: Hugo Ferchau

Volunteers:

Dexter Hess
Otero Junior College
La Junta, Colo. 81050

Robert Heapes
1024 Deertrail Drive
Parker, Colo. 80134

Herb Owen
100 Rio Vista
Durango, Colo. 81301

PUBLICITY COMMITTEE

This committee will attempt to inform the general public with regard to aims, purposes and activities of the Society. The committee will attempt to establish contacts with all public media.

Board Member: Steve Bissell

Volunteers:

Jean Widman
2676 So. York
Denver, Colo. 80210

Jeff Pecka
1700 17th Street
Boulder, Colo. 80302

PUBLICATIONS

This committee will be responsible for developing the Society's publications, including a regular Newsletter and a Bulletin or Journal for more lengthy articles.

Board Member: J. Scott Peterson

Volunteers:

Kim Vories
P.O. Box 89
Ft. Collins, Colo. 80522

Paul Bryant
1434 Summit View Drive
Ft. Collins, Colo. 80521

Jeff Pecka
1700 17th Street
Boulder, Colorado 80302

ENVIRONMENTAL DOCUMENTS

This committee will review governmEntal documents regarding native plants and will attempt to keep the membership apprised of such publications and activities. The committee will also attempt to develop a format for review of environment-related reports.

Board Member: Hugo Ferchau

Volunteers:

Stuart Teubner
8030 So. Marshall Court
Littleton, Colo. 80123

Barry Johnston
University of Colorado Museum
University of Colorado
Boulder, Colo. 80309

Alice Gordon
1290 So. Glencoe
Denver, Colo. 80222

FUNDING

This committee will attempt to search for and obtain funds for the Society's activities.

Board Member: Kim Vories

Volunteers: Desperately needed!

EDUCATION

This committee will attempt to develop and present education programs for broad use among the general public, regarding information on activities of the Society and the need for conservation of the native flora.

Board Members: Genevieve Bryant, Jon Halverson & Bill Harmon

Volunteers:

Sue Martin
4700 Venturi Lane
Ft. Collins, Colo. 80521

Enda Kiley
Longs Peak-Enos Mills Cabin
Estes Park, Colo. 80517

Stuart Teubner
8030 So. Marshall Court
Littleton, Colo. 80123

HORTICULTURE & REHABILITATION

This committee will serve as a clearing house for information concerning the horticultural merits of native plants. The committee will define areas where research is needed to provide such information.

Board Member: Bill Harmon

Volunteers:

Mark Phillips
Dept. of Agronomy
Colo. State University
Ft. Collins, Colo. 80523

Jean Kiel
2319 Panama Court
Ft. Collins, Colo. 80521

Richard Mekkelsen
3585 Catalpa Way
Boulder, Colo. 80302

Ann Morrison
1015 West Mountain
Ft. Collins, Colo. 80521

Lynn Reynolds
809 Scott #A
Ft. Collins, Colo. 80521

Mary Harmon
2040 5th Ave.
Greeley, Colo. 80631

Gayle Ebel
5070 So. Juniper
Littleton, Colo. 80123

Dale Hoffmann
500 West LaPorte
Ft. Collins, Colo. 80521

Wayne Erickson
214 So. Sunset
Ft. Collins, Colo. 80521

Karen Hollweg
4440 Greenbriar
Boulder, Colo. 80303

Richard Bankhead
1712 So. Emerson
Denver, Colo. 80210

Linda Hoffman
2020 So. Williams
Denver, Colo. 80210

LEGISLATIVE

This committee will keep tab on legislation which may affect native plants in both the state and federal legislatures. The committee will attempt to keep members of the Society informed with respect to such legislation.

Board Member: Jon Halverson

Volunteers:

Libby Goodwin
2885 17th Street
Boulder, Colorado 80302

Lois Webster
780 Geneva
Aurora, Colo. 80010

Stuart Teubner
8030 So. Marshall Court
Littleton, Colo. 80123

Members of the Society are encouraged to offer suggestions or criticisms regarding the above committees and their assigned duties. Members of the Society who wish to contribute their time and effort to any of these committees are urged to contact the Board member until the committees have been organized and a chairperson has been selected.

NIWOT FIELD TRIP REPORT

The first Society field trip took place on July 24 in conjunction with the Denver Audubon Society. Seventeen people participated in an excursion to Niwot Ridge, under the expert guidance of Chuck Feddema and Kim Vories. Most of the plants observed were in full bloom and the enthusiastic group made the field trip very pleasurable. Members desiring a species list may contact either Scott Peterson or Kim Vories.

GREETINGS FROM A SISTER SOCIETY

John Sawyer, President of the California Native Plant Society, has extended congratulations to the Colorado Native Plant Society on behalf of the organization he represents. It should be noted that several other western states, including Oregon, Nevada and Washington, now have native plant societies.

ARTICLES OF INCORPORATION & BYLAWS

All members of the Society are receiving with this mailing a copy of the Articles and the Bylaws. Please retain these copies for future general membership meetings.

MEMBERSHIP CARDS

All members of the Society should receive a membership card with this mailing. We are indebted to Jeff Pecka for donating his artistic expertise in the design and development of the membership card. Should you fail to obtain a card with this mailing, please inform the Secretary, Dieter Wilken.

DELIVERY OF NEWSLETTERS

This newsletter comes to you via the mailing service at CSU. The Society has not yet obtained the status required for bulk mailing rate so we are using that provided by CSU mailing. Bulk mailing often results in delays so the Secretary would appreciate any member's comments concerning late arrival of mailing. Once we have established an average date of receipt, preparation of future mailings will be appropriately planned for earlier delivery to the mailing service if needed.

A MESSAGE FROM THE PRESIDENT

As your President, I think I should extend a greeting to all of you in this first newsletter and to try and point the directions I think we ought to take during this first year of our existence as a society dedicated to the preservation and conservation of the native plants and vegetation of Colorado.

We are going to have to provide our own peculiar brand of leadership and expertise to the nervous system of the Endangered Species Act in Washington; we are going to have to inform and try to stand on common ground with farmers, ranchers, miners and developers, who are suspicious of the potential effect of the Act on their livelihoods; we are going to have to define, for our region and its peculiar problems, just what we mean by "threatened" and "endangered", and the scientists among us are going to have to spend some time with the biology of these plants to find out just why they are threatened or endangered.

Recently, I had a very interesting conversation with a student, who, for a class project, was tackling the problems of the Wood Lily (Lilium philadelphicum). Do any of us really know why this plant is scattered in isolated, few-plant stands, why it is endangered here, what might be done to encourage its increase, and what precisely are the ecological characteristics of its optimum habitat? I am sure that we will find, as ornithologists have, that there is an enormous contribution of the patient observation, note-taking, and use of gray cells on the part of dedicated amateurs.

This year we should plan to refine our Society's list of threatened and endangered species and to try to spell out the particular circumstances of each as far as we are now able. We will try to see that truly endangered ones will find their way on the official lists. We should also accumulate a list of sensitive geographic areas of concentrations of these plants. I should like to suggest that the Hoosier Pass area would be an excellent place to begin such efforts.

Hoosier Pass is probably the most critical spot in Colorado for concentration of rare alpine plants. Armeria maritima, Eutrema penlandii, Braya humilis and Ipomopsis globularis occur here at their only known Colorado or world stations; other species are only a little less restricted. The site is easily accessible but both sides of the Pass are being developed with summer homes. Who owns the pass proper? How safe is it from encroachment? What would be necessary to preserve it or give it a "landmark" status? I feel that we as a Society will have gonefar along the road to saving our most significant endangered plants and habitat if we could accomplish something for Hoosier Pass this year.

How much should we educate the general public in the recognition of threatened or endangered species? Do we need a kodachrome file or a coffee-table book with plates? This is a sword that cuts both ways. In Norway a rare species of Lactuca is said to have benn put on the endangered list and protected by a fence in northern Norwegian Lappland. We are told that Professor Nordhagen and his colleagues decided to visit the site after about twenty years and it see how it was doing. They arrived at the site and found that the plant had been exterminated within the fence, but was flourishing outside. The school children, having to make plant collections during the summer, knew that the plant within the fence was what they were after, but may not have been quite so sure about those growing outside. Perhaps we should also keep before us the example of the Yellow Lady'S Slipper, which has survived in Colorado simply because most of the colonies occur on private land guarded by sympathetic owners. Most of the Colorado public have neverseen one and

perhaps this is a good thing. Or is it?

While this society is a combination of amateurs and professionals. I would argue that this is not simply a "Botany" club established for general information and socializing. We do have a mission, and perhaps when we accomplish the mission we should disband. The liklihood of ever making Colorado safe for plants, however, is very low. Let us keep our eyes on the goal we have set, so that within a reasonable time, say the next 5 years, some real progress will have been made. I am grateful for having been honored with the baton for 1976-1977 and I hope to get to know many of you better during this time in office.

Sincerely,
William A. Weber

MEMBERS

At the time this newsletter is being prepared the Society constitutes 110 members (60 Individuals, 22 Families, 15 Students, 9 Seniors, 2 Organizations and 2 Honorary Life Members). A membership form is included with this mailing. Each member is asked to take the responsibility in adding another. There must be many more potential members that have not yet heard of the goals of the Society and we should make every effort to publicize our interests.

FUTURE NEWSLETTERS

All ideas, including criticisms, matters of interest to the general membership and suggestions for future articles should be sent to Scott Peterson, who is presently in charge of future publications.
The next newsletter will contain a list of members, which is too long for present inclusion.

PUBLICATIONS OF INTEREST

"Natural History Inventory of Colorado. Part I. Vascular Plants, Bryophytes and Lichens" by William Weber is available from the University of Colorado Museum, Boulder Colorado 80309 $15.00

"Rocky Mountain Flora, 5th Edition" by William Weber. Colorado Associated University Press, 1424 15th Street, Boulder, Colorado 80302
Text Edition: $9.50 Trade Edition: 12.50

MISSING MEMBER

We received a check from Randal L Stephens for Student membership but we do not have an address. If anyone knows of him, please inform the Secretary of his address. If any addresses are incorrect with regard to your own mailing, please inform the Secretary.

ARTICLES OF INCORPORATION OF THE COLORADO NATIVE PLANT SOCIETY

ARTICLE I

The name of the corporation is THE COLORADO NATIVE PLANT SOCIETY.

ARTICLE II

The period of duration of the corporation shall be perpetual.

ARTICLE III

The purposes for which the corporation is formed are as follows:

1. To encourage the appreciation and conservation of the native plants and ecosystems of Colorado by such methods as may be deemed appropriate by the Society, including, but not limited to, identification of habitat and ecosystems, identification of threatened or endangered plants, acquisition of land, participating in governmental and educational programs, encouraging the State of Colorado to enter into cooperative agreements with the United States concerning threatened or endangered plants pursuant to the Endangered Species Act of 1973 (P.L. 93-205; 87 Stat. 884) or other legislation, and to cooperate with other organizations with similar purposes.

2. To take and hold, by bequest, devise, gift, purchase, lease or otherwise, either absolutely or in trust, for any of its purposes, any property, real, personal or mixed, without limitation as to amount or value; to own (and while the owner of any stocks, bonds, securities, notes or other evidences of indebtedness created or issued by any corporation or association organized under the laws of any state, country, nation or government, to exercise and enjoy all of the rights, powers and privileges of ownership, including the right to vote in respect thereof, with power to designate some party for that purposes, from time to time, to the same extent that natural persons might or could do), operate, use, enjoy, manage, improve, mortgage, pledge, lease, assign, sell or otherwise dispose of any such property; to change and vary the investments of the Society from time to time and to invest and reinvest its funds in any securities or property deemed proper by its Directors for such investments; and, in general, to deal with and expend the property and funds of the Society for the purposes thereof in such manner as in the judgement of its Directors will best promote its purposes.

Article I. Members

Section 1. Membership

Any person, family or other group interested in the native plants of Colorado is eligible for membership in the Society. There shall be the following classes of members: Student, Senior, Individual, Family, Organization, Supporting, Life. Annual membership dues shall be as follows: Student - $4, Senior - $4, Individual - $8, Family - $12, Organization - $25, Supporting - $50. Life membership dues shall be $250. Qualification of each class of members shall be as follows: Student - any individual enrolled full-time as a student in an academic institution; Senior - any individual 65 years of age or older; Individual - any individual person; Family - any individual together with his or her spouse and children; Organization - any corporation or other group other than an individual person or family; Supporting - any individual, family or organization which chooses to contribute at the stated level; Life - any individual who chooses to make a one-time life membership dues payment at the stated level.

Section 2. Right of Members

Members of each class shall enjoy all of the rights and privileges pertaining to membership in the Society. Subject to the Articles of Incorporation, each member, including Family and Organization Members, shall be entitled to one vote on any question requiring a vote of the membership of the Society. The right to vote of an individual which is not a member shall be exercised by an individual designated in writing by the member as its official delegate.

Section 3. Termination of Memberships: Distribution od Assets

Membership in the Society shall terminate upon the death or resignation of a member or by resolution of the Board of Directors. Memberships may not be transferred. No member shall possess any property right in or to the property of the Society.

Section 4. Meetings of the Members

The annual meeting of the Society shall be held at a time and place designated by the Board of Directors which shall be during October. Special meetings for any purpose or business may be called at any time by the President or by the Board of Directors.

Section 5. Notification of Meetings

Written notification of meetings of the members shall be given to each member entitled to attend that meeting. Notices of special meetings shall state the purpose of the meeting. Notice of meetings shall be placed in the mail at least two weeks prior to the date of the meeting.

Section 6. Quorum

The presence of ten percent of the members in person or by proxy, at any meeting shall be necessary to constitute a quorum for the transaction of business. Every act or decision done or made by a majority of the members present in person or by proxy, at a meeting duly held, at which a quorum is present, shall be regarded as a valid act of the Society, unless a greater number is required by law, or by the Articles of Incorporation, or by the Bylaws.

Article II. Dues

Section 1. Manner of Fixing Dues

Dues of each class of members of the Society initially shall be as stated in Article I, Section 1 of these Bylaws, and may be changed only by the members. Dues for all classes of members other than Life are payable for the calendar year. Life membership dues shall be paid in full in one sum at the time of application and will be acceptedas of the time of election. If a new member joins after September 1 of a given year, those dues will apply through the next calendar year.

Section 2. Payment of Dues

Dues shall be payable to the Treasurer of the Society upon application or proper notification. No member who is in default in the payment of dues shall be entitled to any of the rights and privileges of membership while he is in default. When any member is in default in the payment of dues for a period of three months, that member's membership shall terminate. Any member so terminated shall be reinstated upon payment of all unpaid dues.

Section 3. Sharing of Dues with Chapters

A percentage of the dues paid by each member who is also a member of a chapter of the Society shall be paid to that Chapter. The percentage shall be established by the Board of Directors and may be changed from time to time. Payment shall be made once annually at such time as is established by the Board of Directors.

Article III. Directors

Section 1. Qualification to be a Director

Only persons who are members of the Society shall be eligible to be a member of the Board of Directors, including each adult member of a family which is a member. Persons who are members of an organization which is a member shall not, as such, be eligible to be a member of the Board of Directors of the Society.

Section 2. Constitution of the Board of Directors

The Board of Directors shall consist of the President and Vice-President of the Society, the presidents of all duly recognized chapters of the Society, and ten members elected by the general membership of the Society, but not more than twenty in total.

Section 3. Election and Tenure of Directors

The President and Vice-President of the Society shall become members of the Board of Directors immediately upon their election to office as outlined in Article IV, Section 3, of these Bylaws. All chapter presidents shall become members of the Board of Directors immediately upon their election by the individual chapters.

An election of directors shall occur annually at the annual meeting of the Society. To accomplish this election, the Nominations Committee (selected pursuant to Article IV, Section 3, of these Bylaws) shall prepare a slate of candidates for presentation to the members of the Society. Directors may also be nominated by petition signed by no less than fifteen members of the Society and filed with the Secretary not less than forty-five days before the annual meeting. A plurality of all votes cast shall be sufficient to elect. The tenure of Directors elected in this manner is two years. Five directors shall be elected each year.

Section 4. Vacancies in the Board of Directors

Vacancies in the Board of Directors shall be filled in the following manner: If the Director is a chapter president, the vacancy shall be filled at the earliest convenience of the respective chapter in a manner determined by chapter policy. If a Director is elected by the general membership of the Society, or is an officer of the Society, the vacancy shall be filled by the majority vote of the remaining Directors attending a meeting of the Board. A Director thus elected shall hold the office for the unexpired term.

Section 5. Termination of Directorships; Distribution of Assets

A directorship in the Society shall terminate upon the death or resignation of the Director. Directorships may not be transferred. No Director shall possess any property right in or to the property of the Society.

Section 6. Meetings of the Board of Directors

The Board of Directors shall meet in October immediately following the annual meeting of the members of the Society and as needed to conduct the business of the Society. Meetings shall be called by the President or, in his absence, inability, or refusal to act, by the Vice President or by any five directors. Written notification of the date, time and place of the meetings of the Board of Directors shall be given by the Secretary to each Director at least seven days prior to the holding of the meeting.

Section 7. Quorum

The presence of a majority of the Directors of the Board of Directors as constituted at that time shall be necessary to constitute a quorum for the transaction of business. Every act or decision done or made by a majority of the directors present at a meeting duly held, at which a quorum is present, shall be regarded as a valid act of the Board of Directors.

Section 8. Powers of the Board of Directors

The Board of Directors shall be the governing body of the Society and may delegate authority to the Society committee chairpersons. The Board shall determine the policies of the Society.

Artcicle IV. Officers

Section 1. Names of Officers

The officers of the Society shall be a President, one or more Vice Presidents, a Secretary, and a Treasurer The Board of Directors may appoint such other officers as the business of the Society may require.

Section 2. Qualification to be an Officer

Any member of the Society and any person who is eligible to be a member of the Board of Directors of the Society as set out in Article III, Section 1, of these Bylaws, shall be eligible to be an officer of the Society An officer may succeed himself

Section 3. Election of Officers

An election of all officers of the Society shall occur at the October meeting of the Board of Directors.

Section 4. Duties of the President

The President shall preside at all meetings of the members and directors, shall have general supervision of the affairs of the Society, shall sign or countersign all certificates, contracts, and other instruments of the Society as authorized by the Board of Directors, shall make reports to the Board

Section 4. Duties of the President continued

and members, and shall perform all such other duties as are incident to this office or are properly required of him by the Board of Directors

Section 5. Duties of the Vice President

The Vice President shall exercise the functions of the President during the absence or disability of the President The Vice President shall have such powers and discharge such duties as may be assigned to him from time to time by the Board of Directors or by the President

Section 6. Duties of the Secretary

The Secretary shall keep the minutes of all meetings of the Board of Directors and statewide meetings of the members, with the time and place of holding, the notice of thereof given, the namesof those present at a Board of Directors meeting, the numbersof members present or represented at a statewide member's meeting, and the proceedings thereof The Secretary shall give or cause to be given, notice of all meetings of the Board of Directors and statewide meetings of the members as required by these Bylaws, and shall keep the seal of the corporation in safe custody The Secretary shall prepare those directives and other documents as are needed and authorized for the internal use of the Board of Directors; shall also act as the general recipient of the correspondence directed to the Society, receive petitions for chapter formation, and shall have such other powers and perform such other duties as may be prescribed by the Board of Directors.

Section 7. Duties of the Treasurer

The Treasurer shall keep and maintain, or cause to be kept and maintained, adequate and correct accounts of the transactions of the Society, including accounts of its assets, liabilities, receipts and disbursements The Treasurer shall deposit all moneys and other valuables in the name and to the credit of the Society with such depositories as may be designated by the Board of Directors He shall disburse the funds of the Society as may be ordered by the Board, shall render to the President and directors, whenever they request it, an account of all of his transactions as treasurer and of the financial condition of the Society, and shall have such other powers and perform such other duties as may be prescribed by the Board of Directors.

Section 8. Vacancies

A vacancy in the office of the President, Vice President, Secretary, or Treasurer may be filled by an election held for this purpose at a meeting of the Directors An officer thus elected to fill any vacancy shall hold office for the unexpired term of his predecessor and until his successor is elected and qualifies.

Section 9. Records

Each officer shall upon the expiration of his term of office and upon the election and qualification of his successor deliver to his successor the records of his office.

Article V. Committees

Section 1. Kinds of Committees

Two classes of committees are recognized: the Society committees and the temporary committees.

Section 2. Society Committees

The Board of Directors shall create such committees as may be deemed suitable, necessary, and convenient to accomplish the aims of the Society. The President shall appoint, subject to approval of the Board of Directors, a chairman and such members as he deems necessary for the proper functioning of the committee. Vacancies shall be filled by the President, subject to approval by the Board of Directors.

Section 3. Temporary Committees

The President shall create such temporary committees from time to time as may be deemed suitable, necessary, and convenient to accomplish the aims of the Society. The President shall appoint a chairman and such members as he deems necessary for the proper functioning of the Committee. Vacancies shall be filled by the President.

Section 4. Composition

At least one director shall serve as a member of each committee.

Section 5. Quorum

Unless otherwise provided in the resolution of the Board of Directors or President establishing the committee, a majority of the whole committee shall constitute a quorum and the act of a majority of members as a meeting at which a quorum is present shall be the act of the committee.

Section 6. Vacancies

Vacancies in a Society committee shall be filled by appointment of a replacement by the President of the Society, subject to the approval of the Board of Directors. Vacancies in a temporary committee shall be filled by the appointment of a replacement by the President.

Section 7. Tenure of Committees and Their Members

The tenure of a committee and its members shall be at the pleasure of the Board of Directors or the President of the Society, depending upon the classification of the committee as outlined in Article V, Section 2 and Section 3 of these Bylaws.

Section 8. Powers of Committees

The committees of the Society shall have those powers and duties as outlined by the establishing resolution of the Board of Directors or the President of the Society. The chairman of a committee shall render to the Board of Directors or to the President, upon their or its request, an accounting of the progress and current state of the committee's work.

Section 9. Rules

Each committee may adopt its own rules providedthat they are not inconsistent with theestablishing resolution, rules adopted by the Board of Directors, or the Bylaws.

Article VI. Chapters

Section 1. Organization

Fifteen or more members, other than organization members, of the Society may organize a chapter of the Society by submitting to the Secretary a petition giving the names and addresses of the fifteen or more members. The Secretary shall submit the petition to the Board of Directors for approval.

Section 2. Designation

Such chapters shall be designated as "The _____Chapter of the Colorado Native Plant Society."

Section 3. Chapter Officers

Each chapter shall elect annually a President and such officers as it deems suitable, necessary, and convenient to accomplish the purposes of the chapter. The election of officers shall be accomplished so that offices will be taken as of October 1. Any chapter officer may succeed himself.

Section 4. Chapter Bylaws

The members of each chapter may adopt bylaws for the governing of the chapter, provided that the bylaws are not inconsistent with the Society Bylaws or the Articles of Incorporation. If adopted, a copy of such bylaws shall be deposited with the Secretary of the Society.

Section 5. Members

Members of the Society shall be entitled to all the rights and privileges of such membership. Only members of the Society shall be entitled to chapter membership.

Section 6. Chapter duties

The members of each chppter shall hold meetings at such times and places as it deems suitable, necessary, and convenient to accomplish the purposes of the Society and chapter. Each chapter shall hold at least six such meetings annually. The members of each chapter shall elect officers as outlined in Article VI, Section 3, of these Bylaws. The members and officers of a chapter shall have the responsibility of fostering the Society's goals. To this end, each chapter shall have the primary responsibility to represent the Society in its area and to initiate programs and actions consistent with the Society's purposes. A chapter shall inform the Board of Directors of regional activity by forwarding reports and other pertinent documents to the Secretary.

Section 7. Withdrawal of Chapter Status

The Board of Directors may terminate or suspend the chapter status and privileges of a chapter if the membership of the chapter consists of less than fifteen members or if the chapter takes any action inconsistent with the Articles of Incorporation or Bylaws of the Society.

Section 8. Limitation of Chapter Authority

In the absence of express authorization by the Board of Directors, no chapter, chapter officer, or chapter member shall have power to act or bind the Society in any manner. No chapter shall have any proprietary interest in the name "Colorado Native Plant Society". Each chapter's right to use as part of its name or designation the words "The Colorado Native Plant Society" shall cease upon the termination or suspension of its status as a chapter.

Article VI. Books and Records

Section 1. The Society shall keep correct and complete books and records of account and shall also keep minutes of the proceedings of of its members, Board of Directors, and committees having any of the authority of the Board of Directors, and shall keep at the registered or principal office a record giving the names and addresses of the members entitled to vote. All books and records of the corporation may be inspected by any member, or his agent or attorney for any purpose at any reasonable time.

Artcile VIII. Contracts, Checks, Deposits, and Funds

Section 1. Contracts

The Board of Directors may authorize any officer or agent of the Society, in addition to the officers so authorized by these Bylaws, to enter into any contract or execute and deliver any instrument in the name of and on behalf of the Society, and such authority may be general or confined to specific instances.

Section 2. Checks, Drafts, etc.

All checks, drafts, or orders for the payment of money, notes, or other evidences of indebtedness issued in the name of the Society shall be signed by the Treasurer and countersigned by the President or a Vice President of the Society.

Section 3. Deposits

All funds of the Society shall be deposited from time to time to the credit of the Society in such banks, savings and loan associations, or other depositories as the Board of Directors may select.

Section 4. The Board of Directors may accept on behalf of the Society any contribution, gift, bequest or devise for the general purposes or for any specific purpose of the Society.

Article IX. Fiscal Year

The fiscal year of the Society shall begin on the first day of January and end on the last day of December in each year.

Article X. Seal

The Society shall have a seal upon which shall be inscribed:

"The Colorado Native Plant Society Incorporated Colorado"

Article XI. Amendments

Section 1. Manner of Amending Bylaws

Bylaws may be adopted, amended, or repealed by the affirmative vote of two-thirds of the directors present at any meeting of the Board of Directors called for such purpose at which a quorum is present.

From: Greg McArthur
Re: Tentative Dissertation Outline

Dear Committee Member:

Would you please critique this first draft of my dissertation chapter Outline? I am looking for several things based on your comments:

A) Could the order/sequence be more logical?
B) Have I omitted any important considerations?
C) Would you prefer to see something added or deleted?

On the basis of your comments, I shall proceed with a detailed sentence outline for each chapter. I recognize the need for coherency in any dissertation and I am therefore proposing that this chapter Outline serve as the framework upon which we can build the dissertation in a logical and consistent manner.

Could I further impose upon you to return the Outline, along with your comments, as soon as possible?

Thank you

Greg

FIRST DRAFT DISSERTATION CHAPTER OUTLINE
10/5/76

I.0 INTRODUCTION
- 1.1 The Rise of Disturbed Habitats
  - 1.1A Increasing magnitude of developments
  - 1.1B Ecological implications
- 1.2 The Role of Ecology in Disturbed Habitat Rehabilitation
  - 1.2A Effective amelioration of adverse habitat effects
  - 1.2B Recognition of plant/habitat interaction
  - 1.2C Application of ecological concepts/principles to disturbed habitat cond.
    - --succession
    - --niche
    - --species
    - --competition
    - --ecotypes/hybrids
    - --environmental induction
- 1.3 The Role of Plants in Disturbed Habitat Situations
  - 1.3A Ecological/evolutionary significance of being a plant
  - 1.3B Pioneer stage of succession
  - 1.3C Selection pressures in disturbed habitats
  - 1.3D The Gramineae (Poaceae) in relation to disturbed habitats
- 1.4 Human Management of Disturbed Landscapes
  - 1.4A Habitat improvement
  - 1.4B Revegetation and rehabilitation
  - 1.4C Synthetic species and artificial habitats
- 1.5 A Test Case Disturbed Habitat: Spent Oil-shale
  - 1.5A Magnitude of development
  - 1.5B Reasons for choice
  - 1.5C Regional considerations
    - --environmental
    - --ecological
    - --economic

2.0 BACKGROUND REVIEW
- 2.1 Literature Review
  - 2.1A Botanical review specific to Gramineae
  - 2.1B Ecological review specific to habitat/niche interactions
  - 2.1C Genetic, Physiological, Morphological review specific to Gramineae
  - 2.1D Information Sciences and interface with biological investigations
- 2.2 History of Oil-shale Development
  - 2.2A Colorado
  - 2.2B Magnitude and estimated impact
  - 2.2C Ecologic/economic balance
  - 2.2D Properties of spent shale (TOSCO II)
- 2.3 Revegetation Problems and Contemporary Managment Solutions
  - 2.3A Plant species Selection
  - 2.3B Habitat selection

3.0 DATA, INFORMATION RETRIEVAL SYSTEMS, AND SYNTHETIC RESEARCH
- 3.1 Data
  - 3.1A The gathering of data
  - 3.1B The Storage and Maintenance of data
  - 3.1C The use of data
- 3.2 Information Retrieval Systems
  - 3.2A General considerations
    - --use
    - --utility
    - --functions

3.2B Use in Biology
3.2C Computerized IRS
--rapidity
--flexibility
--capacity
--user requirements
3.3 The EXIR Information Storage and Retrieval System
3.3A History and Development
3.3B Capabilities and Functions
3.4 The Use of EXIR in Creating a Data Bank
3.4A EXIR data requirements
--alpha
--numeric
3.4B Descriptors, descriptor states, and items
3.4C Formating the data bank
3.5 Synthetic Research
3.5A Making maximum use of existing information
3.5B Application ot immediate societal-ecological problems

4.0 MATERIALS AND METHODS

4.1 EXIR Data Bank (PHDHOPE)
4.1A Identification of data sources
4.1B Selection of material (data)
4.1C Creation of Data Bank
4.1D Interaction with EXIR (PHDHOPE)
4.2 GRSENHOUSE Experiments
4.2A Greenhouse facilities
4.2B Methods for obtaining seeds
4.2C Planting seeds
4.2D Shale ammendments
4.2E watering regime
4.3 TOSCO II spent oil-chale
4.3A Creation of planting ratios
4.3B sludge ammendments
4.4 Recording of Greenhouse Data
4.4A germination studies
4.4B plant growth responses
--height
--color
--vigor
--no. of leaves

5.0 RESULTS
5.1 EXIR Retrieval Output
5.1A Histogram displays
5.1B Query output and its use
5.1C Seed material
5.2 Greenhouse Experiments
5.2A Tables
5.2B Charts ---extensive use for data interpretation
5.2C Graphs
5.2D Figures

5.3 Synthesis
5.3A Statistical reliability
--sample size
--sample data
5.3B Co-products of selected data parameters (e.g. soil pH as a function of height)

6.0 DISCUSSION
6.1 The Relevancy of the EXIR output
6.1A Reliability
6.1B Bias (researcher induced)
6.1C Basis for further investigations
6.2 Detailed comparisons of species performances
6.2A site-specific selection
6.2B Information base of EXIR
6.2C Correlation with known field conditions
6.3 Inappropriateness of field study --post greenhouse
6.3A Scope of research
6.3B Uniquness of research using computer
6.3C Reliability/predictability of results
6.3D Field performance extrapolation
6.4 Explanation of results
6.4A Consideration of above disscussions
6.4B Literature foundation
6.4C Ecology of species in relation to performance

7.0 CONCLUSIONS AND RECOMMENDATIONS
7.1 Best species analysis
7.2 Recommended application
7.2A soil ammendments
7.2B water regime
7.2C community stabilization

8.0 SUMMARY

9.0 BIBLIOGRAPHY

10.0 APPENDICES
10.1 EXIR control vocabulary
10.2 Histogram printouts
10.3 Maps
10.4 Species performance graphs
10.5 Others

To: Development Committee - Present: Pollock, Rogers, Windell, Telleen, Reimers
Absent: Shulls, Nixon

From: J.T. Windell, Chairman

Subject: Minutes of Meeting

Date: Nov. 24, 1976

1. Future Meetings - It was decided to have meetings as often as necessary but no less than monthly during the spring semester. Notices will be sent out by the Chairman. The group favored adding more undergraduates to the committee and Toni Reimers was asked to seek volunteers.

2. Dr. Rogers gave a brief background of the committee's history. Committee's focus centered on building, curriculum, departmental changes, increase in number of faculty, etc.

3. Steve Telleen agreed to take charge of last year's uncompleted survey. Dr. Windell will check with Dr. Crumpacker about an account number at the computer center to pay for key punch and analysis.

4. Considerable discussion was generated about the specific charges given to the committee by Dr. Crumpacker. It was generally agreed that the committee would address itself to the changes but in reverse order as given on the notice of the meeting and the departmental memo.

It was recommended by Steve Telleen that the committee consider establishing an EPOB Undergraduate Council. This council would be an umbrella type organization. It would take the lead in having a fall meeting and maybe a spring meeting. It would sanction, plan, and conduct meetings for each class each fall.

Considerable discussion followed about what would take place at each of the meetings i.e., information would be disseminated regarding careers, job market requirements, graduate school requirements, professional school requirements, curriculum, etc. Students would be encouraged to seek summer employment in biology, attend field stations, work as volunteers, interns, etc.

It was felt that if item 3 of the charges became a reality that items 2 and 1 would be easily attainable. Inasmuch as there is no undergraduate student organization at present it was recommended that details be worked out during our future meetings with an attempt to hold meeting(s) later in the spring.

Inasmuch as the University supports a premed advisor for a limited number of students, it was suggested that maybe the biology department and University should support a biology advisor with similar responsibilities for the much larger group of students.

There seemed to be consensus that at present the Biology Department pretty much ignores student needs, desires, interests, etc. except for quality instruction. Some members apparently feel that Departmental responsibilities should go beyond simple classroom and laboratory instruction.

To: Development Committee - EPO Biology
From: J.T. Windell, Chairman

About: Meeting, Nov. 30, Tuesday, 3-4 in Ramaley Office #1

Date: Nov. 24, 1976

Please note the time and place of the first meeting of the Departmental Development Committee. Departmental chairman, Dr. Wilson Crumpacker has identified three charges to the committee.

(1) To look at curriculum to assess what courses are needed to help our students get a "practical" job upon graduation.

(2) To get up-to-date information on students and alumni. Where do our undergraduates go? Where do graduate students wind up?

(3) Organize undergraduate EPOB majors.

Members of the committee are:

Faculty	Graduate Students	Undergraduate Students
J. Windell, Chairman	Scott Elias	Toni Reimers
D. Rogers	Steve Telleen	Elizabeth Nixon
W. Shulls		
B. Pollock		

A tentative agenda for the meeting:

1. Monthly, weekly, or biweekly meetings, best time and place.
2. Old business to finish - last year's uncompleted survey.
3. Ad hoc subcommittees to investigate the "charges" identified by the departmental chairman.
4. Other

UNIVERSITY OF COLORADO
DEPARTMENT OF PERSONNEL
BOULDER, COLORADO 80309

Willard Administrative Center 67

MEMORANDUM

TO: All Faculty, Unclassified Administrators, and Professional Exempt Employees

FROM: Personnel Services

SUBJECT: New Payroll/Personnel System Changes in the Statement of Earnings

DATE: November 15, 1976

The November 15, 1976, mid-month payroll marks the completion of a new payroll/personnel data processing system for the university. It combines the present separate payroll, personnel, and insurance operations into a single, comprehensive system. This new system will provide more complete and current financial information to employees, departments, campuses, and the university as a whole.

For the balance of the 1976 calendar year, the year-to-date information on the stub includes January-to-date for the paid gross, taxes, and Social Security (FICA) deductions only. Other deductions, e.g., insurance, credit union, will reflect year-to-date totals for November and December only.

Even though some employees will have reached the maximum earnings for FICA, the mid-month advance will reflect a deduction for FICA. The deduction made on the mid-month advance will be corrected on the November month-end payroll when the to-date totals will be included in the calculation.

The following pages show examples of the new payment stub and explain some of the differences from the old Statement of Earnings.

A new contact point has been established in Personnel Services to answer any payroll inquiries. The phone number for this service is 8066; please feel free to contact Personnel Services with any questions you may have.

David J. Rogers
Prof. of Biology-EPO
Taximetrics, Director
Ramaley 110

CU 1876

CHANGES IN THE PAYMENT STUB

The new payment stub "STATEMENT OF EARNINGS" shown below will appear on the right-hand side of both the Warrant and the Advice of Deposit (previously called "Employee's Earnings Statement"). The example below (Figure 1) is an end-of-month pay stub, which shows detailed payroll calculations, while the mid-month pay stub (Figure 2) does not.

① SS # 002-14-5265 ADVICE # 0100021 PERIOD END 11/30/75

DETACH AND RETAIN THIS STUB FOR YOUR RECORDS

STATEMENT OF EARNINGS

UNIVERSITY OF COLORADO

②	GROSS PAY	REDUCTIONS	TAXES	DEDUCTIONS	ADVANCE	NET PAY
CUR	557.00		83.22	55.41		418.37
YTD	2,785.00		416.10		TIAA/CREF %	50

③ PAYMENTS	HRS	AMOUNT	DEDUCTION	AMOUNT	YTD PAID	DEDUCTION	AMOUNT	YTD PAID
REGULAR		557.00	FED TAX	63.53	317.65			
			ST TAX	19.69	98.45			
			PERA	43.17	215.85			
			PRUD	6.74	33.48			
			PRUD LIF	5.50	27.50			

④ TAX MARITAL STATUS - M (a.) EXEMPTIONS - 0 (b.) ESTIMATED MIDMO ADVANCE $167.35

UC2-1 10/75

Figure 1 - End-of-Month Statement of Earnings

The following differences in the Warrant/Advice stub may be noticed:

1. Social Security Number replaces the Employee Number and should be used for all payroll, personnel, or benefit inquiries to Personnel Services.

2. The upper portion of the stub shows in capsule form how your net pay was calculated. Reductions (tax-sheltered pay), taxes, and other deductions are subtracted from goss pay to calculate net pay. Year-to-date totals are shown here for gross pay, reductions, and taxes. In addition, the percentage of your TIAA/CREF dollars which are being remitted to TIAA is indicated.

3. The middle portion of the stub itemizes your gross pay on the left-hand side; the right-hand side is a detailed list of your deductions, reductions, and taxes, and the total amount paid this year for each.

Deductions for health insurance and life insurance are shown separately, rather than as a total; this will help you at the end of the year in computing medical expense deductions for income tax purposes.

Also, the total insurance deductions may differ slightly from the October, 1976 earnings statement, since the new system provides for more current insurance information than was previously possible.

4. The bottom portion of the stub shows:

   a. The W-4 information that was used for computing your federal and state withholding taxes. This includes your tax marital status - "M" or "S", and the number of withholding exemptions.

   b. An estimate of next month's mid-month advance (if applicable), which is computed as 40% of your net pay. This figure may be slightly different, since certain deductions, such as Parking and United Fund, were not previously used in calculating the advance.

The mid-month advance is considered to be only an estimated advance rather than a regular payroll amount, so detailed payroll-type calculations of net pay do not appear on the mid-month Advice of Deposit. An example of the mid-month stub is shown below in Figure 2.

SS # 523-38-0345 ADVICE # 0200014 PERIOD END 01/31/76

STATEMENT OF EARNINGS UNIVERSITY OF COLORADO

********** MID MONTH ADVANCE **********

	GROSS PAY	REDUCTIONS	TAXES	DEDUCTIONS	ADVANCE	NET PAY
CUR					296.90	296.90
YTD						

PAYMENTS	HRS	AMOUNT	DEDUCTION	AMOUNT	YTD PAID	DEDUCTION	AMOUNT	YTD PAID

TAX MARITAL STATUS - M EXEMPTIONS - 4

DETACH AND RETAIN THIS STUB FOR YOUR RECORDS

UC2-1 10/75

Figure 2 - Mid-Month Statement of Earnings

The University of Birmingham

DEPARTMENT OF PLANT BIOLOGY
The University of Birmingham, P.O. Box 363, Birmingham B15 2TT
Telephone 021-472 1301

Mason Professor of Botany: J G Hawkes Sc D

JGH/SED

15th November 1976

Dr. David Rogers,
Department of Environmental Population and Organismic Biology,
University of Colorado,
Boulder,
Colorado 80302,
U.S.A.

Dear Dave,

I enclose herewith the semi-final draft of the collectors' manual for seed crops and would be most grateful for your comments. Even if you have none, could you still reply, please, since IBPGR have insisted that you see the draft and that the final version carries your agreement! Sorry to be so bureaucratic.

The discussions with IBM about Trevor Williams' fellowship seem to be progressing smoothly, if a little slowly. I shall be seeing Gary Kozak on Thursday and may then have a positive, one way or the other. I will keep in touch.

All the best to you and Connie.

Yours,

Jack

Professor J.G. Hawkes

Enc.

DRAFT MANUAL FOR THE FIELD COLLECTION OF CROP GENETIC RESOURCES

(Seed Crops)

CONTENTS

PREFACE

This manual has been written as a general guide for those wishing to collect seed crops in the field for the long-term conservation, evaluation and utilization of genetic resources. Other manuals in this series will deal with root and tuber crops and with fruit and nut trees. The present manual covers methods of collecting seeds from root and tuber crops also.

This book is not designed for workers widely familiar with collecting specific crops, but is written in order to assist scientists who are not familiar with crop plant exploration and for those who have little experience in the field.

The manual is, of necessity, broad in content and cannot deal with individual crops. It lays emphasis on the need for adequate field records which can be used in computerised documentation systems and sets out a standard minimal recording sheet which all collectors could use.

Advice can always be obtained from the Crop Ecology and Genetic Resources Unit, F.A.O., Via delle Terme di Caracalla, 00100 Rome, Italy, or from the Genetic Resources Units of International, Regional and National Centres with which the collector may be associated.

A. PLANNING

1. Region and crops

As much time as possible should be allowed for expedition planning. From six months to one year or even longer are advisable. Sometimes three months or less can be useful, depending on whether the collecting team has already been to the region in question and can therefore return with a minimum of further planning.

Choosing a region for exploration depends on:

(a) crop priorities for genetic resources conservation,

(b) regional priorities,

(c) review of past exploration activities.

The fact that extensive collections have been made in the past and have provided useful germplasm in breeding programmes, does not mean that no more collections are needed, since the existing ones may not necessarily contain maximum genetic diversity.

The expedition team should be familiar with the crops to be collected and their wild relatives and should have been informed on the region to be visited by others who have been there before or by reading all the available literature.

Frequently these past collections, (a) may have been collected by breeders for a limited purpose, (b) may not have been population samples, (c) may not have been conserved properly for long-term conservation, (d) may have suffered from genetic erosion since they were collected, (e) may have been collected from easily accessible areas, ignoring remote or even fairly accessible sites, (f) may have been lost by neglect, pest attacks, etc.

The main purpose of the exploration may well be to collect wild species and primitive cultivars. These are in general not particularly well represented in some of the larger collections; even some so-called "world collections" may not include more than a few samples of related wild and weed species.

It is sometimes easier to collect only one crop (e.g. Sorghum) on an expedition, or perhaps a group of crops of similar life form (e.g. millets). Very often, several related species are all grown together (e.g. wheats) or groups of even unrelated species occur in the same rotation (e.g. wheat, barley, lentils, etc.). When this is so, you should try to collect this wider range of crops

since it will probably be very expensive and not very cost effective to send several expeditions to the same region, each for its own particular crop.

In some instances, multiple crop collecting may not be advisable. This could be so for cottons and Quinoa in the Andes, where each crop occurs in a completely distinct altitudinal and agro-ecological zone. So, careful decisions must be made in the planning stage, and collecting priorities must always be kept firmly in view. Of course, some flexibility must be allowed in the field, if interesting material is found, even though it may not have been on the list of crops to be collected when the expedition was planned.

In all expedition planning it is of the greatest importance to enlist the enthusiastic support of the host country and to ensure that government officials and agricultural scientists are fully aware of the importance of exploration, conservation and efficient utilisation of their national plant genetic resources.

Full reports on the expedition results and offers of subsamples of all collections should be made to the authorities of the host country. Reciprocal exchange of material should be arranged where possible, on a continuing basis after the close of the expedition and the attention of government officials should be drawn to areas where further collecting should be carried out.

2. The collecting team

This should be kept small for efficiency. From two to three persons is ideal. Larger teams can be split up into groups of two or three people, each allocated to a particular area and reporting back to the team leader at regular intervals.

The team leader should preferably be a botanist, a breeder or an agronomist. It is essential that at least one member of the team, perhaps the leader himself, should know the crop well, especially the varietal diversity and that of related wild and weed species. Knowledge of the diseases and pests of the crops collected in the region is also of considerable advantage.

Whenever possible, the team should include a specialist from the host country and if necessary a local agronomist or extension officer who is conversant with local conditions and languages, as well as its crops and people. Often a driver, guide or interpreter may be hired for each particular place or region when special needs arise.

3. Route

Preplanning the route is essential, and the availability of maps, at least contour maps 1:1,000,000 (or larger scale if possible) and road maps, is most important. Regional soil types and climatic maps as well as vegetation maps are most useful, but generally are difficult to find or do not exist. In many regions, the maps are unreliable and allowance should be made for this. Good road maps, even without contours, are quite useful and are better than nothing.

At an early planning stage local contacts should be made by correspondence to advise on the feasibility of following certain routes. Government permission is often required to enter certain areas. A government permit to collect plants may also be required, and if the plants are to be exported to another country, clearance from the relevant section of the Ministry of Agriculture (Plant Health, Quarantine, etc.) may be necessary. Information on how to get these permits, who to contact, etc., varies from country to country. The relevant Embassy should be contacted for advice or the F.A.O. Unit of Crop Ecology and Genetic Resources.

4. Timing of the expedition:

Correct timing will help you (a) to collect the largest possible amount of genetic diversity in the period available, (b) to travel as far as possible when the crop is maturing, (c) to collect from as many distinct areas as you can in each region, (d) to cover local variations in soil, climate, altitude, varying agricultural practices, etc., (e) to look for weedy forms in and around the field borders, (f) to search for related wild species.

In general, when planning the expedition allowance in timing can be made for climatic and seasonal differences associated with broad geographic factors, viz. latitude, longitude, altitude, within the agro-ecological region to be sampled. It is most important to ask for advice on maturity and harvest times from local agriculturists who will have intimate knowledge of crop production and statistics on regularity of yield, etc. The FAO Unit will always be pleased to help with suitable information from crop scientists outside the region or put you into touch with local experts. (Note: In certain cases it may be necessary to plan a reconnaissance trip in advance of the collecting trip, in order to increase the effectiveness of

systematic exploration and avoid relying too much on the intuitions of the individual collectors).

There will inevitably be certain areas where primitive or locally selected cultivars flower early, or late, despite the maturity times known for the general region. Such local differences make it advisable to allow a little more time than one thinks will really be necesary for the expedition.

The period when seeds are ripe is relatively short. Thus it is useful to have all seed collecting techniques well rehearsed during the expedition planning, so as to collect as many samples as possible in the field during the time available.

5. Equipment

(a) Collecting Equipment

1. Strong paper or cloth bags, size and type depending on crop.

2. Polythene or parchment bags for fruits, e.g. berries, capsules, etc. to be "cleaned" later.

3. Strong knife or secateurs for cutting bushes, vegetative organs, etc. Even though seeds are to be collected it may be necessary to look at other parts of plants in the population which are not ripe (e.g. roots of beets, etc.).

4. Seed packets (porous) of various sizes.

5. Sieve for cleaning seeds unless this is done at base.

6. Small pocket notebooks, for taking notes in the field and for listing photographs taken.

7. Collectors' field notebooks (see page).

8. Larger notebook for keeping diary of impressions, notes, etc. - to be written up each evening from the notes made in the field. This will then comprise a "journey log".

9. Large notebook for making a check list of material collected and the institutes to where it has been or will be sent.

10. Rubber bands or string for closing bags.

11. Tag labels for specimens, e.g. for particular heads.

panicles, spikes, ears.

12. Presses in which voucher specimens can be dried.

13. Absorbent paper for pressing specimens.

14. Corrugated cards or aluminium sheets to put between drying paper in the press and thus allow for adequate ventilation.

15. Drying stove and stand. (A slow-burning paraffin stove is ideal)

16. Napsacks for collecting equipment, notebooks, etc.

(b) Scientific Equipment

1. Small portable altimeter to read up to 5,000 m. (15,000 ft.).

2. Field compass.

3. Cameras, one for black and white and one for colour. 35 mm. single lens reflex with pentaprism or view-finder, close-up lenses, ultraviolet filter, green or yellow filters, flash apparatus, tripod, etc.

4. Lightmeter, if not already incorporated into camera.

5. Pocket lenses.

Optional Equipment

6. Scalpels, dissecting needles, scissors.

7. Binoculars, especially for reconnaissance trip.

8. pH meter - colorimetric type.

9. Polythene or glass specimen tubes for anthers, flowers or other materials.

10. Bottles of alcohol and acetic acid for preserving parts of plants.

11. A small battery tape recorder for dictating field notes, etc., may be a useful addition.

(c) Transport

This depends on the type of expedition. If you are going to very isolated areas (across deserts, etc.) then it may be better to have two small vehicles in the field than one. Advice should be taken from local residents and past collectors.

1. Land Rover, Jeep, etc. where possible with four-wheel drive and high/low gear change. It must be completely covered in and lockable to prevent theft of contents. Long wheel base and heavy springs desirable.

2. Roof rack with waterproof cover and ropes.

3. Good set of spare parts and tools.

4. One/two spare tyres, pump and pressure gauge.

5. Spare petrol cans.

6. Winch and chain or nylon rope.

It should be stressed here that in many regions, perhaps in most, collecting has already been done along the roads. Therefore, you should plan to visit remoter places which are accessible only on horseback, muleback and camelback, or on foot. Many of these remoter regions still contain valuable genetic resources which have disappeared from the more easily accessible places.

(d) Camping Equipment

Most collecting will be made in areas which do not have hotels or overnight accommodation. Camping equipment is therefore essential but in route planning you should note the accessibility of towns and villages for buying food, fuel and other essential supplies.

1. Light-weight tents to take two people each (with fly sheet and mosquito netting), also sealed-in groundsheet.
2. Sleeping bags with sheet bags.
3. Small camp beds or air matresses.
4. Cooking equipment and stoves.
5. Sets of plastic or aluminium cutlery.

6. Plastic cups or mugs.

7. Water container(s).

8. Electric torches and adequate supply of batteries.

9. Lamp (battery or gas).

(10. A small table and chairs may be useful if space permits).

(e) Clothing

Clothing should be suited to the region and should be lightweight wherever possible. Wash n'wear/drip dry clothes are especially useful.

1. Field shirts and trousers.

2. Sweaters, several of various thicknesses.

3. Waterproof jacket with hood.

4. Sun hat.

5. Waterproof trousers.

6. Strong leather boots, leather shoes or rubber-soled canvas shoes according to tase.

Jackets and shirts should have plenty of pockets.

(f) Medical Supplies

The amount of supplies depends on local advice on the problems likely to be encountered, and the common sense used on whether to sample foods and drinks which are totally unfamiliar.

1. Insecticide sprays.
2. Insect repellent creams.
3. Antibiotic tablets against stomach and intestinal infections (e.g. Thiozole).
4. Enterovioform, Mexaform (or alternative).
5. Antimalarial tablets, when necessary).
6. Antihistamine cream.
7. Bandages.
8. Band-aid, Elastoplast, etc.
9. Panadol or other form of pain killer.
10. Oil of cloves for toothache.
11. Water purifying tablets.
12. Portable water purifyer.

Previous injections against smallpox, typhus, yellow fever, cholera, etc., will have to be taken according to the health laws and regulations of the particular country to be visited.

B. SAMPLING

1. Generalised sampling strategy

(a) Field collections

The overall sampling strategy depends on the kind of species and especially its breeding system, amount of geneflow between populations, etc. However, this is often not known in advance. Therefore, you should try to cover the whole region by taking random population samples at wide intervals (= "coarse grid sampling"). The size of these intervals depends on the amount of environmental diversity. Thus, if an area seems to be fairly uniform in climate, soil type, farming practices and altitude the intervals can be quite large (20 - 50 kms., perhaps). However, if these factors are changing quickly (especially altitude), then frequent samplings should be made (sometimes every km. or less, or every 100 m. increase of altitude). It is difficult to be precise here, but the collector should observe the general changes in vegetation, farming practices, tribal boundaries, etc. and make his decisions accordingly.

Sometimes if time permits a two-stage collecting can be done. First carry out a "coarse grid" sampling, and then secondly, generally at a later date, follow this by

1. more intensive sampling in specific areas depending on records of past evaluation of material collected previously. This two-stage collecting is essential when searching for defined genotypes, e.g., those showing high drought resistance, disease resistance, etc.
2. special sampling of disjunct populations, peripheral populations and those occupying geographically remote and often peculiar or distinct ecological niches.

(b) Collections from markets, shops, farmers' stores, etc.

It may not always be possible to take field samples over a whole region adequately, even using a coarse grid, through lack of time. For this reason samples may sometimes need to be obtained from farmers' storage bins or from local shops and markets. With the latter it is important to ascertain how much mixing has occurred - especially if the seed is being sold for consumption rather than as seed for sowing. Many market seed

stalls offer mixtures geared to consumer demand, e.g. grain legumes with a particular cotyledon colour when split, rice caryopses translucent or not, coloured or not; and these may all represent selected seed lots with mixtures of genotypes different from those sown by the farmer. If possible the region from which the seed was obtained should always be ascertained.

2. Sampling site: This is an area in which a population sample is collected. For each sample there will be a single collection number with its set of recordings of locality and habitat data (see section E).

Size of sampling site:

(a) For an annual crop this will be the farmer's field.

(b) For a wild species this must be determined in relation to the variation observed in the population.

(c) For a weed species the same concepts apply as in (b).

It may be necessary to divide a widespread population, whether cultivated or wild, into subpopulations, each of which will then require a different collection number and set of locality and habitat records. In some cases these may be required even for individual plants.

Selection of sample site: this depends on (a) environmental diversity

(b) pattern of distribution and densities of individuals

in the populations (especially in wild and weedy forms), (c) observation of rare variants in the populations. The more variability that is seen, the closer will be the sites to be sampled.

3. Number of plants to sample

Random sampling is strongly recommended. Sampling error is minimal when a large sample is taken, but if the variation in each population is high large samples may be needed.

As a rule-of-thumb obtain the random sample by taking heads say, every three paces along a number of transects through the crop. Continue until not less than fifty and (usually) not more than one hundred heads are collected. If the plant species in question produces small pods with limited numbers of seeds in them, standardise by taking five ripe pods from each of three adjacent plants every three paces. If the species produces heads with very large numbers of seeds, e.g., sorghums or millets with 2000-4000 or more grains, only parts of each head need sampling.

In all cases seeds should be collected from plants that are disease-free or undamaged by pests.

Additional non-random samples may be added if the collector sees any particularly interesting variants, present in small numbers, which were not included in the sample by strictly random sampling.

4. Sample sizes

Each species and each area will represent a unique problem in sampling. We need to collect as much genetic variability as possible. This is generally to be done by sampling 50-100 individuals (with about 50 seeds from each) from as many sites as possible, as we have already said, ensuring that a total of from 2,500 to 5,000 seeds are included in each sample. However, where some populations seem to be extremely variable or the seeds are very small you can either (a) make very much larger samples, or (b) take several distinct samples from various parts. On the other hand in some instances it may not be possible to collect more than 100 to 1,000 seeds. Such small numbers should also be collected, or even less, if they are all that can be found.

Not all the seeds in the head or fruits may be mature, and allowance may have to be made for conditions of low seed set. Where this is suspected a larger sample than usual would be advisable.

C. SEED CLEANING AND TREATMENT

1. Dry seed and grain Crops

For many seed and grain crops seed cleaning is left until the end of the expedition. The heads are simply placed in cloth bags which allow the circulation of air. This is true for many temperate crops as well as those from arid zones. However, if the weather is wet during harvesting, the seed must be dried quickly to prevent the growth of moulds. In the tropics grain ripening time may be during a rainy spell.

As far as possible the seed sample must be cleaned and sun dried. If this is not possible use artificial heat, but never exceed 40°C. The moister the conditions of harvest the slower the drying process and the lower the drying temperature should be.

In the short time between collection and processing in the laboratory elaborate fungicide or insecticide treatments are usually not necessary beyond the light dusting treatment, after drying, with an insecticide and/or a fungicide. Check which are the preferred compounds

for the particular crop in question because some chemicals may affect seedling emergence. Never treat seed with a high moisture content with these chemicals.

2. Crops where the seeds require extraction from fruits

With several vegetables, such as tomatoes, peppers, pumpkins, gourds, squashes, aubergines, potatoes, etc., the seeds need to be extracted from the collected fruits. The number of fruits per population needed will depend on the number of seeds contained.

In these cases the fruits should be fully mature when collected. If this is not possible, the largest ones should be taken and kept in paper or cloth bags until they ripen.

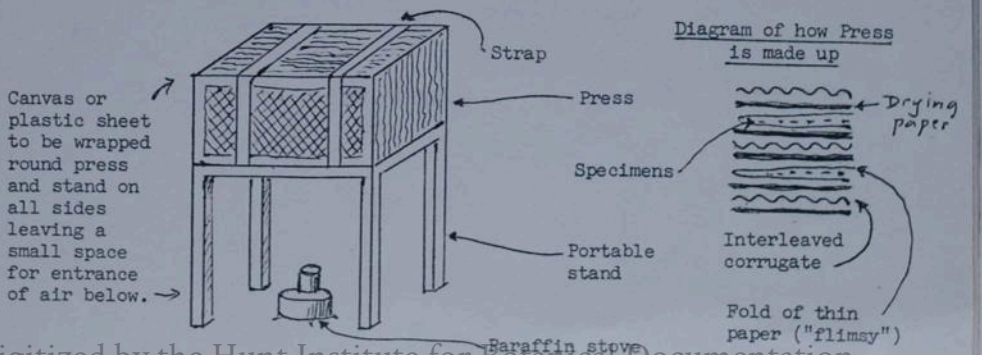
The best way for seed extraction is to spread the seeds from the fruits onto newspaper or blotting paper, after firstly squeezing them into a sieve, washing and draining off excess moisture.

Please note that the seeds of a number of trees and shrubs die quickly when dried. These are spoken of as "recalcitrant", and the fruits must be kept intact until the seeds can be extracted and sown immediately. Examples of these are coffee, cocoa, rubber, oil palm, tea, many tropical and temperate tree fruits and nuts, etc. A separate collector's manual dealing with such plants is contemplated.

D. VOUCHER SPECIMENS

Whenever possible voucher herbarium specimens should be made. Specimens of the plants are important for several reasons. In the first place they facilitate identification and may be used for taxonomic work. Secondly, they are useful for recording features of the particular seed accession, especially where there is much variation within the sample. In addition, the sample needs to be checked against the original voucher after regeneration to prevent admixture or error.

The voucher specimens are placed between drying papers in presses at the time of collection. Each evening the drying papers should be changed or the press heated gently over a non-pressure paraffin stove until the specimens are thoroughly dried. If stove heating is carried out the drying papers must be separated by cardboard or aluminium corrugates to allow for the passage of hot air from the stove, thus removing the moisture. The corrugations should be vertical and at right-angles to the long side of the press. The diagram indicates the general concept:



E. DOCUMENTION

Genetic resources functions include collection, storage, maintenance and transfer, utilisation and evaluation. At each function it is necessary to observe and record data in order to store, process and retrieve them. At the collecting stage data gathering is a very important part of the operation. The absolute minimum of information is (a) the title of the expedition, (b) an identification of the plant, (c) the collector and

collection number, (d) the date of collection, and (e) a description of the collection site so that at any time this could be relocated. Also important are information on status (wild, weed, cultivated) frequency, provenance (field, farm store, market), soil type and various other data.

Scientists working with different crops require somewhat different collection data, e.g. those collecting maize are particularly interested in the ethnic group who grew the sample, those collecting sorghum, the maturity group of the specimen, the processing and the opinions of the cultivator.

The descriptive terms used for the collection data are termed descriptors and these are graded if necessary by means of descriptor states. A certain number of collection record descriptors are common to all expeditions, viz.:

(1) Expedition and organization (name, year, etc.)

(2) Country in which the expedition is made

(3) Team, collector's name

(4) Collector's number (a single sequence is recommended for the whole expedition and any others in which the leader may be participating)

(5) Date of collection

(6) Family

(7) Latin name of genus, species, subspecies, etc.

(8) Vernacular name

(9) Precise locality (e.g. road point reference, nearest village, political division, province, department, etc.)

(10) Latitude (degrees and minutes)

(11) Longitude (" ")

(12) Altitude (in metres above sea level)

(13) Type of material (seeds, spikes or heads, vegetative storage organs, herbarium specimens, whole plants)

(14) Sample type (whether populations, pure lines or individuals sampled)

(15) Status (cultivated, weed, wild)

(16) Source, i.e. from field, market, farmer's store, etc.)

(17) If from market or store, where grown originally

(18) Habitat (mostly relevant for wild species)

(19) Principal deposits (location of material deposited in base, duplicate, active collections)

(20) Accession number of institution (where it differs from the collector's number)

(21) Photo number

NOTE: Tear-off labels at the bottom of the page with collector's name and number are to be placed with the collections.

In addition, the following descriptors may be recorded:

(22) Cultivar identification

(23) Cultural practices (irrigated, dry, etc.)

(24) Disturbance factor observation

(25) Season (winter, spring, other - e.g. rainy, if applicable and only when exact information available)

(26) Soil observations (texture, stoniness, depth, drainage)

(27) Land form observation (aspect, slope)

(28) Topography (swamp, flood plain, level, undulating, rolling, hilly, hilly dissected, steeply dissected, mountainous, other - specify)

(29) Plant community (natural vegetation; for wild species)

(30) Other crops grown in surrounding area

(31) Field observations of pest and pathogen reactions

(32) Scoring of morphological features of interest for the particular crop.

For any descriptors which are directly observable or measurable there should be designated descriptor states. When relative observations are recorded an 0-9 scale can be used (0 = zero, 1 = minimum expression - 9 = maximum expression).

Standardization of descriptors is likely to come rapidly in relation to different crops. Advice should be sought from the Genetic Resources Communication Information and Documentation System Project at the Taximetrics Laboratory, University of Colorado, Boulder, Colorado 80302, USA, (Cables GENRESYS, Boulder, USA).

Even if a herbarium specimen alone is collected, adequate documentation is essential. Proposals are being forwarded for a minimal set of descriptors in the first instance based upon herbarium label-data by a NATO Eco-Sciences Working Party. The documentation of herbarium specimens has helped to make possible the development of concepts in taxonomy, ecology and genetics.

The aim of the collector should be to gather enough information to ensure that it can be used in data recording procedures and thus provide intelligibility in genetic resources documentation.

For convenience in the field some form of collecting record book is needed. A specimen page is shown at the back of this manual. The pages can conviently be printed 17 x 25 cms. and bound in books of 100 sheets along the top margin with a spiral binder. The four pieces at the bottom should be perforated to tear off to put with the samples. Each page can be numbered consecutively.

F. STORAGE

Although storage does not of course form part of the process of field collections, all collectors should bear in mind the particular storage requirements of the plants they are collecting and the optimum amount of material required.

Table 1 sets out the suggested optimum numbers of seeds per population sample for collection and storage. It will be noted that the numbers for collections are much lower than those recommended for storage. The extra numbers must thus be made up by one multiplication cycle.

TABLE 1: Suggested optimum numbers of seeds per population sample for collection and storage

Population Type	For Collection	For Storage			
		Base Collection	Duplicate of Base Collection	Active Collection	Totals for Storage
Highly Variable (Heterogeneous)	5,000 (100 plants, 50 seeds from each)	12,000	3,000	5,000	20,000
Fairly uniform (Homogeneous)	2,500 (50 plants, 50 seeds from each)	4,000	1,000	3,000	8,000

By base collections we mean those that are to be kept under ideal storage conditions for really long periods (up to 100 years or even perhaps more in some instances).

Duplicate storage of base collections in another institute in another country or even continent is needed as an insurance to prevent total loss.

By active collections we mean those that are kept under less than ideal storage for medium to short-term periods (5-20 years) and are used for regeneration, multiplication and distribution, evaluation and documentation. Breeders' working collections are regarded as outside the framework of the conservation of genetic resources.

Since the 2,500 to 5,000 seeds recommended for a single collection are less than the 8,000 to 20,000 reasonably required for conservation some multiplication is obviously needed. In practice, it may sometimes not be possible to collect more than 200 to 1000 seeds.

It is therefore well to keep in mind that the initial samples should be multiplied up at the main introduction centre or genetic resources centre to which they are first sent.

This single multiplication cycle will have the following additional advantages:

(a) A primary simple evaluation of morphological features can be made on the plants grown.

(b) The seeds from these plants can be harvested under optimum conditions, which is not always possible under expedition conditions.

(c) Cleaning and drying can be carried out under good conditions.

(d) Seeds can be put into long-term storage (Base Collection) with the least possible delay after harvesting.

Thus the points made under (b), (c) and (d) will ensure that the seeds are in the best possible condition for long-term storage. The only disadvantage is that the material will probably not be grown under the same climatic conditions (isoclimatic conditions) to those where it was collected, but this seems to us to be far outweighed by the advantages given above.

Final note

As a very rough guide the following weights of cleaned air-dried seed lots contain the seed numbers indicated.

Cultigens	2,500	5,000	8,000	20,000
Groundnut (*Arachis*)	440g	875g	1,400g	3,500g
Soybean	215g	425g	680g	1,700g
Wheat, oats, barley, rye, rice	100g	200g	320g	800g
Sorghum	50g	100g	160g	400g
Onion	12g	25g	35g	85g
Brassica, jute (*Corchorus*)	9g	18g	28g	70g

G, Suggested Standard

COLLECTOR'S FORM
(front)

EXPEDITION/ORGANIZATION[1]/:

COUNTRY:

TEAM/COLLECTOR(S): COLLECTOR'S NUMBER:

DATE OF COLLECTION: FAMILY:

LATIN NAME:

VERNACULAR NAME:

LOCALITY[2]/:

LATITUDE: ° ' LONGITUDE: ° ' ALTITUDE: m.

MATERIAL[3]/: Seeds Spikes Vegetative Herbarium Plant

SAMPLE[3]/: Population Pure Line Individual

STATUS[3]/: Cultivated Weed Wild

SOURCE[3]/: Field Market Store Shop Garden

ORIGIN:

HABITAT[4]/:

PRINCIPAL DEPOSIT:

INSTITUTE ACCESSION NUMBER:

PHOTO NUMBER:

Collector:	Collector:	Collector:	Collector:
No:	No:	No:	No:

Suggested Standard

COLLECTOR'S FORM
(back)

CULTIVAR NAME:

CULTURAL PRACTICES [3]: Irrigated Dry

DISTURBANCE FACTOR[5]:

SEASON[3]: Winter Spring Other

SOIL OBSERVATIONS: Texture:
Stoniness:
Depth:
Drainage:

LAND FORM: Aspect:
Slope:

TOPOGRAPHY[3]: Swamp Flood Plain Level Undulating
Rolling Hilly Hilly Dissected
Steeply Dissected Mountainous

PLANT COMMUNITY[4]/ [5]:

OTHER CROPS:

PESTS/PATHOGENS[5]:

MORPHOLOGICAL FEATURES[5]:

EXPLANATORY NOTES

1/ Name, year and other identification.

2/ e.g., 10 kms. from village along specified road in particular. compass direction, administrative district, etc.

3/ Ring which applies.

4/ Mostly relevant for wild species.

5/ Only to be filled by a competent observer.

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
NORTHEASTERN REGION

U. S. National Arboretum — 399-5400
Washington, D. C. 20002

12 November 1976

Dr. David J. Rogers
Department of E. P. O. Biology
University of Colorado
Boulder, Co 80309

Dear Dave:

I was sorry that you were unable to attend the first meeting of the Committee on Germplasm Resources in Washington last week.

I was invited to present the plan for a project I have long thought ought to be done, namely an encylopedic work on the origin of cultivated plants. I don't know of such a work now in existence. I would like to see a work that would bring together the latest information on the history, origin, genetics, taxonomy, and uses of the world's major crop and food plants. The plan would be to assemble the information in an enclycopedic format, with a list of pertinent references for each entry. The information on manihot, for example, would be a capsular resume of the work you have done on the group, with some expansion of the historical section, perhaps. The work ought to be headed by a taxonomist, because keys and descriptions ought to be a part of the book. It should have a taxonomic base. I suppose onemight choose 1000 plants to begin with and work these up, using the talents of as many specialists as one good get their hands on to contribute pertinent information. I had presented my ideas earlier before some of the folks at the National Academy and that caused my participation in the recent meeting. I wasn't expecting the committee to rush out and do the job, but I was glad to be able to present the idea, since the whole thrust concerns germplasm and the preservation of germplasm. I would like for the USDA to get interested in the project and have it based here at the Arboretum. I don't have time now to chair the project, but I would like to see this project added to the things we are already doing. How does such a project strike you? Could you ever settle down to doing what would amount to a modern version of De Candolle's "Origin of Cultivated Plants" along the lines of Bailey's Cyclopedia.

One other point. I have collected a cultivated Manihot in the South on a couple of occasions. I believe, from reading your monograph, that it must be M. grahami Hook. Would you be willing to look at my material, plus some other material of Manihot that we have added to our herbarium since your monograph was published. I am working on a manual of the cultivated trees and shrubs of the southeastern states, and would like to include the manihot correctly named. I note that you annotated one sheet in our he

herbarium, collected in Tallahassee as M. tweedieana. It resembles M. grahami very closely, seems to me. Since that part of Florida is included in my survey, I would like to be sure that tweedieana is, in fact, an established cultivated plant of the area before I would include it. I could send the specimen for you to look at again.

I was sorry to have missed you here earlier this year. I was in Europe for a month. I had lost track of you, knowing that you went out to Africa at one point, and am glad to know that you are again back in Colorado.

We are doing quite all right. Jean has asthma and fights this humid climate, but otherwise we are doing fine. I have a full schedule in the herbarium and cranking out research in between bursts of other supervisory miseries.

Our best to you and Connie.

Sincerely,

Fred

Fred G. Meyer

11 Nov. 1976

to: Bock, Bonde, Lewis, Linhart, Mitton, Nichols, Pollock, Rogers, Shushan, and Webber.

from: Bye and Grant

re: [illegible] controlled environment facilities

Attatched is a draft of a committee report concerning our projected greenhouse and growth chamber facilities. We are estimating the cost to run between $130,000 and $150,000. A large portion of the cost goes for the greenhouses and growth chambers for which we are applying to NSF for grant support in their program for "Specialized Research Equipment." The thrust of the grant is for multiple users within our department and a few faculty in MCDB and Chemistry.

As part of the grant application, we must "justify" the equipment for the members of the department who will be using it the most. We also need information on the auxiliary users. We would appreciate your cooperation in sending us the following information that is required of all users of the greenhouses and growth chambers that are covered in the grant:

A. description of the research project(s) for which the equipment will be used

   1- explain the purpose and significance of the project
   2- describe the procedures for which the equipment is required and their importance for the research
   3- justify the particular model requested

   note: "detailed project descriptions" are required for major users
   "two or three pages" are adequate for auxiliary users

B. list <u>all</u> research support of the scientists who will be using the equipment. This includes unrelated projects. For each grant list:

   1- principal investigator
   2- title of the project
   3- granting agency and code number of grant
   4- total amount of support (direct costs)
   5- starting and expiration dates of the grant

C. curriculum vitae (This will be used, in part, for the requirement under the "Justification Clause" that applicants should document that they have the necessary skills to use effectively the instruments requested.)

We need this information as soon as possible because the filing deadline is 1 Dec. 1976. Please give this information to Bob Bye by Monday, 15 Nov. If you have any questions, contact Bob at 6319.

A proposed Controlled Environmental Facility for the Department of EPO Biology at the University of Colorado, Boulder.

The purpose of this brief report is to outline the needs of the EPO Biology Department with respect to controlled environment space for plant ecology experimentation, evolutionary studies, limnological culturing and other related research programs carried out by the faculty and graduate students.

Working from the assumption that the new facility will be above the Ramaley auditorium, we project that the following facilities would be needed:

1- a head-house for potting plants, steaming soil, labeling specimens, tissue drying, routine examinations, weighing and related activities. This space needs to be approximately 400 sq. ft. to include room for steamers, soil bins, potting material, fertilizers, and general greenhouse equipment storage. Equipment needed would include 2 stereo dissecting scopes, 1 heavy, 1 medium, and 1 small range scales, a cabinent style drying oven, and assorted pots, trowels, shovels, and small tools.

2- three (3) greenhouse rooms of approximately 300 sq. ft. each. These rooms would be maintained at three substantially different temperature regimes (cold - moderate - hot) to permit comparative studies over three environmental regimes.

3- six (6) additional environmental chambers to bring to a total of eight (8) functional chambers within the department. Half of the chambers would be walk in type models while the other half would be standing or lean-in models. The smaller chambers can be used for periodic alteration of light and temperature factors for individual experiments on small plants and other organisms (under 1½ ft. tall). The walk-in models could be

used for taller plants in the following manner: 3 chambers would be regulated for short, nuetral, and long photoperiods at constant temperature, while the other chamber could be manipulated for individual programs as required. Control of relative humidity may be needed in one or two of the smaller chambers, depending on research needs.

As a working plan, we suggest that a two story arrangement be considered where the upper floor consists of the three contiguous glass houses which would occupy approximately 1200 sq. ft. including an access ramp, walk spaces, maintenance areas, etc. The lower floor could contain the head house area and the growth chambers of the department. This setup would serve dual purpose of elevating the glass houses to receive maximum exposure and providing interior room for controlled environment chambers and work space. Thus the total surface area needed on the roof would be about 1200 sq. ft.

Our initial cost projections for these facilities reflects commercial estimates based on rough specifications.

1- headhouse interior outfitting with bins, scopes, and hand tools → $ 9,500.

2- 2 Lord & Burnham glass houses with cooling, heating, shades, benches installed on the roof (@ $14,000) 42,000.

3- auxilliary cooling system for "cold" house 5,000.

4- 6 environment chambers: 3 walk-in (ER-6XL @$ 5,500) and 3 standing (E2-66 @ $4,900)(Calumet Sci. Inc.) 31,200

research equipment costs (conservative estimate) $ 87,700.00

A grant proposal for funding the equipment will be presented to NSF in December of 1976 under the program for "Specialized

Research Equipment" for multi-users. This grant supports the initial cost of the equipment needed to serve a group of investigators within a department or institution. A substantial contribution from the University is needed in order to insure full consideration of the application.

NSF has indicated that the contribution from the University in terms of commitment and interest is important. We feel that the following points will demonstrate sufficient institutional commitment and interest.

1- structural modification and enclosure of Ramaley site for controlled environment facilities $ 15,000.

2- physical plant modification - trunk or feeder lines for electricity, water, and heat.

3- maintenance of electric, water, and heat lines.

4- Service contracts on environmental chambers (Calumet can authorize the local physical plant department to service and repair facilities when needed.)

5- employees: a) one (1) full time staff member to maintain and coordinate activity in research and teaching facilities at Ramaley, Hale, and Macky. b) one (1) full time student employee assistant (to be divided as a few part-time positions)

6- faculty with research oriented programs. The recent increase of botanists and organismic biologists on the faculty is a strong indication of the University of Colorado's interest in supporting the active use of the controlled environment facilities. The addition of Bye, Grant, Lewis, Linnart, Mitton, and Pollock increases substantially the research faculty who need these facilities in order to continue their research programs. The facilities will also benefit

other members of the faculty as well. This point of justification is documented below.

VALUE OF THE PROPCSED FACILITY TO THE THE University of Colorado.

The number of students and faculty in EPO Biology has increased rapidly in recent years. At present, the greenhouses and growth chambers available to students and faculty are limited and outdated. Only four small chambers of questionable vintage and one walk-in chamber are in operation. Greenhouses made of surplus material are located at Hale and Macky building sites. The space is restricted to 1560 sq. ft. and is proportioned as follows:

1- general plant material for demonstration and experimental reservoir	710 sq. ft.
2- faculty reserch	530 sq. ft.
3- student research and teaching labs	520 sq. ft.

The proposed research facility would free space in the Hale and Macky for more undergraduate and graduate research lab exercises. This space would be used in experiments in ecology, systematics, and evolution for lab courses that are being revised and updated by committees on botany and ecology cirricula. Efforts will be made to upgrade demonstration materials and general research stock which will benefit the EPOB courses as well as be useful to other members and students of such departments as MCD Biology, Environmental Studies and Anthropology. Graduate students will have more opportunity for experimental studies. The new facilities be used by graduate students in advance course work and their individual dissertation research.

RESEARCH

The new research facilities will be open to all CU researchers who are interested in biological and ecological research. A steering committee within the Department of EPO Biology will be in charge of allocating and supervising the space and environmental parameters so that the facilities will be used in an efficient and compatible manner. They will be responsible for screening applications for projects within the facilities to insure that no harm will come to other studies underway or proposed and that no projects will endanger the life of humans or organisms in the area or damage the the facilities.

Outlined below are faculty members primarily interested in using these facilities:

BOCK, Jane	Plant ecology, plant taxonomy
BONDE, Erik	ecophysiology of plants
BYE, Robert	ethnoecology, plant ecology plant systematics & Evolution (hybridization, domestication, medicinal plants)
GRANT, Michael	ecological genetics (Chara, aspens)
LEWIS, William	limnology, phytoplankton
LINHART, Yan	ecological genetics (pines)
MITTON, Jeff	ecological genetics (aspens, pines)
POLLOCK, Bruce	ecophysiology, seed viability
WEBBER, Patrick	ecology of artic and alpine plants
SHUSHAN, Sam	ecology of lichens & fungi
ROGERS, David	plant taxonomy, economic botany

Members of other departments at CU have indicated the need to use such a research facility. Their participation in the activities of this controlled environment facility are encouraged.

(MCDB, Chem)

Dr. David Rogers
Hale 114

EPOB Faculty Meeting November 10, 1976

Present: M. Bekoff, Bernstein, Bonde, Busbnell, Bya, Carey, Crumpacker, Cruz, Grant, Gregg, Hall, Linhart, Mitton, C. Norris, D. Norris, Pollock, Segal, Shulls, Shushan, Smith, Snyder, Webber, Williams, Winston, Duke (student representative).

Absent: A. Bekoff, Lewis, Marr, Nichols, Rogers, Windell; on leave C. Bock, J. Bock, Jones, Wilson.

1. Announcements

a. The faculty were reminded that this week's seminar is on Thursday rather than Friday.

b. Shulls commented on the concern of AAUP about Public Relations in the University.

c. Graduate Faculty meeting Monday 11-15-76 in Dunne 030.

d. Cruz announced that the Vertebrate Palaeontology Society will meet on campus beginning 11-11-76. A schedule is posted outside of Ramaley 111.

e. Crumpacker reminded the faculty of the special departmental meeting to consider certain of the regular faculty for reappointments and promotions. The meeting will be Monday 11-22-76 in Hale 302. The time is re-scheduled from 5-7 to 4-6 p.m. (unless a significant number of faculty absent today cannot make it at 4 p.m.).

2. Core Curriculum

Faculty members assigned the task of defending various approaches to a core curriculum presented their cases.

a. D. Norris summarized Windell's case for an unstructured curriculum.

b. Gregg presented the arguments for a structured program and Winston presented the arguments for a middle-of-the road program.

c. Hall presented his views on possible structures for General Biology. An extended summary of his views will be presented to the faculty next week.

d. M. Bekoff moved that the department require 35 hours for a major in EPOB. C. Norris seconded the motion. This is in addition to the departmental requirements for outside courses which include:

Chem	9-10	
Physics	8-10	
Math	8-10	
plus the A & S college requirements		
Soc. Sci	12	
Hum.	12	
Language	12	
The total credit hours would then be:		
61	to 66	
35	35	
96	to 101	
28	to 23	Electives
124	124	

e. Bushnell moved to table motion, Shulls seconded.
vote: 5 yes; 14 no; 2 abstentions
motion to table failed.

f. Vote to call question
17 yes; 3 no; 1 abstentions

g. Vote on M. Bakoff's motion
15 yes; 4 no; 3 abstentions
motion carried.

h. Crumpacker re-opened floor for discussion of core curriculum.

i. Carey moved to not accept Windell's proposal. Bonde seconded.
Vote: 21 yes; 0 no; 0 abstentions

j. Linbart moved to have two tracts in EPOB: Professional vs Liberal Arts. Bernstein seconded. Action on Linhart's motion was postponed by Crumpacker due to lack of time.

3. Bushnell (for Rogers) announced a Taxonomy curriculum meeting. He requested that persons who include any aspects of taxonomy in their teaching let him know of that fact and the extent of the inclusion.

Respectfully submitted

C.K. Snyder

EPOB Faculty Meeting - November 17, 1976

Present: A. Bekoff, M. Bekoff, Bernstein, Bonde, Bye, Carey, Crumpacker, Cruz, Grant, Gregg, Hall, Linhart, Nichols, C. Norris, D. Norris, Segal, Shulls, Shushan, Smith, Snyder, Williams, Windell, Duke (Graduate Student representative).

Absent: Bushnell, Lewis, Marr, Mitton, Pollock, Rogers, Webber, Winston; on leave: C. Bock, J. Bock, R. Jones, J. Wilson.

1. Announcements:

   a. J. Windell asked interested persons to help him haul 3 tanks from Army Surplus (approx. cost $100).
   b. M. Bekoff announced the final seminar for this year - Friday. There will also be a graduate student defense Friday at noon. A colloquium by Prof. G. Pasteur from France, "A Genetic Approach to Phylogeny," will be held next Wednesday at noon.
   c. Crumpacker reminded everyone of the meeting next Monday (4-6 pm) for discussing regular faculty personnel actions and the suggested meetings on Tuesday for subsequent actions (dates and times have been announced in the memo sent out on 11-15-76).
   d. General Biology - Crumpacker requested a meeting be held to discuss and take action on the General Biology Program (11-29-76; 4-6 pm) in Ramaley 216.
   e. Crumpacker raised the question of whether the student representative should attend all of the meeting on discussion of promotions and tenure. R. Duke argued for his being able to attend the entire meeting to present student views and to answer questions. Crumpacker called for a faculty vote to allow R. Duke to attend the entire meeting on discussion of promotions and tenure. The results were: 5 yes; 8 no; 6 Abst. Since the motion failed, the student representative (R. Duke) may attend the first part of the meeting to provide graduate student imput, but will be asked to leave before the main discussion begins.

2. Summer School.

   D. Norris announced that summer school information should be in by 11-25-76. Anyone wishing to teach should contact him and provide the appropriate information by this Friday.

3. Special-Title Faculty Considerations.

   a. Crumpacker presented the list of names for Adjoint reappointments:

Donald Horak	Prof. Adjoint
Philip Weiser*	Prof. Adjoint
Beatrice Willard	Prof. Adjoint

*Action to reappoint not officially needed until fall, 1977.

No action was taken on Weiser and Willard since their sponsors (Winston and Marr, respectively) were not in attendance.

b. Windell presented the case for Horak and recommended that Horak be reappointed. Seconded by O. Williams.

c. Crumpacker presented the names for new Adjoint appointments:

J.P. Bradbury	Assistant Prof. Adjoint
Robert McClean	Professor Adjoint

Bradbury was not considered since his sponsor, Lewis, was not present to present the case for him.

O. Williams presented the case for R. McClean and recommended that he be given an appointment.

d. Votes on Horak and McClean were as follows:
Horak 19 yes; 1 no; 0 abstentions
McClean 20 yes; 0 no; 0 abstentions

e. Crumpacker presented a case for appointment of Gerald McClearn as Professor of EPO Biology for four years effective now. This would be a joint appointment, without extension of tenure. Crumpacker recommended for appointment of McClearn. The vote was: 14 yes; 5 no; 2 abstentions.

f. To recap: D. Horak will be recommended for reappointment and R. McClean and G. McClearn will be recommended for new appointments.

4. M. Bekoff moved that the department jointly (with Psychology and IBG) sponsor G. McClearn for one of next year's University Faculty Research Lectureships. Seconded by Grant. Crumpacker reviewed some of McClearn's qualifications for this award. The vote was: 15 yes; 1 no; 1 abstention. Hence, the department will jointly sponsor McClearn.

5. Shushan moved to appoint S. Bowen, R. Epp and J. Flock as new Research Associates - Linhart seconded. Crumpacker asked if the department wished to waive, by a 2/3 vote, its responsibility for a secret vote on these three recommendations. The vote was: 17 yes; 0 no; 0 abstentions.

The votes by show of hands on these Research Associates were:

Stephen Bowen	17 yes; 0 no; 0 abstentions
Robert Epp	17 yes; 0 no; 0 abstentions
JoAnn Flock	17 yes; 0 no; 0 abstentions

Respectfully submitted,

G.K. Snyder

BPGS Faculty Meeting November 22, 1976

Present: A. Bekoff, M. Bekoff, Bonde, Bushnell, Bye, Carey, Crumpacker, Cruz, Grant, Gregg, Lewis, Linhart, Marr, Mitton, Nichols, C. Norris, D. Norris, Segal, Shulls, Shushan, Smith, Snyder, Wabber, Windell, Winston, Ron Duke (graduate student representative).

Absent: Barnstein, Hall, Pollock, Rogers, Williams; on leave: C. Bock, J. Bock, E. Jonas, Wilson.

1. Announcements.

   a. M. Bekoff announced Dr. G. Pasteur's seminar on Wednesday at noon in Biosci. 040.
   b. Crumpacker reminded the faculty of the Associate and Full Professor meeting on Tuesday to discuss and vote on Linhart's promotion and tenure award. The time has been changed from 12 noon - 1 p.m. to 12:30 p.m. - 1:30 p.m.

2. Regular Faculty Personnel Decisions.

   a. Crumpacker discussed some general facts about personnel decisions. He stressed the "positive" nature of departmental action, be it pro or con. He discussed some new directives as set forth by Chancellor Mary Berry.
   b. Graduate student opinions of the candidate were summarized by Ron Duke.
   c. Greg Snyder's credentials for reappointment to a final 2-year term effective fall of 1978 were presented by his Evaluation Committee: D. Norris (Chr.), Cruz and Segal. The Committee recommended reappointment by a vote of 3 yes; 0 no. After additional discussion, Snyder was recommended for reappointment by a vote of 24 yes; 0 no; 0 absentions (absentee ballots of C. Bock and J. Bock included).
   d. Yan Linhart's credentials for promotion to Associate Professor and award of tenure were presented by his Eval. Comm.: Crumpacker (Chr.), J. Bushnell and J. Marr. Linhart is presently serving his 6th year of the tenure track. The committee unanimously recommended in favor of Linhart's promotion and tenure award. Following discussion, the case was rested until tomorrow's meeting of Associate and Full Professors.

   e. Mitton suggested a procedural change for accumulation of material for faculty personnel files. Particularly, he noted that a preponderance of letters of support have been coming from persons closely related professionally to the respective candidates. Since this undoubtedly introduces bias, letters from prominant persons not associated with the individual should be especially solicited.

   f. Harvey Nichols's credentials for promotion to Full Professor were presented by his Evaluation Committee: Bonde (Chr.), Bushnell and Smith. Bonde noted that several letters of support are still outstanding (no fault of Nichols). Therefore, the Committee recommended delaying final consideration until all letters have arrived.

g. C. Bock's credentials for promotion to Full Professor were presented by his Evaluation Committee: Smith (Chr.) Gregg and Williams. The Committee recommended unanimously in favor of C. Bock's promotion.

h. D. Norris's credentials for promotion to Full Professor were presented by his Evaluation Committee: Winston (Chr.), C. Norris and Smith. The Committee recommended unanimously in favor of D. Norris's promotion.

i. R. Jones's credentials for promotion to Full Professor were presented by his Evaluation Committee: Windell (Chr.), Smith and Winston. The Committee recommended unanimously in favor of R. Jones's promotion.

j. Crumpacker presented additional information regarding the candidates's files including such things as their respective times-in-grade as Associate Professors.

k. Smith presented a very thorough and detailed comparative analysis of the credentials of C. Bock, R. Jones, Nichols, and D. Norris. Discussion ensued. Carey asked whether Smith's set of criteria might also be applied to candidates for promotion to Associate Professor. Smith indicated that he would prefer to take this up as a separate consideration.

Shushan questioned the "service" part of Smith's analysis since faculty member's do not have full control over their committee assignments, etc., and some may have been left off committees for reasons which have nothing to do with their desires or merit.

1. Crumpacker suggested that continued discussion of promotion to Full Professor be delayed until Mon., Dec. 6 when more outside letters of reference would be available on certain candidates and that the action meeting of Full Professors tentatively scheduled for 4:30-6:30 p.m. tomorrow be cancelled.

Respectfully submitted

G. K. Snyder

EPOB meeting of Associate and Full Professors - Nov. 23, 1976

Present: Bonde, Bushnell, Crumpacker, Gregg, Harr, Nichols, C. Norris, D. Norris, Rogers, Segal, Shulls, Shushan, Smith, Webber, Williams, Winston.

Absent: Windell; on leave: C. Bock, J. Bock, Jones, Wilson

1. Crumpacker appointed Nichols as secretary for the meeting.

2. Announcements:

   A. Crumpacker reminded those present of two upcoming meetings:

      Mon., Nov. 29, 4-6 p.m., Hale 302 - General Biology curriculum
      Mon., Dec. 6, 4-6 p.m., Ramsley 216 - Continuation of discussion on promotion to Full Professor, and possible action.

   B. Shushan requested that, beginning as soon as feasible, no lectures or labs be scheduled during the faculty meeting time from 12-2 p.m. on Wednesdays.

3. Yan Linhart's promotion to Associate Professor and award of tenure.

   A. As chairman of Linhart's Evaluation Committee, Crumpacker provided additional information on Linhart's credentials. Discussion ensued.

   B. The vote to recommend Linhart for promotion and tenure was: 17 yes; 0 no; 1 abstention (absentee ballots of C. Bock, J. Bock and Windell included).

Respectfully submitted,

Harvey Nichols

EPOB Faculty Meeting

November 29, 1976

Present: A. Bekoff, M. Bekoff, Bonde, Bye, Carey, Crumpacker, Cruz, Grant, Gregg, Hall, Lewis, Linhart, Marr, Mitton, C. Norris, D. Norris, Pollock, Rogers, Segal, Shulls, Shushan, Smith, Snyder, Webber, Williams, Windell, Winston, Duke (Graduate Student Representative)

Absent: Bernstein, Bushnell, Nichols; on leave: C. Bock, J. Bock, Jones Wilson.

1. Announcements:

a. Crumpacker announced that the greenhouse proposal went out last Wednesday to NSF.

b. Crumpacker announced that Phil Weiser has resigned his appointment in this department. This was a unilateral action on his part.

c. Crumpacker announced that the Science Librarian, Dick Morehouse, has informed EPOB that new issues of certain journals will no longer be made available to EPO Biology prior to being placed in general circulation.

d. Crumpacker announced that summer school positions are available for: 2nd semester General Biology, Principles of Ecology, Animal Ecology, and Genetics. Please give him your suggestions.

e. Bekoff announced a talk in Psychology by Dr. Peter Marler next Monday that will conflict with the next EPOB meeting. Crumpacker urged those who felt they must attend to come to the meeting by 5 p.m.

f. Winston announced that there is a new Animal Caretaker (R. Gage). If you want animal care help see Winston.

g. Crumpacker announced that Continuing Education has requested that Miriam Denham be appointed to teach EPOB 102-3 (no lab) in the Mini-College during spring semester of 1977. D. Norris reviewed the student comments from her last teaching job in Continuing Education. All of these comments were favorable and Hall said that she had been consulting with him about the new structure of General Biology. C. Norris moved that Denham be reappointed for this purpose; O. Williams seconded. The vote for reappointment was 24 yes; 0 no; 0 abstentions.

h. Crumpacker announced that the department should consider a Christmas party. It was decided that the party should be held in Ramaley from 3-5 p.m. on Friday, December 10. Winston moved that alcohol be excluded. No second. Crumpacker appointed a committee of C. Norris (Chr.) and A. Bekoff to represent the faculty in planning the party with the staff.

November 29, 1976

2. Replacement for Bob Gregg who will retire in May, 1977.

   a. Dean Briggs had given permission to advertise. The Dean pointed out that the Department has permission at this point in time to hire only one person.
   b. Crumpacker opened floor for discussion on priorities for filling this position. Bekoff suggested that the General Biology Coordinator be number 1 priority. Shushan suggested that the most important priority should be replacing R. Gregg. Winston and C. Norris supported Shushan's statement. Cruz asked whether Gregg's retirement would free enough money to fill two positions. Crumpacker suggested that perhaps the best approach would be to advertise with the assumption that both positions will be granted.
   c. Nature of the replacement for Bob Gregg.
      Mitton suggested that an Entomologist would play a more vital vole in the department than a Phycologist. Crumpacker noted that the Phycologist situation was not a replacement and, therefore, somewhat different. Shushan moved to replace Bob Gregg with an Entomologist. Winston seconded. The vote was: 24 yes; 0 No; 0 Abstentions. Shulls suggested that Crumpacker appoint a committee to write up a job description for advertising the position which could be approved by the faculty by a mail ballott. Crumpacker then appointed such a committee as follows: Winston (Chr.), Bernstein, Gregg and Mitton. Crumpacker asked for a report from the Committee by no later than tomorrow afternoon.

3. General Biology Plan.
   a. Crumpacker asked Hall to review his proposal
   b. Hall's basic plan would call for three introductory courses.
      i. An introductory course for disadvantaged students. 3 lects. and 2 rec., no lab. This course would satisfy the A&S requirement but not the EPOB raquirements for majors or prerequisites for advanced courses. The course will be 3 credits and require 3-4 faculty + M. Jones and 2½ TA's (approx. 100 to 150 students).

      ii. An introductory course for non-majors and non-allied health students. This course will have 3 lectures, no labs, and will satisfy the A&S requirements but not EPOB major requirements or prerequisites for advanced EPOB courses. The course will be 3 credits and require 8 faculty and 2 TA's. (approx. 300-400 students).

      iii. An introductory course for EPOB majors, allied health, and others desiring a lab course and/or entrance to other EPOB courses. 3 lectures and 1 3 hr - lab. This course will satisfy the A&S requirements, the EPOB major, and the EPOB prerequisites. It will be 4 credits and require 8 fac.. and 11-13 TA's (approx 600 students).
   c. Discussion followed.
   d. Bonde moved to continue discussion on the General Biology curriculum next Monday in place of the anticipated discussion on promotions to Full Professor and to include course content in the discussion. Shushan seconded. The vote was: 24 yes; 0 no; 0 abstentions.

Respectfully submitted,

C. K. Snyder

EPOB Faculty Meeting - December 1, 1976

Present: A. Bekoff, M. Bekoff, Bernstein, Bye, Carey, Crumpacker, Cruz, Grant, Gregg, Linhart, Mitton, C. Norris, D. Norris, Rogers, Segal, Shulls, Shushan, Smith, Snyder, Williams.

Absent: Bonde, Bushnell, Hall, Lewis, Marr, Nichols, Pollock, Webber, Windell, Winston, Duke (Graduate Student representative); on leave: C. Bock, J. Bock, Jones, J. Wilson.

1. Announcements

   a. Crumpacker reminded the faculty of the meeting on General Biology curriculum next Monday 4-6 in Ramaley 216. A detailed description of the proposed course content will be forthcoming from Hall. Attention should also be given to the Lewis proposal before coming to the meeting.

   b. D. Norris indicated that faculty should have T.A. requests into him immediately, as request analysis is over and he will make assignments next week.

2. Discussion of the nature of the ad for an Entomologist to be sent to Science and elsewhere.

   a. Crumpacker announced that a straw vote by mail was 16 in favor of the ad as sent out to the faculty and 4 against.

   b. Gregg suggested the following changes in the ad:

      i. Insert "General" before Entomology, so that the teaching requirement would be in General Entomology.

      ii. Research interests should be primarily in Insect Systematics and may include such related subjects as Ecology, Morphology and Evolution of insects.

   c. Gregg moved to insert the word "General" before Entomology. Linhart seconded.

      Vote: 19 yes; 0 no; 0 abstentions

   d. Gregg moved to change research interests to read "research interests should be primarily in Insect Systematics and may include such related subjects as Ecology, Morphology and Evolution of insects." O. Williams seconded.

   e. Hobart Smith suggested an alternative "Research interests must lie in systematics...."

   f. Shushan moved the following amendment: "Teaching responsibilities will include General Entomology, Insect Taxonomy, periodic participation in General Biology, and periodic offering of an advanced course in the area of specialty", and deletion of sentence on research responsibilities. Seconded by O. Williams.

g. Linhart called for question on Shushan amendment. M. Bekoff seconded.
Vote on question: 18 yes; 0 no; 0 abstentions
Vote on Shushan amendment: 2 yes; 14 no; 2 abstentions.
Amendment failed.

h. Bekoff called question on Gregg motion. Grant seconded.
Vote on question: 18 yes; 0 no; 0 abstentions
Vote on motion: 7 yes; 10 no; 1 abstention

i. Mitton moved to accept the ad as is, except with inclusion of the successful Gregg motion to insert "General" before Entomology and with Systematics listed first in the enumeration of research interests.
Bekoff seconded.

j. Williams amended. (Shushan seconded) to insert ... "and Insect Taxonomy" preceding "General Biology" in the description of teaching responsibilities.
Bekoff called question. Linhart seconded.
Vote on question: 15 yes; 2 no; 0 abstentions
Vote on Williams amendment: 8 yes; 9 no; 0 abstentions
Motion failed.

k. C. Norris amended. (O. Williams seconded) to insert ..."periodically presenting a course in Insect Taxonomy."
Bekoff called question. Grant seconded.
Vote on Question: 16 yes; 1 no; 0 abstentions
Vote on amendment: 4 yes: 11 no; 1 abstention
Amendment failed.

l. Bekoff called question on Mitton amendment. Grant seconded.

m. Shushan moved an amendment. (O. Williams seconded) to replace phrase after "General Biology" with "and an advanced level course in Insect Taxonomy."
Vote: 8 yes; 7 no; 1 abstention
Amendment passed.

n. Gregg moved to amend Mitton motion with "must lie" instead of "may lie", in regard to listing of research interests.
C. Norris called question. Linhart seconded.
Vote on question: 15 yes; 0 no; 1 abstention
Vote on amendment: 6 yes; 9 no; 0 abstentions
Amendment failed.

o. Vote on Mitton motion: 13 yes; 2 no; 0 abstentions
Motion carried.

Respectfully submitted,

G.K. Snyder

EPOB Faculty Meeting December 6, 1976

Present: A. Bekoff, M. Bekoff, Bernstein, Bonde, Bye, Carey, Crumpacker, Cruz, Grant, Hall, Jones, Lewis, Linhart, Marr, Mitton, C. Norris, D. Norris, Pollock, Rogers, Segal, Shulls, Shushan, Smith, Snyder, Williams, Windell, Winston, Duke (Graduate Student Representative). Welcome back Dick Jones!

Absent: Bushnell, Gregg, Nichols, Webber; on leave: C. Bock, J. Bock, J. Wilson.

1. Crumpacker announced that he had requested a meeting of the General Biology Coordinator Search Committee as soon as possible in order to provide the Department with a progress report. Cruz replied that the meeting was scheduled for Wed., Dec. 8.

2. Crumpacker announced that the next faculty meeting could be Wed., Dec. 8 from 12-1 p.m. in Hale 302 if today's action on General Biology is not completed.

3. Appointments and Reappointments of Special-Title Faculty.

   a. Peter Bryant - Crumpacker asked if the Department wished to reappoint Peter Bryant as a Visiting Lecturer for the Spring Semester, 1977. Winston so moved, Marr seconded.

   b. J. Platt Bradbury - Lewis presented credentials and justifications for Bradbury's proposed appointment as an Assistant Professor Adjoint.

   c. Beatrice Willard - Marr presented Willard's credentials and the justifications for her proposed reappointment as a Professor Adjoint.

The votes were as follows:

	Yes	No	Abstentions
Bryant*	22	0	0
Willard	21	1	0
Bradbury	22	0	0

All three appointments were, therefore approved.

*Prior to this vote the faculty agreed to offer the reappointment to Bryant, if the vote were positive, and then let him decide if he wanted to accept, since a similar type of appointment is apparently being considered for him in the School of Business.

December 6, 1976

4. Structure and Content of General Biology.

Crumpacker briefly reviewed the three existing plans (Hall, Lewis, and Smith) and suggested the following agenda for discussion:

1. Do we continue to offer a program for EOP and other educationally disadvantaged students?
2. How many credits do we require of our majors in the introductory sequence alternatives?
   a. 4 credits/semester x 2 semesters = 8 cr.
   b. 5 credits/semester (3 lect + 2 lab) x 2 semester = 10 cr.
   c. 4 credits/semester x 3 semester (3rd semester would be course like present 202) = 12 cr.

a. Linhart moved that we continue to offer a program for disadvantaged students Winston seconded. Vote: 22 yes; 0 no; 0 abstentions

b. Linhart moved that the Department offer a separate course sequence for educationally disadvantaged students which would involve 3 lectures and 2 recitations for 3 credits per semester in a two-semester sequence. The course would satisfy one year of the natural science requirement of the College of A&S. The course will not satisfy prerequsites for EPOB courses, but may count as credits in EPOB above the 35 credit hours minimum. (seconded by Winston).

c. Marr moved to amend the motion to have a lab with the course. Shushan seconded.

Vote on amendment: 2 yes; 15 no; 3 abstentions
Vote on motion: 21 yes; 1 no; 0 abstentions

Hence, the amendment failed and the motion passed.

d. Mitton moved to accept the Lewis curriculum plan for General Biology: Biology 101,102 (lecture courses only) with separate 110, 111 laboratory courses for majors and others desiring them. 101, 102 and 110, 111 would be required for majors and as prerequisites for advanced EPOB courses, seconded by Bekoff.

Vote: 14 yes; 10 no; 0 abstentions
Motion passed.

e. Windell moved that 101, 102 be 3 credits each and 110, 111 be 1 credit each. Seconded by Grant.

f. Lewis asked for more information on a suggestion from Snyder that 110, 111 be combined into a 1-semester lab course (e.g., with two 3-hour labs per week) and offered each semester. Considerable discussion ensued without any amendments being offered to the Windell motion.

5. Crumpacker called a meeting on Wed., Dec. 8 from 12 to 1 p.m. in Hale 302 to continue and hopefully conclude the discussion on the General Biology curriculum. Items remaining include the Windell motion and the above-mentioned Snyder plan, the course content, and whether or not to drop 202 completely from the curriculum.

Respectfully submitted,

G. K. Snyder

No Executive Committee Meeting held on Monday, Nov. 1.

Executive Committee Meeting 11/10/76

Present: M. Bekoff, Bouda, Crumpacker, Duke (Grad. student representative), D. Norris, Smith.

Absent: None

1. Departmental equipment request for 1976-77 was discussed. The original prioritized request was made during the previous academic year. It totalled $25,300. Last month we received $4,922 in code 8 funds as a response to this request. After discussion, a final list was prepared for spending this allotment, with priorities as follows:

1)	1 steel herbarium case (Plant Taxonomy teaching)	$ 400
2)	4 binocular dissecting scopes (Plant Morph., Invertebrate Zool., and Entom. teaching)	$ 2,252
3)	2 centrifuges, clinical table (Gen. Biol. and Animal Physiol. teaching)	$ 500
4)	2 waterbaths serological (Gen. Biol. & Animal Physiol. teaching)	$ 500
5)	1 Spectronic 20 (Plant Physiology teaching)	$ 620
6)	1 specimen case (Ornithology and Mammalogy teaching)	$ 420
		$ 4,892
	5% inflation over 6 months	$ 235
		$ 4,927

Crumpacker will contact appropriate faculty members concerning this equipment to see if it can still be purchased for the above amounts which were estimated last May.

2. There is $560 left of the Graduate School funds (Biomedical Sciences Support Grant) appropriated for the scintillation counter earlier this year. Crumpacker asked D. Norris to see if all purchases pertinent to the scintillation counter had been made. If they have, then this balance can presumably be spent for other biomedically related equipment.

3. Crumpacker reported on the Department's attempt to obtain a controlled environment complex for botanical research. Bye and Grant are preparing a request to NSF for this set of equipment and facilities. It will include 3 greenhouses and 6 growth chambers, with the preferred site being on top of the Ramaley auditorium. The preliminary cost estimate is about $110,000. The University will be asked to contribute at least $15,000 of the $110,000 plus a new full-time staff member to care for the facility. This controlled environment complex would also be a benefit to graduate training and would free considerable space in existing greenhouses for use in undergraduate teaching. Dean Briggs has given his approval for the Department to proceed in drawing up the request, but assurance of the University funds has not yet been obtained. The NSF deadline is December 1, 1976.

Respectfully submitted

Marc Bekoff

Dr. David Rogers
Hale 114

Nov. 9, 1976
Box 42 RD1
New Hope, Pa 18938

Dear Dr. Rogers,

It's been quite some time since I've spoken with you; I've since moved to Pennsylvania which is going to make my immediate future plans more difficult.

You may recall my visit with you during the summer when I related to you my plans to attempt graduate school in agriculture, and asked your advice on possible programs and schools. Your advice has been valuable and still forms the basis of my thoughts on the matter. By now my school choices have become: Penn State, Corvallis, Gainesville, Texas A&M, Madison, CSU, Davis and Cornell (not necessarily in that order). My field still remains Agronomy, more specifically Crop Science, and I am still very interested in the problems of cropping systems. Lately I've been finding that there may be more opportunity in the field of international agriculture, but this will require more research.

I expect to be sending in applications sometime around the first of the year and am wondering if you would not object to writing letters of recommendation for me? I was a member of the 505 class in Fall 1974, and worked on the Kapa data bank with Steve. (Sorry, can't remember his last name) I then

and worked with the ECOMAR data bank with, Buckner, Boyce and Olmsted. I specifically worked on the sub-bank dealing with Sarcobatus vermiculatus stands. Lois Abbot may recall some specifics.

In the mean time I'm going to have to work and I've been applying to universities and pharmaceutical companies for a job as a lab technician. Hopefully I won't be pushing my luck by asking if I may use your name when asked for a professional reference. I've also asked Dr. Marr and Dr. Quick of the Geology Department for similar labors.

I'll be in touch; hopefully you don't object. Thanks again.

Gerhard Weber

UNIVERSITY OF COLORADO AT BOULDER

BOULDER, COLORADO 80309

DEPARTMENT OF PHYSICAL PLANT

November 2, 1976

To: Prof. Rogers
From: Gary McAndrew

Dave -
I think we can cancel the
weatherbeat order!
If repairs are not satisfactory,
please let me know.
Regards, Gary

MEMORANDUM

TO: Gary Andrew

FROM: Spec Lefler

SUBJECT: Hale Science Roof Leaks and Memorandum from Dr. Rogers dated October 27, 1976

Repairing of the roof at Hale Science Building has been on our request list for a number of years, along with Engineering Center and other buildings. This year, as you are aware, we were successful in getting the money from the State to handle part of our roofing repairs. (Hopefully, more will be coming.)

We have notified Drs. Crumpacker and Rogers that the roof repair at Hale Science Building was included in this year's list of approved projects, that the requests for bids have been made, and bids are expected in approximately two weeks. If bids are within budget, work will proceed as weather permits.

H. B. L.

HBL/gkb

cc: Mike Jancic

Attachment

UNIVERSITY OF COLORADO
AT
BOULDER, COLORADO 80309

Department of Environmental,
Population and Organismic Biology

On 76-77 C.M. approved list. Bid opening will be 16th or 23rd of November, GKH

RECEIVED '76 OCT 29 PM 3:01 ... DEPT.

October 27, 1976

X 8181, called 11/1/76

To: Wilson Crumpacker, Chairman of E.P.O. Biology

Please record the following:

When I moved into Room 109, Hale Building, (as a favor to the individuals in charge of space arrangements on campus), I requested that a permanent repair of the roof over this room be made to stop the serious leaks. It might be said parenthetically that the problem of leaks in this room goes back at least to 1938 (fide Pennak). Since the history has been consistent that the administration refuses to do anything useful about this problem, may I respectfully submit a requisition for at least nine large wastebaskets which are needed only on the occasions when the rain or snow has been continuing for some time. I submit that this request is the most effective means for coping with the problem as presently existing.

We, of course, understand that some staff member will have to come over to the building evenings and weekends to empty the buckets to avoid overflow damage to the room below. Perhaps we can assign this as a staff function with the understanding that time and a half will be paid. A job description might be submitted to the Personnel Department giving them a chance to advertise an opportunity for unique employment catagory.

Thank you for your serious consideration for this serious problem, brought to you by the undersigned undistinguished Professor of Biology, Taxidermy, Taximetrics and other scurrilous pursuits.

With sincere affection and deep gratitude,

Dave

David J. (for James) Rogers

11/1/76 X 7187 - left msg. re: C.M. project (Rogers in Japan for 3 wks.)

DJR:js

cc: Dean William A. Briggs
Director of the Physical Plant
Vice Chancellor for Research and Dean of the Graduate School
Chancellor Mary Berry

6685

TO: EPOB Faculty
FROM: Alex Cruz for Committee on Teaching Evaluation.
SUBJECT: Faculty - Course Evaluation Questionnaire

Please rate each of the following 27 questions from the Faculty-Course Evaluation Questionnaire on two matters, relevance and validity, for both a lower division (LD), upper division course (UD), and graduate (G) course.

In regard to relevance, please use the following criteria:

A = This item is of great importance in evaluating my teaching in this course.
B = This item is of substantial importance.
C = This item is of moderate importance
D = This item is of slight or minimal importance
E = This item is of no importance at all in evaluating my teaching in this course.

Now please appraise the items with regard to validity. It boils down to this question, what percentage of students taking this course could make a valid judgment on a given item, a judgment you would trust?

A = 91-100%
B = 71-90%
C = 30-70%
D = 10-29%
E = 0-9%

Dr. David Rogers
Hale 114

Table 1

Item	Relevance			Validity		
	LD	UD	G	LD	UD	G
1. Instructor was well prepared						
2. Students' ideas were respected						
3. Instructor taught effectively						
4. Lecturer facilitated learning						
5. Course presented enthusiastically						
6. Instructor knew his field well						
7. Instructor spoke clearly						
8. Content summarized effectively						
9. Instructor made me think						
10. Instructor realized when students were confused						
11. Students were motivated to explore subject matter further						
12. Discussions were handled well						
13. Assigned material was obtainable						
14. Instructor's feedback on student's work aided learning						
15. Difficult material was clarified						
16. Assignments were worthwhile						
17. Instructor was available						
18. Instructor was approachable						
19. Course was an effective learning experience						
20. Examples were used effectively						
21. Exam covered important rather than trivial points						
22. Grading criteria were fair						
23. Assignments were clearly explained						
24. Teaching aids were used effectively						
25. Library materials were used effectively						
26. Rate this course compared to your other college courses						
27. Rate this instructor compared to your other college instructors						

Rogers

To: Office of International Education Advisory Board, Study Abroad Executive Committee, Office of International Education Staff

From: R. Curtis Johnson

Attached is the first draft of material to be submitted to the Chancellor, in keeping with the memorandum I sent to you on November 17. It follows the outline submitted at that time (more or less), with changes which have come about logically as various individuals have attempted to cover their assignments and describe their activities.

Several of you advised against a long report, but we had to write one. We plan a short summary of recommendations which can stand on its own in terms of its clarity of requests, but which of course cannot fully transmit the necessity, urgency, rationale, philosophy, or anything else. In order to get those, a reader would definitely have to go into some detail and study the major report.

Our timetable is short. We want this to reach the Chancellor's desk on time (January 20), and Jim Corbridge has indicated he needs it before that. Our objective is to finish it off before the Christmas holidays so nobody feels guilty about not working on it during that period of time. What I need from you, therefore, within three or four days, is any comments you want to make about this report. We know several things are wrong with it, and we will correct them. Those things include the fact that many program descriptions do not bring out the problems associated with the programs, and perhaps that we have been a little over-descriptive here and there. All of this will be edited down to slimmer form before it is finally submitted,

To: Chancellor Berry via Vice Chancellor Corbridge

From: R. Curtis Johnson

In compliance with your request of October 8, transmitted to our office by Vice Chancellor Corbridge on October 20, we have engaged in some self-analysis of our unit, the Office of International Education, our fuctions and our efficiency. We have been aided by critiques from members of the Advisory Board for this office, members of the Study Abroad Committee, and ourselves as we have discussed and debated.

As difficult a decision as any was that of proper method of writing up and transmitting to you the information we felt must be transmitted. We concluded first that the format designed for academic units in no way fits this particular office, and that we had to go it alone in regard to our format. We also felt that it was important to present the essence of an annual report, and at the same time to update, at least partially, the job description for the office. The attached report is the result of those activities.

The report describes the operations of this office in considerable detail, attempts to relate these to the rest of the University, and summarizes what we consider to be strengths and shortcomings associated with each and every component of the office. We then attempt to define those things which should be done in order to alleviate the problems which we have identified.

The short memorandum preceeding the report summarizes only those things which we feel need to be done for this office to fulfill its responsibilities to the University. The recommendations may therefore be accepted as given in this short summary, or you may prefer to go into the report itself to determine the background and the rationale for the recommendations which have been made. Members of our staff are of course available and eager to discuss with you any and all points about which you may have questions.

(Following this will be a several page memorandum of needs, requests, etc.. This will also state that OIE is doing very well with its resources, but would welcome an outside evaluation. Names for an evaluating team will be suggested.)

I. Overall office functions and diagram

A. Introduction

The Office of International Education at the University of Colorado is charged with the broad assignment of carrying out any and all activities of an international nature at any of the four campuses of the University of Colorado. The office has not been instructed concerning activities it may or may not engage in, and can determine the acceptability of various programs only in terms of level of funding and assignment of personnel by the administration.

In the broadest sense, the office manages the study abroad programs for the University, serves foreign students and scholars and short-term visitors for the Boulder campus only, and is involved in miscellaneous academic, research, and training programs, fellowships and scholarships, proposals, professional liaison, etc. for the University as a whole, but primarily for the Boulder campus. This section includes a functional diagram which shows the relationship of the major functions of the office to the Dean, and this office's relationship to other units in the University. Subsequent sections will show in more detail the relationships within each of the divisions.

B. Office Administration

In the administrative part of the office, most of the present support comes by way of various work-study students--computer scheduler, librarian, account technician, editorial assistants, and secretarial. These should be permanent full-time rather than temporary part-time positions.

The Assistant to the Dean serves also as fellowship adviser (primarily Fulbright-Hays) and also as Administrative Assistant to the office. The large volume of paperwork demanded from the administration and personnel, much of it seemingly irrelevant, demands so much time that there should be a separate position of Assistant to the Dean and Administrative Assistant to the office. In other words, this person is presently holding two jobs, and being paid for one.

Similarly, the Account Technician, who must work with many different currencies every day, is expected also to serve in a budget officer category. Therefore, this person is involved in budgeting, request budgets, projections, and the like, and will be able to fulfill this task if given more assistance to handle routine accounting.

In addition to the staff personnel, the line administration includes the Directors of Study Abroad Programs and Foreign Student and Scholar programs (who should be Associate Deans). OIE has an ultimate objective of having three additional individuals, in academic, research, and training program support activities. As will be discussed later, a careful phasing into these positions is necessary.

II. Foreign Student and Scholar Programs

A. Office Diagram and Personnel - RCJ and JM

B. Objectives

The objectives of the Office of Foreign Student and Scholar Programs are (1) to provide services to foreign students, scholars, and short term visitors to insure that they have the best possible educational experience at the University and (2) to develop progrmas which will utilize these foreign students, scholars, and visitors to a maximum extent as an educational resource for the campus and the community. The ultimate goal is the second, to derive educational benefits from the presence of foreign nationals, but it cannot be achieved unless the first is accomplished thoroughly.

At our present level of staffing and support, we are able to provide adequate services to accomplish our first objective reasonably well. Though we are making efforts in several areas toward the second objective, we fall far short of success. We need additional staff to allow us to develop programs which will increase the impact of foreign nationals on the academic and cultural life of the Universtiy and the community, thereby properly utilizing the educational resource which they represent.

C. Relations with Admissions

1. Boulder Campus Students

The Office of Foreign Student and Scholar Programs provides a wide range of services to some 400 foreign students who are regularly enrolled at the University. These services include pre-arrival information; reception and orientation; assistance in housing, registration, management of finances, transfer of funds from abroad, and maintaining immigration status; advising on personal matters, finances, academic problems, legal questions, and adjustment to a new culture and academic system; liaison with home governments, sponsoring agencies, and the Immigration and Naturalization Service; a wide variety of miscellaneous special services needed by foreign students.

The Office works closely with many agencies and individuals on and off campus in an attempt to coordinate all activities and services related to foreign students, and serves as a focal point for these activities and services.

2. Economics Institute and Internsive English Center Students.

In addition, the Office provides advising and assistance of a more narrow

scope, principally related to immigration matters, to foreign students enrolled in the Economics Institute and the Intensive English Center. The Economics Institute enrolls 20-40 students during the academic year and up to 250 during the summer months. The Intensive English Center enrolls from 110 to 140 students during the entire calendar year. Because of their lack of English proficiency and their inability to understand complex immigration regulations, the students at the Intensive English Center require special care, attention, and patience. During the past year we have devoted approximately 15 hours per week of professional staff time and 10 hours per week of secretarial staff time to IEC students, and a somewhat smaller amount of staff time to Economics Institute student. We receive fees from the Economics Institute and the Intensive English Center for these services, and it is only through this soft money that we have been able to employ a half-time graduate intern and a half-time student secretary. Unfortunately, the addition of these two student staff members has not added much to our capability of providing services or developing programs elsewhere, for their time, or its equivalent in other staff time, has been almost entirely taken up with services to Economics Institute and Intensive English Center students.

E. Services to Foreign Faculty and Staff.

The Office provides complete immigration services to all departments and research units on the Boulder campus which bring approximately 50 foregn faculty and staff members to the University each year for temporary or permanent assignments These services involve advising departments regarding the appropriate immigration status for foreign faculty and staff members, preparing the necessary forms and petitions to enable the foreign faculty and staff members to obtain such status, advising and assisting the visitors in maintaining status, and, most important, keeping ourselves informed of changes in and changing interpretations of highly complex immigration laws and regulations. During the past three years, changing immigration regulations, and particularly interpretations of existing regulations, have imposed severe restrictions on our ability to employ foreign faculty and staff members, and this has required thorough research and the imaginative use of the existing regulations to bring some foreign faculty members to the University. The Director of the Office is a member of the Government Regulations Advisory Committee of the National Association for Foreign Student Affairs, and his work in this position has assisted him in developing a high degree of expertise in immigration matters.

In addition to providing immigration services to foreign faculty members, the Office works closely with the Boulder Council for International Visitors,

a community organization, to assist in their integration into the community. We need to expand our activities with BCIV and with foreign faculty and staff members in order to increase their impact on the educational programs of the campus and the community.

F. Services to Short-Term Foreign Visitors

The Office of Foreign Student and Scholar Programs also schedules appointments for and arranges the programs of short-term foreign visitors to the campus. Such visitors are referred to us by the Institute of International Education, the Department of State, and many other national programming agencies. Some come on their own initiative. Professional appointments, sightseeing tours, and social activities as appropriate are arranged by the Office. Approximately 20 to 30 programs for 40 to 50 foreign visitors are arranged each year. We work closely with the Boulder Council for International Visitors in arranging such programs, but our principal contacts are individual members of the faculty and administration. We feel that we are doing an adequate job in this area.

G. Services to the Community (outreach)

1. Boulder Friends of International Students

Two community organizations are closely linked with the Office of Foreign Student and Scholar Programs and provide means for the integration of foreign students and scholars into the community and increasing their impact on the community. Boulder Friends of International Students offers a host family to each foreign student who wants one, develops social and educational programs for the spouses of foreign students, offers informal English instruction to foreign spouses, and organizes a number of other individual and group activities for foreign students and their families. Through the Schools Program (described below), BFIS involves foreign students in elementary school classrooms in Boulder. The Director of the Office of Foreign Student and Scholar Programs and the graduate intern both serve as ex officio members of the BFIS Board of Directors, and during the past two years we have devoted increasing attention to working with BFIS in recruiting and orienting host families, fund raising, and expanding the community activities of foreign students. We need to devote even more efforts to this end, as we have a very effective community organization which can further expand its activities in increasing the impact of foreign students on the community.

2. Boulder Council for International Visitors

The Boulder Council for International Visitors is another community group

which provides similar programs and activities for foriegn visitors other than students - visiting faculty members and researchers, foreign visitors to NCAR, NOAA, and other agencies in Boulder. The Director of the Office serves as an ex officio member of the Board of Directors of BCIV. Unfortunately, our work with BCIV has been limited because of staff shortages, and has been mainly concentrated on insuring that foreign faculty and staff members are aware of the services and activities of BCIV. We need to expand greatly our work with BCIV to assist them in developing programs which will make good use of our international visitors as an educational resource for the community.

3. Schools Program

The Schools Program, now in its third year, has provided an excellent opportunity for foreign students to have an impact on our young children in the elementary schools. This program is a cooperative effort of the Boulder Friends of International Students, the Office of Foreign Student and Scholar Programs, the local schools, and foreign students. Foreign students are assigned to visit the fifth and sixth grade classes of local schools on a regular and continuing basis, allowing the school children the opportunity of becoming acquainted with a person from onother country and culture and of learning about other parts of the world. At the same time, the foreign student is exposed to a part of our community to which he might otherwise have no access. The program has proved to be quite popular with foreign students and with elementary school students, teachers, and principals. We now need to expand it and to move into junior high schools and high schools as well as elementary schools.

4. Speakers' Bureau

The Speakers' Bureau, operated by the Office, offers opportunities for foreign students to speak to and meet with other school classes, church groups, service clubs, and other community organizations. Foreign students welcome the opportunity to speak to such groups and are able to teach and inform a wide variety of persons in the community by this means. We need to devote more effort toward publicizing and organizing this program so that it can reach a greater number of persons in the community.

H. The Academic Curriculum

1. Introduction

The presence of 400 foreign students on our campus should make a significant impact on our academic programs. We should be able to use these foreign students to enrich course content and the academic experience of the American students who share classrooms with them. Though we have made some steps in this direction, we have not been able to devote the time and effort necessary to making the best use of this valuable educational resource.

2. Conflict and Peace Studies

In cooperation with the Conflict and Peace Studies Program, and with a two-year grant from the U.S. Office of Education, we have been able to develop a series of two courses (Political Science 429, Alternative World Futures, and Sociology 459, The Sociology of Global Systems) which are specifically aimed toward the interaction of foreign and American students. Foreign students are actively recruited for the courses, and one of the objectives of the courses is to form working groups composed of foreign and American students to carry out specific projects. In addition, the courses provide for the presentation of public colloquia featuring foreign students discussing the problems, the policies, and the futures of their own countries. These courses set an example of what might be done in other areas of the curriculum.

3. Other "Interaction" courses

With the encouragement of the faculty members involved, we have also specifically encouraged foreign students to enroll in certain other courses which provide an opportunity for intercultural and international interaction. Specifically we have promoted Communications 427/527, Intercultural Communications; Psychology 449, Cross-Cultural Psychology; and Journalism 420, International Journalism. There are many other existing courses in the curriculum which, in their present form or in a slightly revised form, might provide equally valuable opportunities for enrichment through the use of foreign students as participants and/or resources. To do this, we need to work carefully with the faculty in developing the courses so that they will provide these opportunities, and then work aggressively with foreign students to encourage them to participate.

4. Intercultural Communication

Specifically, we need to seek greater cooperation with the Communications Department faculty to develop broader programs in intercultural communications. The single course in intercultural communications is a good starting point, but we need to expand the University's efforts in this area toward the objective of increasing intercultural awareness on the part of the American student body. Foreign students can play an important role in those efforts.

We also need to do a better job of orienting and re-orienting our foreign students. We should offer an orientation program which extends throughout the student's first semester and which helps to make the new foreign student feel comfortable and secure in his new surroundings and which offers him some understanding of those surroundings. Equally important, we need to provide programs to prepare students for re-entry into their own societies and cultures as they approach the end of their academic programs here. We have not been able to devote any effort to such programs.

I. An Assessment of Our Strengths and Weaknesses

The Office of Foreign Student and Scholar Programs is doing a good and thorough job of providing essential services to foreign students and scholars. The staff is capable and knowledgeable, and they have the confidence and respect of the foreign students. Students know that they can get the help they need at the Office, and many students have indicated that we have one of the most sympathetic, understanding, and helpful staffs in the University. However, we are not doing as good a job as we might in providing services to the students at the Intensive English Center, and we fall far short of success in developing programs which will increase the impact of foreign students and scholars on the life of the campus and the community and thereby make the foreign student program valuable to the University. Therefore, we need to devote increasing attention in the future to the following kinds of activities:

- Provide better and more thorough advice and assistance to the students and to the faculty and staff of the Intensive English Center.
- Enter into closer cooperation with the Boulder Council for International Visitors to develop more substantial programs which will increase the impact of foreign faculty and staff members on the campus and the community.
- Expand and promote the Schools Program and the Speakers' Bureau and initiate other programs which will promote educationally valuable interactions between foreign students and people in the community.
- Work intensively with selected faculty members to identify and develop academic courses in which foreign students can serve as valuable participants and resources, building in the example set by the two courses in the Conflict and Peace Studies Program.
- Initiate and develop other academic and extra-curricular educational programs which promote interaction between foreign and American students, working with the residence halls, counseling center, student organizations, and other agencies and individuals on campus.
- Initiate and develop substantive programs for the orientation and the re-orientation of foreign students.

J. Staffing Needs

The present staff of the Office of Foreign Students and Scholars is working at full capacity, and no more can be expected of them. Therefore, if we are to devote more attention to the activities listed above, we must have additional staff. We should eventually have a very substantial increase in staff in order to do all of the things we should be doing, but we propose a steady though slow increase which

will allow us to take some steps in that direction.

We propose to convert the present position of half-time graduate intern into a full-time professional staff appointment as Assitant Director at the level of University Program Specialist III. We propose to negotiate with the Intensive English Center toward the end of their guaranteeing payment for a share of that salary, probably 50%. We estimate that the IEC will pay us fees of from $6,000 to $7,000 during the current fiscal year on the basis of our per-student per-term charge; if that payment could be increased slightly and guaranteed at a percentage of the FTE salary of the Assistant Director, it would allow us to hire an experienced professional foriegn student adviser with expectations of continued employment, assign that person the agreed-upon percentage of time to the IEC so that better services could be provided to the students, faculty, and staff there, and devote the remainder of the Assistant Director's efforts toward the enrichment activities outlined above. It would allow us to make our first substantial steps toward the proper utilization of foreign students and faculty as an educational resource.

We propose that the Assistant Director should be at the level of University Program Specialist III because we need an experienced professional in that position. If he or she is to work effectively with the Director in developing and promoting academic programs with the faculty and other educational programs in the community, knowledge, experience, self-confidence, and status are all important factors. A willing amateur or a trainee is simply not adequate for the major effort we foresee.

Present starting salary for a University Program Specialist III is $13,896, and it will probably increase to $14,592 next year. Including benefits, total cost would be approximately $16,000 the first year. If the Intensive English Center will agree to paying 50% of the salary, the increase in our own code 3 budget would be $8,000. For that small amount, we would be able to hire an experienced full-time professional foreign student adviser who could substantially improve the services to the Intensive English Center and who would enable us to make significant improvements in our efforts to accomplish our objective of making full use of our foreign students and scholars as an educational resource. Such a person should be in some exempt category in order to avoid problems with the State Personnel System.

We are now providing good services to foreign students and scholars, and thus are meeting half of our objectives. In order to make any progress toward the second objective, we must have additional staff. We feel frustrated and uncomfortable about doing our job half way, and we are confident that the Unviersity administration is just as uncomfortable about such half-way measures. Therefore, we have high hopes that our proposal will be accepted so that we can move toward fulfilling the full role that the Office of Foreign Student and Scholar Programs should be assigned.

III Study-Abroad Programs

A. Office Diagram and Personnel

B. General Description

1. Introduction

To separate the academic dimension from the other aspects of Study Abroad may be both awkward and artificial, for the essence of Study Abroad is the tota lity of the experience, including not only the academic but the social, personal, and informal as well. However, since the academic is the basis of the experience, and without it, the rest falters, we will deal especially with the academic aspect of each of the programs, emphasizing their present strengths, and how they might be improved.

The reason for a student's for selecting a particular program depends on a number of factors; First is the opportunity to supplement, and perhaps enhance the academci work he/she would receive at home; this is especially true of those studying a foreign language who wnat to progress more rapiedly than is possible outside of the environment where the language is generally spoken. Many students are in search of their ouwn cultural heritage, and want to learn more about their own traditions. Undergraduates are less likely to wnat to study under a particular professor, or pursue a special research topic, although there are many who wnat to gain a perspective on themselves and the insights they have been given here, in order toreach their own decisions.

A university will sponsor a study-abroad program for a variety of reasons as will. Departments see an opportunity to strengthen themselves, both quanititatively and qualitatively. Students who are attracted into a department, meet basic language requirements, then are given the opportunity to study abroad, may then continue in a the language, and as upper division set higher standards of achievemnet both in the language and courses related to the culture.

Faculty exchange, and close colaboration between departments in universities in different countries can strengthen them and enhance their prestige with still other institutions. Recognizing that study abroad is possible only because it must be important to both the individual and the institution, the Office of International Education works at the student, faculty and administrative levels in the planning, recruiting, preparing,

directing, supervising, and finally evaluating study-abroad programs.

Before discussing each program separately, there are several basic principles and plicies effecting all the programs that need explanation.

2. The background of Study Abroad at C.U.

In the early 1960's a faculty committee under the chairmanship of Professor Carl McGuire of Economics was appointed to set directions for International Education at the University of Colorado. The committee prepared a classic report that became a standard no only for C.U., but was used elsewhere as an outstanding analysis of the various dimensions of International Education. One of their primary recommendations was the development of opportunities for American students to go abroad to study, participating in the life of the foreign universities, much as foreign students come to the U. S. to study. At the same time, they pointed out that the American students were not degree candidates in the foreign institution, but were to be there for only a year, hence needed special assistance in transferring credits back to their home institutions. Since few foreign institutions had an equivalent of a "Foreign Student Adviser" if many students from the same institution were to go together they needed someone to assist them with housing, course selection, etc. Thus, it became implicit that a Resident Director accompany a study-abroad group to a foreign institution.

Secondly, and really implicit in the existence of the McGuire Committee, was the essential importance of a strong faculty committee to serve as watchdog over the developmetn of programs; to co-ordinate them, and to set the basic academic policies. The Study Abroad Committee became responsible for the academit excellence of each of the programs under their jurisdiction.

The strength of the current study-abroad programs depends upon the close cooperation and mutual respect and support of the Study Abroad Committee and the Office of International Education.

3. The Role of the Study Abroad Committee

It should be evident that the University provides every motivated student a wide varity of options for a well supervised overseas educational experience. The staff is in charge of the mechanical operation of these operations, both in Colorado and abroad. It is the

C.U. faculty which is charged with investigating and maintaining the academic quality of the programs. The administrative officers of the various schools and colleges, of course, have the final word on awarding credit, but it is the representatives of these faculties on the Study Abroad Committee who approve and evaluate all proposed and existing programs.

Up to three years ago the Study Abroad Committee was composed of faculty appointed by the dean of the Boulder Arts and Sciences faculty. However, since then the committee has become university wide with faculty representative from the professional schools and the arts and sciences faculties of the Denver and Colorado Springs campuses. The largest component of the committee remains the members from the Boulder A & S faculty, and depending on the year either the chairperson or the vice-chairperson will be form that unit.

Each member of lthe Study Abroad Committee participates in the full committee meetings, of which there are at least four yearly; in these meetings major policy issues are discussed and voted upon, personnel questions affecting all programs are approved or challenged, and new programs approved or rejected. Each member also is assigned to one or more of the subcommittees which have the responsibility for the programs in specific countries; these subcommittees meet as often as necessary to accomplish its charges to interview all student applicants for the programs in that country and to interview and select the directors of C.U. programs in that country.

The relationship between the staff and faculty, that is, the Study Abroad Office and the Study Abroad Committee, is necessarily close and complementary to insure a smooth mechanical operation, a continuity from year to year, and continued high academic quality and achievement. A secondary, but also important role, of the Study Abroad Committee is to explore avenues for further cooperation with institutions of higher education overseas. Areas of interest which are being studied this year concern faculty exchanges, graduate student exchanges, cooperation with other institutions or institutes that could be of mutual benefit.

4. The Offices of the College Deans

We refer primarily to the Office of the Dean of Arts and Science and their essential role in the preparation and evaluation of work taken study abroad with the students. Mr. Gilbert Wilson has been the member of the Arts and Science Office carrying distinctive respon= sibility for students going abroad to studey. All Arts and Science students must consult with him before they leave to go abroad to study, to ascertain progress toward their degrees. When course evaluations are received from resident directors abroad, Mr. Wilson clears them with the Chairmen of the appropriate departments, and then the actual credits are assigned according to the policies laid down by th Study Abroad Committee. Dean John Carnes is the ex-officio representative of the Office on the Study Abroad Committee, and he supervises the administration of Committee policies in relation to the credits the students are granted upon their return. All work taken on an approved Study Abroad Program is recorded as C.U. credit, not transfer credit. This procedure guarantees the students that they will receive credit for the work they successfully complete overseas, and that, in general, foreign study will not delay them in their pursuit of a degree. There is serious need for better support and understanding in several of the other schools and/or colleges in Boulder.

5. Resident Directors

In the first few years of study abroad at C.U., when the Program in France was the only one actually administered by C.U. which needeed a Resident Director, the policy was to pay the Director whatever he/she would re- ceive in Boulder. This seemed to work satisfactorily for a number of years, but with inflation and mounting faculty salaried, in 1972 the Study Abroad Committee acted to alter this previous policy and to set the salary for a resident director according to the demands of the position, rather than the academic level of the individual. This resulted in most faculty members feeling that they could not afford to go as a resident director. Al- though the scale did probide for paying faculty somewhat more than graduate students, even so, for the last few years the Director in the European programs have almost all been advanced graduate students. In many ways this has worked out extremely well, for these persons are willing to work hard to make a name for themselves; and are able to relate even better to the students than many faculty members who are older. There has been some

apprehension that host institutions would take not a Graduate Student as seriously as a faculty member, and there is no doubt but what periodic contact with top level administrators and/or faculty is important. However, most of thw institutions are sensitive to financial pressures, and are aware of the reason for sending younger directors, and actually in several instances have lauded the policy, finding it easier to work with a young, flexible director than with someone more established and less ready to assist the staff of the host institution. The very warm and friendly relations are due in no small part to the devotion and enthusiasm of the young directors.

For the small programs, such as the ones in Israel and Taiwan, it has been possible to find nationals with substantial experience in the USA who are willing to serve as Resident Director for a small group of students on a part-time basis. This has worked out extremely well in these two places the past year and this, but it is essential that the person appointed be familiar with American higher education, and be able to work will with American students. Delightful individuals and renowned scholare who lack these two qualities can be disasters as Directors through no real fault of their own, but because they are not sufficiently familiar with the backgrounds and needs of the students.

6. Financial structure of the Programs

As implied above, all study abroad programs must pay for themselves. The McGuire repost recommended that instead of paying tuition, students pay a program fee which would pribide an operating budget including the salary of the Director, as well as all other expenses connected with the program. Initiallly the University paid for all the office operations and supervision of study abroad. At first there was onlyaa 1½% service charge on the monies that were paid into the acoount. In-state and out-of-state students paid the same program fees. In 1971, a surcharge was levied against the OIE: it must annually raise $15,750 from program participants to refund to the University. With the approval of the Study Abroad Committee the Office levied an additional charge against out of state students; remarkably enough for four years it was possible to meet this additional surcharge from these out-of-state fees. However, with the increasing number of students who are able to establish themselves as adults who are independent of their families and thereby become in-state students, it was becoming increasingly impossible to raise this money without raising the price of the program for instate students as well. Hence, this last year, through the cooperation of the vice-chancellors office, this sur-charge was dis-

continued, with the understanding that an additional fee would still be charged the out-of-state students to defray some of the operating costs of the Study Abroad Office.

In 1968 there were 50 students in Study Abroad Programs; today there are over 300. This raises by a factor exceeding six the work of the office in terms of correspondence, student inquiries, and the other myriad details of program administration, including insurande, travel arrangements, transfer of financial aid, etcl In 1973 an Assitant Director of Study Abroad was hired, paid for first out of savings when the Director of International Education resigned, and the Director of Study Abroad became the acting Director of International Education. However, at the end of the fiscal year, those funds ended, but it was recommended that a small surcharge be put onto the student fees to finance the Assistant Director of Study Abroad. Since then the OIE has levied a surcharge equivalent to the ASR on each of the programs, to finance the position of the Assistand Director of Study Abroad and to assist with the other operations of the office. She carries major contact with the incoming studnets, and handles liaison with the university offices. As the program has grown, her responsibilities have also increased, so that this year approval was received for the employing of an additional secretary. Her salary must also be covered out of student program fees. By an increase in the program volume the charge per person is kept down, but this also increases the work. Of course the goal is to have as many qualified students as possible participate in overseas programs, but to identify the qualified ones requires seeing and talking with many, many more, so that the volume of office activity constantly mounts. In spite of the increase of the cost of postage, printing, and other means of communication, the funds from the university to cover the items have not increased, so that these too, are currently being paid for out of student fees. To cut the program back to the level financed by the University itself would be to diny dozens of students an international experience. However, the increased cost of the programs to cover these obligations undoubtedly eliminates students who might otherwise consider going.

7. Contracts with other universities

Partly out of financial need, but also out of philosophic committment to cooperation the University of Colorado has from the beginnigg had official relations with the University of Kansas, accepting their students on the Bordeaux program on the same basis as Colorado students, and sending our

students on the KU program in Costa Rica. The University of Nebraska becamea co-participant in the Bordeaux program shortly thereafter, and this past year the University of Missouri and of Texas-Austin also joined as co-participants. This means that their faculty will undertake to screen their students for us, and select those whom they feel are qualified. They will also collect their fees, and take some of the work load off Colorado; for this they are allowed to send their resident students on the same basis as Colorado residents. (Their non-residents are ontthe same basis as Colorado non-residents). There has been substantial pressure from the European Universities to push American Institutions to collaborate and not to have a proliferation of study abroad programs, but to form consortia so that the foreign institution does not have to deal with so many different American groups. Hence the move to accept students from other institutions is good policy abroad as well as good economics here.

Another major concern of the foreign institutions has been for more "reciprocity". Most of the foreign universities are highly subsidized by their central governments, and the tuition for foreign (American) students is actually not comparable to what American universitied charge their out-of-state students, including foreign students. As a result of pressure placed by several foreign universitied, in 1972 a system was worked out with the support and cooperation of the CCHE to allow one or two students from a cooperating foreign university to come to Colorado and to be charged zero tuition status there. This is possible only when formal contracts between the two universitied are signed. At the present time C.U. has such contracts with the University of Regensburg and Erlangen in Germany; Universities of Bordeaux and Chambery in France; the University of Lancaster in England; the Hebrew Univeristy in Israel and a most recently signed agreement with the Univeristy of Vera Cruz in Jalapa, Mexico. The possibility of having a similar arrangement with the University of Ghana is currently pending. The number of students coming under these contractual arrangements is not so great, but the goodwill and snese of partnership engendered at the foreign university are very important. In some cases, such as those from Regensburg, the incoming students are able to finance their own living expenses either through perosnal funds or through government grants. In other situations, the program has been able to offer supplementary expense money to the recipient of the Exchange Tuition waiver in order to assure their participation in the life of the university and to assist wi with the selection and preparation of students planning to go to their institution for further study. The agreement with the cniversity of Lancaster was put into effect as early as 1970, for at that time there was suff-

ficient foreign student scholarship funds to cover tuition for the student. This offer to a student at the University of Lancaster to come to Colorado has become a much coveted honor, with a large number of qualified students applying each year. This has enhanced the reputation of Colorado in the United Kingdom.

8. Faculty Exchange

Another genaral interest among faculty both a t foreign institutions and here in Colorado is the possibility of faculty exchanges. Included in some of the contracts as a goal to be sought, and implicit in other aggreements is arranging these exchanges. After several abortive efforts, the first one with the University of Lancaster was completed this year, and a Professor from the Department of Theater is teaching there, and a Professor from the English Department is here at C.U. This si proving a happy exchange for all concerned, and it is to be hoped that this will be the first of a regular series of exchanges, involving a number of different departments. The complications are less with the English Universities, since fluency in another langaage is not required. However, Professor Pilcher from C.U. had a Fulbright faculty appointment at the University of Bordeaux a few years ago, and one of their Professore taught Shakespeare here at Boulder one summer. To negotiate an exchange takes time, dedication, patience, and some money. This is one of the very important phases of study-abroad agreements that should take high priority in the next couple of years. Widespread inflation makes it increasingly difficult for a faculty member to finance his/her own study and travel abroad, but when and as exchanges can be worked out, it is possible to offset the additional costs in various ways. The problem for incoming faculty is often the unanticipated cost of medical care, especially for a fmaily. So many European countries provide free medical care for everyone, or at least those covered by social security, that it comes a s a blow that they might have to pay for their medical care. Even health insurance is not as nearly complete as they are used to. This is one problem, though not a major one, which should be studied by responsible university bodies, and surely a satisfactory solution can be found.

In February the Director of Study Abroad visited programs in Europe and the Middle East. It is certainly essential that the Office maintain constant touch with the Directors in the Field. Continuity of relationships is important, to workout on going policies. It is also important that traveling faculty and administrators have an opportunity to visit programs when they are in the area. However, familiarity with the arrangements and

ability to forestall problems before they arise is very important, and must always be a primary function of the Director of Study Abroad.

C. Year-long Programs--CU Sponsored or Co-Sponsored.

1. England--East Anglia

The University of East Anglia has a considerable reputation within Great Britain, and those Colorado students who participate in our program at this university wholeheartedly support UEA's excellence. Colorado's basic agreement is to send students to the five science "schools" of East Anglia (Biology, Chemistry, environmental sciences, computing science, and Maths and Physics). where students participate in small classes intensive study in one field and a chance to do significant research in the laboratories, an opportunity not often available to undergraduates in the U.S.

The University of East Anglia has an unusual system of determining progress toward a degree, which caused a certain amount of difficulty in determining appropriate numbers of credit hous and assigning proper course numbers and titles to work accomplished. With the help of the science departments and the continued work and good will of the College of Arts and Sciences office however these problems have been settled to everyone's satisfaction.

2. England--Lancaster

The University of Lancaster is known in England for excellent education in many fields, but especially in Business and Religious Studies. It is ironic that the University of Colorado School of Business will not accept any work done in Business at Lancaster (or anywhere else for that matter) for a major. However, in most other disciplines students are able to progress satisfactorily toward their degrees at Colorado and have an unusual and challenging educational experience as will. Becuase there is no language barrier and all departments at the University of Lancaster are open to our students, Colorado program members come from many colleges and schools. Students are fairly rigorously screened for the program. and their work at Lancaster reflects this attention to the selection of capable students. University-level work in England demands considerably more independence on the part of the student than most US college education Our program participants usually thrive in the tutorial system, once they make the initial adjustment to the fact that no exam pending is not license to riot or complain of lack of challenges. The success of the program is reflected in the current exchange of faculty members between institutions, which enriches both campuses.

3. France--Bourdeaux

The University of Bordeaux, France, is the oldest study-abroad program sponsored by the University of Colorado, which is appropriate for such an old and distinguished institution as Bordeaux. The Institute of Politics is a particularly prestigious area within the many Universities of Bordeaux, and our st;udents are eligible to participate in courses with the French students, a special arreangement for program participants. (Since the student upheavals of 1968, Frnech higher education was reprganized into a decentralized system which allows greater flexability in the universities, but also leads to condiserable disorganization.)

There are other resources in Bordeaux which our program has not developed in the areas of Engineering, Architecture, the music Conservatory, and the Beaux Arts, becuase of the structure of the institutions, However, our original contacts in Bordeaux (with the University of Bordeaux III and the Institute of Politics) remanin strong. Exchanges of graudate students between the Colorado French Dept. and the Bordeaux English Department have been continous since _____. Prof. Pierre Spriet, President of Bordeaux III and Director of the Cours pour Etranger, ahs been in Boulder as a visiting prifessor twice. The University of Coloado needs to encourage these exchanges and broaden the base of operations in Bordeaux to offer a wider variety of education to Colorado students. This particular program enhances our relations with US universities as wellas foreign ones. The Universities of Kansas, Nebraska, Missouri and Texas at Austin with Colorado to place participants on the program, and resident directors in the past have come fore these schools as well as CU.

4. Germany--Regensburg

Established in 1971, this C.U. program is a relatively new University, but over the last six years the physical plant has grown from a few scattered buildings in a muddy field to a beautifully equipped university with the most modern facilities, including dormitories, of almost any in the workd. The faculty has been recruited from a variety of other institutions, and is outstanding especially in th e sciences. Since C.U. has a contract with Regensburg,our students are not banned from the sciences courses by the "numerous clausus" rule. Affecting a great many study abroad programs in Germany. The contract provides for a mutual exchange of students, with 20 here and 16 there in 1975-76, and 19 there and 18 here this year.

The Directors both years have been Karla and Eckhardt Kuhn-Osius. Eckhardt is a natuve of the area who was working on his Ph.D. at C.U., and Karla had been a student in Germany, and was teaching German in a high school prior to going abroad. They had also been Directors of the Language House on campus. During their tenure they have arranged for each student to have a "host family", with whom they take dinners during the first month of the program in order to practice their German, and who continue as their mentors during the year. The warmth of the relationship between the Unviersity of Regensburg and the University of Colorado was indicated by the fact that in June the City had a large exhibit of pictures and books from Colorado, clebrating our Centennial.
Dr. Henreich, Rector of the University, will visit Colorado in 1977.

There is substantial interest in faculty exchange which needs to be facil-litated and encouraged here in Colorado.

5. Israel--Jerusalem

Director: Rabbi Paul Laderman
1975-76, 5 students; 1976-77 8 students

The Hebrew University of Jerusalem is seventy-five years old, and a recognized center of learning with quite an elitist posture. In addition to the courses offered in Hebrew to their own students, they have an International Division, offering courses taught in English, and this is where the Junior Year Abroad Students take most of their courses. There is a 14 week mandatory language "plan" prior to the beginning of the academic year (which is Nov. 1) and during the year all studnets must continue to study Hebrew.

The program began in 1973, and the Yom Kippur War occurred during the first Fall that the students were there. Although there were 20 in the first group, since then the groups have been much smaller. Fortunately Rabbi Laderman

Denverite, son of ~~aprominate~~ a prominent Denver Rabbi, and he had been the Director of a Hillel Foundation in California before emigrating to Israel. Hence he has been able to provide outstanding leadership for the group from C.U., reassuring families as to the safety of the studnets.

This past year a contract for mutual tuition waiver for one student each way was signed. The applicant from Hebrew university was turned down by our Business but subsequently received a full fellowshop at Harvard. Nevertheless, C.U. is given one tuition waiver, which is divided among the members of the group, and next year it is expected that there will be two graduate students from Hebrew University at C.U.

6. Japan--Kobe

Because of the exceeding ly high cost of living in Japan, the problems of administring a program there are non inconsiderable. In 1973-74 a group of 22 students had gone from C.U. to Kyoto, and the program had been extremely successful. The Department of Religious Studies had co-sponsored the program, and many of the students were from that deparmtment. In 1974-75 the program was cancelled, for 14 participants were not enough to finance the program. In 1975-76 the number had dropped still lower, to 11, but the decision was to try to run it by using people already in Japan, saving the cost of sending a resident director from Colorado. After some search and checking references an outstanding scholar in Japanese religons was selected to the academic director of the program. Unfortunately although hehad fluent English, he was from Brussels and the American academic system completely eluded him, and the reports evaluating student work which he was supposed to perpare were most inadequate. He was to teach the background courses in Japanese Religions, but the students felt that he was not prepared to provide the survey type of approach which was needed.

The previous year there had been some dissatisfaction with the Kyoto Japanese Language School, so when a new school under the Direction of a Japanese man who had been a friend of the program was to open, it was determined that the students should go there for their langauge study. After the first semester it became evident, that it would be more satisfactory to have the director, a splendid sensitive Japanese woman teach the language, rather than to send the students elsewhere. Her splendid contacts in Kyoto in the realm of music and the arts, opened upmany opportunities fpr students to do indpendent study in Cermanics, Caligraphy, Japamese music, Zen meditation, and the like. These independent projects were very successful, but caring for the 11 students nearly exhausted the director. Meantime the budgetary restrictions prevented hiring additional help, and the students

were having difficulty keeping down their travel and non-program expenses, such as lunches, so it seemed the better part of wisdom for 1976-77 to place C.U. students on the program being established by the Universities of Illinois and Michigan State.

In light of these difficulties however the University is now joined in a cooperative venture with the University of Illinois-Champaign-Urbana, and Michigan State Unviersity in aprogram in Kobe. It is affiliated with Konan University, having access to classroom and office facilities, as well as the innumerable clubs of Japanese students. The academic component entails one course in Japanese language, two coursese in Asian Studies, and on independent study project each semester. (The time for the independent study project was copied from Colorado's Kyoto program.) This program is doing very well, and indication of the necessity of a wider recruiting base and expenditure of adequate funds for the proper program operation.

7. Japan--Sophia

8. Mexico--Jalapa

Located near important pre-hispanic archaeological sites in a small city typical of Mexico, the Jalapa program has grown over the last five years into the most prestigious study-abroad program of its type in Latin America. Courses are offered in intensive Spanish, archeology, history, culture, linguistics, literature, dance, anthropology and a variety of fields with emphasis on the humanities. The purpose of the program is to develop a fluent command of Spanish and to introduce the student to the history and culture of Mexico.

The Jalapa program is very well suited for developing the skills necessary for Spanish or Bilingual Education teachers and experienced teachers who may want to spend a sabbatical year developing skills for innovative programs. Realizing the benefits of language training and a cultural experience available in Mexico, the majority of students are majors in fields ranging from psychology to public administration. The number of applications exceeds the program's capacity of 60 students who are under the direction of a professor from the University of Colorado system. The program has achieved substantial prestige in the Universidad Veracruzana where it is housed. The excellent cooperation from the UV faculty and staff has contributed to the success of the program and such cooperation is very likely to continue, thus insuring the future excellence of the program. A recently-executed agreement allows a number of Metro-State students to participate in this program.

9. Mexico--Monterrey

10. Republic of China (Taiwan)--Taipei

Director: Prof. Chu Limin, formerly Dean at National Taiwan University - 1975-76 9 students; 1976-77 5 participants.

The academic activities of the students on the Taiwan Program are centered in the two best universities in the Republic of China, namely, National Taiwan Normal University and National Taiwan University. NTNU's Mandarin Center, in addition to classes of regular or intensified training in standard Chinese language, provides experienced teachers to students who require special emphasis on certain aspect of the language; for example, political, economic, artistic, literary, or medical terminology. Students who come on the program are either in the Humanities or the Social Sciences. NTU not only has the strongest faculty in these fields but it also has many who have had educational or professional backgrounds in the States and are thus able to properly orient their approaches to the introduction of Chinese culture and civilization for American students without diluting the relevant materials.

At the present time a request for funding to HEW is pending. Students have been exceedingly pleased with the experience, but unfortunately several of the best qualified were unable to obtain funding for themselves and had to cancel. Even so, this is one of the least expensive of programs in Asia for American students. The University of New Mexico this fall requested the privilege of becoming a co-sponosr of the program, and it is hoped that they will send some students next year. We hope also that the University of Denver, through the East Asian Studies Center (joint with CU and DU) will send students on this program.

D. One-Semester Programs - CU Sponsored or Co-Sponsored.

1. France--Chambery

Recognizing the importance of early language training, the French Department worked with the Office of International Education to begin a new intensive French program for beginners in French language in Chambery, France. This program operated for the first time in the Spring semester of 1976 with superb results, mainly due to the dedication and teaching skills of the director, Mrs. Ruth Bleuze. Students with a minimal introduction to French studied in Chambery for 15 weeks, four and often five hours a day, to improve their language abilities as well as their understanding of French culture and civilization. The same students are now participating in upper division French courses on the Boulder campus, proving themselves far ahead of their classmates trained only on campus. The reception that the University of Colorado and our students received by the city of Chambery and the University Center of Savoy was cordial in the extreme; to the point that professors at the Center were

giving extra classes to our students who had trouble understanding some of the classes in Civilization. We look forward to another successful program in 1977.

2. Germany--Berlin

Director, Dr. Rainer Dimter - 1976

21 students signed up for 1977

This is a Spring semester Program for intensive German, started in 1974. Although the original plan had been to take students with one year of German and raise them to fluency, there seemed to be so many more students who had had only German 101 who were interested in going, that last year the requirements were changed. As a matter of fact, those who began with only one semester seemed to achieve as good fluency as those who had had more, depending more upon linguistic aptitude and application than up on prior training. Dr. Dimter has his Ph.D. from C.U., and he is assisted by a German graduate student, and an American doing graduate work in Berlin. These three provide about 4½ hours of instruction per day for 5 days a week. It is a relatively grueling program, but fortunately well balanced by the incredible cultural facilities of Berlin. Student tickets for the Spymphy, the opera, later theaters, and always museums, provide a rich cultural experience while students are mastering the language. The Wall introduces them to the realities of the divided world, providing another educational dimension to the program.

The results of the program have been so good the last two years that the German Department is recommending that the program operate both semesters, Spring and Fall, with primary emphasis on taking students with only one semester of German, and within the semester raising them to the 300 level, with very real fluency in the language.

3. Italy--Siena

The first of the Spring-semester language programs have broadened in its academic offerings beyond just the intensive language course. In the Spring of 1976 there were 16 students in theprogram. The Director, Dr. Alessandro Falassi has his Ph.D. in Anthropology from the University of California. He teaches a course in the Folklore of Tuscany, and one of the outstanding Art historians and Associate Director of Antiquities and Museum in Siena, Dr. Alberto Corencci taught a course in Art history, supplemented by field trips not only in the immediate area but in Rome, Florence and Venice as well.

However, during the Spring of 1976 the language teaching seemed to be the weakest aspect of the program. All instructors were Italian, but they seemed to have difficulty in explaining the grammar in a way that the students could understand, and all too

often reverted to English in conversation. Upon the recommendation of the students it was decided to find an American who was experienced in the teaching of basic Italian to go with the group, and to teach the Italian 102, 201, and 200/300 courses. One of the previous language instructors is actually a history professor in Siena, and the students found his history lectures fascinating while his language instruction was poor. Hence next year he will offer a course in Renaissance History, which will further enrich the program. Through his personal contacts in Italy the Director is able to provide a wide range of valuable experiences for the students, especially in the areas of the Arts and Social Studies, so that they obtain a fairly well rounded understanding of Italian culture.

4. Mexico

5. India--Madras

When Professor Robert Lester was in India on sabbatical leave during 1974-75, he laid plans for a one semester program to be held in Madras for the Fall of 1976. Although the plans seemed to be well established before he left, during the intervening 15 months a number of things happened to make their fruition difficult. A primary emphasis had been placed on living with Hindu families, and he had prepared the 21 students who were accepted to go to fit into what he thought had been set-up. However, for one reason or another during the interim, the families situations changed, so in the long run only one family was still willing to take unknown American students into their home. The decision was to place all students in formitories with their spending occasional week ends with this or possibly one or two other families who were still willing to cooperate.

The problem of culture shock for students going to India is probably the most severe of any place in the world. The poverty, the cheapness of life, the climate, bugs, humidity and the food conspire to disorient students in a way that they act almost desperately in attempting to re-establish their equilibrium. If the country is disconcerting to Americans, America students are fully as disturbing to a traditional Hindu scholar. An attempt to keep the cost of the program down by employing a local Sanscrit scholar to serve as Director proved to be almost disastrous. With the far more paternalistic and autocratic Indian family as his model he was unable to relate to the independent (demanding) resourceful American students. It became very apparent during the course of the semester that this had been a false economy. What the students learned will have to be evaluated after their return. Although some were indignant and baffled, others found that they were learning more than they ever anticipated, and that new horizons had indeed opened up before them.

Arrangements had been made for each student to have private tutors for whatever he/she wanted to study. The Principal of Vishnev College, who was the honorary Director, was very instrumental in finding well qualified scholars to act as mentors to the students, and to assist them in pursuing a variety of subjects. Again, the Indian College does not allow students the independence that is mandatory in even a secondary school in America, so that in a number of cases, the professor and the students failed to relate very satisfactorily. Again, some were very successful.

The program will have to be radically changed if it is to be repeated. On the other hand, with India being the third most populated nation in the world; with the need for Americans to know more about the mentality of the third-world countries, and since English is the lingua franca of India, it would seem to be important to continue to struggle to find a solid program for fewer students under the combined leadership of a qualified American director and an Indian experienced in working with

Americans. Just because it is difficult does not mean that it is either impossible or unimportant.

E. Short-term Programs - C.U. Sponsored or Co-Sponsored

1. Art history in Italy - Florence

2. Ad-hoc

F. Special

1. Mexico - Bilingual - Bicultural

2. Mexico - IESC - organized programs

G. Programs sponsored by other institutions

1. General

It is important, during periods of recession, inflation, and currency devaluations, to look carefully at ways of keeping study-abroad programs financially solvent and, at the sme time, maintain high academic quality. No one school, even if larger, more internationally-minded, and better funded than Colorado, can run programs every place for all types of students. It is still desirable to be able to accomodate each and every student interest, and this can be done to a great extent by consortia (The Kobe program) and by sending students on programs administered exclusively by other organizations. Doing either requires much advance planning, investigation of both the program and sponsoring organization, and negotiation of contracts. The remainder of the section lists several specific programs in which we participate. We should note, however, that OIE keeps an up-to-date file of programs, world-wide, and can assist students (and faculty) on finding other programs of interest. We learn of new developments mainly through the extensive experience of our staff through their affiliations with professional organizations and frequent personal contacts with leaders in the field.

2. Austria - Vienna (IES)

3. Costa Rica - San Jose (Kansas)

Through agreements with the Universtiy of Kansas, University of Colorado students may participate in their program in Costa Rica. Costa Rica offers a very different perspective on Central America than our Jalapa Program, integrating students into the University of Costa Rica in San Jose as regular students.

4. Egypt - Cairo (AFME)

About seven years ago the Study Abroad Committee approved the American University of Cairo for a C.U. Study Abroad program. In 1975-76, 3 students went to Cairo, but none applied to go for the current year. One of last years group gave an excellent presentation to the NAFSA Regional Conference of what he had gotten out of the experience. Although the American students must study Arabic while there, the courses are taught in English. Some of the students from C.U. have been impatient with what they assume is the low academic level, since the classes move relatively slowly as English is the second language for most of the students. However, as the student who made the report at the Conference stated, he had learned a vast amount from just spending a year in Cairo, getting to know the people, spend time in the bazaars, and gradually was able to appreciate the courses much more. Even though the tempo was slower they provided important understanding of the culture and the attitudes of the people in the Middle East. Middle East Studies, Economics and Archeology are especially strong departments.

5. England - London (IES)

6. France - Rennes (CIEE)

France is popular enough to require a third program, one in Rennes, which is administered by the Council on International Educational Exchange, a non-profit educational organization based in New York. This program is designed for advanced studetns of French, similar to the Bordeaux program, but has the option of spending a single semester abroad rather than a full year. The Rennes program also has a unique education opportunity for students interested in teaching, for, through the program, participants may spend time in the public schools of the city, teaching English to French children. Nearly all of the students who take part in this option are convinced that it was the best part of theri experience abroad. Ohter work is taken through program courses, taught by French faculty, but designed for the American participants.

7. Italy - Bologna (Indiana University)

8. Peru - Lime (Indiana)

Peru is also an unusual experience for American students, offering a view of a developing country that is undergoing tremendous political upheavals. In fact, during 1975, the program was postponed for eight months to allow the country to settle after a coup. However, students are able to investigate the native Indian culture of the country as well as the European culture intrduced in the 16th century. Both the Costa Rica and Peru programs offer variety to Colorado students which would otherwise be denied to them.

9. Soviet Union

(Call Earl Sampson - get idea as to students who study Russian in USSR.

10. Spain - Seville (CIEE)

The Coundil on International Educational Exchange adminsters a program in Seville, Spain in which Colorado studetns form the largest group. For students with an adequate Spanish background, the Seville program offers many opportunities for educational enrichment. The program opens with an intensive language session for four weeks, after which the University of Seville courses begin. Almost all courses in the University are available to our students although certain subjects are not taught, the most obvious being political science. However, for students interested in literature, history, Latin American history and exploration of the New World, and Art history, Seville is a goldmine of information. Also available through the program are courses in Teaching English as a Foreign Language and the opportunity to practice teach in Spanish elementary schools.

11. Sweden - (Long Beach State)

H. Programs being changed or planned

1. Africa - Ghana (?)

For a number of years the Study Abroad Committee had hoped to have a program in Africa that would appeal to both Black Americans and those of other ethnic backgrounds. In 1974-75 a program at the University of Ife was launched. Of the 6 carefully screened students selected to go, only 4 of them were granted visas. (No explanation why the 2 Black male students, whose averages were actually the 2 highest of the group were refused visas.) Although the students who did go felt that they had had a very enlightening and worth while experience, the committee did not want to again run the risk of having a group thus broken and divided. However, when Professor Ernest Emenyonu decided to go to accept a call to Allen Okoku Teachers College in Onitsha and one of his students from here wanted to go there to study, the Committee agreed to accept her for a pilot program at this College. At the time, it had been expected that the College would become a Universtiy under the aegis of UNESCO. However, due to action by the Central Nigerian Government, this anticipated upgrading of the College did not take place, and Mess Bender dropped out after the first semester, to do some independent travel in Africa. She found this very interesting, but not a worthy substitute for a sound academic program. We have dropped further consideration of Nigeria.

At the present time the Sub-committee on Africa is negotiating with the Universtiy of Ghana at Accra. The Vice-Chancellor was in Colorado in September, and it seems quite hopeful that a program can be negotiated which will not run up against central government interference and problems as the one in Nigeria did.

The Dean will visit Ghana shortly, and will also investigate possibilities in Kenya.

2. Caribbean - (Denver Campus)

3. Poland - (Colorado Springs Campus)

4. Spain - Almeria (?) (Colorado Springs Campus)

I. Relations with other agencies

1. Introduction

As mentioned above, sending students abroad and/or managing exchange programs require that agreement be reached on conditions of such activities. Such agreements benefit our students in various ways. In some cases there are significant financial benefits; in others we gain access to organizations and/or classes which would otherwise be closed to us. The material which follows except that for CAIE, lists the agreements, copies of which are in an Appendix.

2. CAIE

The CAIE has published, for the second year, a brochure listing all (except for oversights) study-abroad programs sponsored by Colorado institutions. We hope, in this way, to advertize all programs to all students, and to facilitate state-wide participation in all programs. This is, of course, no fait accompli, because of various ways of charging for programs (schools represented being large and small, state and private, military, religious, etc.), and the normal red-tape of bureaucracies. Many negotiating sessions around the state will be needed before the machinery runs smoothly.

3. International Agreements

The following agreements are included in the Appendix.

4. Agreements with out-of-state institutions

We must maintain agreements with institutions which co-sponsor programs with C.U., and also with those which run programs to which C.U. sends studetns. The following agreements are included in the Appendix.

5. In-state agreements

It is advantageous at times to have in-state agreements, especially when they benefit students on financial aid. Students from other schools who participate in C.U. Programs, and where agreements do not exist, are treated in an *ad hoc* manner. They usually receive C.U. credit which must then be transferred. Present in-state agreements included in the Appendix are:

IV. Academic Research and Training Program Support

B. General Comments

The office job description prepared by the Office of International Education reflects the realities of the present university organization, not the optimum conditions for effective operation. Within the confines of the present structure, the Office of International Education is free to serve as a service unit in any way that it chooses with no guarantee either of administrative nor financial support or of receptivity of its actions by the units it attempts to serve. The ultimate structure of the Office could very well include assistant or associate deans in charge of each of the areas of academic support, research support, and training support. Only the events of some years of operation and development and change in university functions will indicate which, if any of these are supportable. Also as noted later, there is serious question concerning responsibility for programs of an academic interdisciplinary nature, such as area studies.

For the moment, this part of the office is not only understaffed, it is completely unstaffed. Consequently, the dean and his assistant fill the position of director and assistant in each of the areas of academic, research, and training support. The dean in addition serves as director of two programs for which the Office of International Education has procured outside funds. His assistant is again involved in those programs. These two people are thus filling between four and six positions and their effectiveness in any one of them can therefore, by sheer mathematics, be expected to range from 25 to 16.7%.

The above figures, while fitting a convenient mathematical model, are not true. The fact is that the Dean and his assistant must spend far more time on the overall

problems of the Office of International Education; consequently, the attention paid to academic, research, and training support is far less than that which is needed, with the result that the office is not achieving the reputation that it should in these areas. This situation will remain a source of irritation and frustration until conveniently resolved. The first step toward this resolution is administrative recognition that the problem even exists; a situation which has not yet been met in three years' time.

C. Area Studies

1. There are presently African and Middle Eastern, Asian, Central and East Euorpean, East Asian, and Latin American Area Studies Programs, as well as International Affairs. With the exception of the latter, which is well-established mainly within Political Science, and which a boasts a sizable number of majors, the other program s come and go in their quality, number of students, faculty increases, and other factors which affect the quality and reputation of the program. All these programs have a definite set of similarities; they are all programs, none are departments. Therefore, they have no stable organization; they are all guided by committees headed by a chairperso who is approved by the Dean of Arts and Sciences. They all have low visibility, little recognition, and insultingly low budgets. It is more of a danger that a credit to a faculty member's benefit to serve on an Area Studies Committee; particularly if the faculty member is non-tenured. The record of university recognition and support of these programs has been, to this date, at best, miserable. Part of the difficulty is that these groups are small, they do not have their own courses (with few exceptions) and therefore use collections of courses given by other departments, and they are administratively placed in the wrong college. This topic will be discussed further later.

2. African and Middle Eastern Studies

So little information comes out of African and Middle Eastern Area Studies that it is difficult to comment on the programs. The university can boast of a sizable

number of highly qualified scholars in the African and Middle Eastern Areas who should be able to do far more on an Area Studies program than is bein g done. Part of the difficulty is, we believe, the unnatural combination of Africa and Middle East. Admittedly, North Africa belongs with the Middle East and not with Sub-Saharan Africa and two separate Area Studies program s should be established if there is interest, and abolished if there is not. Either way, the present unnatural combination should probably be dissolved.

With all the heavy world interest in both Africa and the Middle East at this time, it would be unfortunate if this university would take a negative decision in regard to both African and Middle Eastern Studies. On the other hand, if the present membership o f these committees will not aggressively seek funding (and to our knowledge only one proposal has been submitted in three years), then there is little hopw that the program can be made and kept viable.

3. Asian Studies

(See East Asian Studies below)

4. Central and East European Studies

The visibility of Central and East European Studies is at most 10% that of African and Middle Eastern. The Central and East European Studies Committee is defined as "anyone who is interested" which makes for no structure or organization at all. In the past three years, there have been, to our knowledge, no meetings of Central and East European Studies faculty. Again, to our knowledge, there have been no proposals submitted in support of this group.

This is a most unfourtunate situation. The university can boast a good Slavic and East European language department, and several scholars of condsiderable note.

Some of these people indpendently with their own students (usually graduate) carry out some very effective professional activities. Thus there is no intended critisim of personnel in what is written here, only in the lack of any effective organization and apparently, as a corollary, a lack of any drive and desire to develop an effective orgaization. As a result, it is quite a difficult matter for a student to gain much enthusiasm for entering Central and East European Studies.

The point has been brought up that there are probably no jobs at the other end of the line, but the question would exist as to how many of the many students majoring in English, Sociology, [redacted] Anthropology, and other liberal-arts courses expect to "find jobs in their fields" at the end of their education. The sad fact remains that both U.S. government and business should be very much interested in hiring students with area studies interest and language competencey, and it is extremely discouraging to realize that our society is not yet fully comprehending the value of these individuals.

Many of the courses necessary for an effective Central and East European studies program probably exist. The Office of Interantional Education has made and published a minimal effort during each of the past three years to evaluate course offerings and determine where loopholes exist in the various departments, i.e. where a particular department does not adequately support an area-studies program. Further evaluation of this will be made as time permits and as volunteer person power becomes available.

5. East Asian Studies

For some time both Asian Studies and East Asian Studies Committees have met together because there are many areas of common interest. It is the belief of this office that, eventually, should interest exist among students, three separate programs should

be instituted: East Asian Studies, Southeast Asian Studies, and South Asian Studies. (The geographical and political divisions of these areas are fairly will defined with exception of the question as to where to locate Mongolia; (On the other hand it is probably not too important where we put Mongolia.)

By far the most active area-studies personnel at the university, and especially at the Boulder campus, are those in East Asian and Asian Studies.

The two programs have actually been quite similar to each except that originally Asian Studies did not require the language competency that East Asian Studies does. Now that language requirements have been added to Asian Studies, it seems that quite possibly ~~that~~ the two programs are practically the same, but that the student who does show some interest in South Asia would usually procede to get the degree in Asian Studies (where our lack of language courses is ~~a detriment~~ serious).

The combined committee has a reasonably well-established setup of bylaws, holds monthly meetings, selects new members and officers in the Spring who assume their positions in the fall, is professionally active, and, with much prodding and assistance from the Office of International Education, has submitted a large number of proposals in the past few years. Several of these have resulted in at least some reasonable funding for some programs; obviously, not nearly enough of these have resulted in funding, however.

The University ~~can boast~~ has an excellent faculty in the Chinese and Japanese languages; the department however has received such impecunious treatment at the hand of the administration that the department can barely make it through the teaching of languages, and is not making the contributions it should in the field of literature. A very serious omission in the offerings of the department is in the

Korean language; steps should be taken to remedy this.

The Asianists have had another continuing problem, and that is the frequently espressed desire of the library to diperse the East Asian Collection. An examination of the good libraries at other schools indicates that the books and journals which are in Chinese, Japanese, or Korean are kept in a separate library and librarians are hired to maintain this library. It is rather indicative that the University of Colorado is barely able to support one librarian for the East Asian Collection, whereas the really significant schools in East Asian Studies support between six and fifteen professionals for East Asian collections alone.

It has been the desire of the Office of International Edcuation to place major stress on the development of programs with Japan and with Latin America, particually Mexico. We recognize that not every university can accomplish truly outstanding programs in every world area, but there are certain areas where excellence can be achieved while reasonably good programs can be maintained regarding the rest of the world.

6. Latin American Studies

Next to the Asianists the Latin American scholars have been most active in attempting to put together a program of high quality and reasonable size. They have been the most creative in developing certificate programs and perhaps out in front of all others in regard to the preliminary planning of Masters-level programs. However, they have not had the consistantly large turnout of both faculty and students at theircommittee meetings, and faltered along the way in getting some program started.

This group again suffers from lack of administrative support with the result that a university that should and could have truly powerful language, areas studies, and related activities associated with Latin America has yet to achieve this status.

V. Professional activities.

A. Professional nature of Office of International Education

It is important to note that, more than any other academic support office on the campus, the Office of International Education is a highly professional unit. Activities associated with planning, staffing, and sending students on study-abroad programs and the difficult advising of foreign studnets are to be undertaken only by highly qualified, motivated, professionally-minded individuals. These jobs are so variable, so interdisiplinary, and so demanding of creativity that few ordinary individuals can fill the slots. The feeling of professionalism must extend from the top to the bottom of the office. Secretaries hired into the office are expected to be bilingual or multilingual and to have lived outside the United States. Our job descriptions state that people must be able to work long and irregular hours under conditions of extreme pressure and urgency. The statements made to foreign students can make a great deal of difference concerning whether they are able to obtain the right kind of visa or not. The improper selection of a student to participate in a study abroad program can ruin that program and possiblely even make us persona non grata in that country. Therefore, even "little" decisions can have tremendous impacts. It is for this reason that exact job descriptions are not possible and only the experienced individuals in the office are capable of determining which applicants for any positions will actually satisfactorially fulfill those positions.

B. Relations with Organizations

1. Introductory

As with most fields, professionals involved in international exchange of personnel participate in certain organizations dedicated to helping them discuss their problems and search for solutions with their colleagues. In this particular field, the major organization is NAFSA, the National Association for Foreign Student Affairs, which is nation-wide. There are international divisions or projects within many other organizations, such as the American Council on Education, and there are smaller organizations such as the Colorado Association for International Education, the Indiana Consortium for International Projects, and the Michigan Association for Foreign Student Affairs. There are organizations like SIETAR, Society for Intercultural Education Training and Research, which are devoted to a particular component of international relations. There are also many professional organizations with international divisions, for example, the American Society for Engineering Education. In addition, there are certain organizations like the Japan Society of New York, the Japan Society of San Francisco, the Asia Society, the Association for Asian Studies, and various other groups and organizations whose purposes are more "academic" and serve the needs of scholars, particularly those performing research concerning the various world areas. It is important that the staff in offices such as our Office of International Education be members of, participate in, and attend meetings of numerous professional organizations.

There are also organizations devoted to a single or relatively restricted set of purposes. The Institute of International Education (IIE) which administers some of the Fulbright programs and coordinates the visits of many students and scholars to this country, is one such example. CIEE, the Council on International Educational Exchange, operates study abroad programs; we have made reference to our participation in their programs, particularly the one in Seville. Various members of our staff have served in various official or voluntary capacities in almost all of these organizations.

2. NAFSA

As mentioned above, the major organization for individuals in our field is the National Association for Foreign Student Affairs. NAFSA originally began (as its title might suggest) when admissions officers and foreign student advisers banded together to attempt to understand and interpret properly the ever more

restrictive and confusing rules of the Immigration and Naturalization Service. It expanded since that time to include teachers of English as a second language, individuals who send American students abroad, and community volunteers. The two longest-term professionals of our office, Ms. Ruth Purkaple and Mr. Eugene Smith, have been active in NAFSA for many years, and have contributed significantly to many of its committee and other activities. They are frequently called upon as some of the most experienced consultants in this country. Others newer to the field such as Dean Johnson and Ms. Jean Delaney are serving on committees and participating in other activities. Many of the staff have attended NAFSA meetings and profit greatly from this attendance. They will continue to participate in the meetings.

3. CAIE

The Colorado Association for International Education engages in some projects which could be interpreted as in conflict with NAFSA. Such is not the case, however. It is intended that CAIE be an organization devoted primarily to the problems of international education within the boundaries of the state of Colorado. It is true that at this time schools such as the University of Wyoming and the University of New Mexico are or have been members of CAIE; schools from surrounding states are interested in membership until such time as they can work out arrangements for their own state organizations. Again, the Office of International Education has been very active in CAIE. The Dean is this year's chairman, Ms. Purkaple has been chairman in the past, Mr. Smith is responsible for previous legislative efforts of CAIE, Ms. Fisher is the secretary of CAIE and handles CAIE travel arrangements, Mr. GIbbons is presently working with the development of a program bringing together admissions officers and teachers of English as a second language, Mr. Acosta is involved with the proposed Latin American Center, Dean Johnson and Jim Adams, a work-study student, are presently responsible for the association's computerized information retrieval system.

Already CAIE is achieving some recognition, and interested parties from other states have been inquiring into the structure and nature of the organization and have indicated a desire to set up similar organizations within their own states. CAIE will lend all possible assistance to these organizations.

4. SIETAR

SIETAR, as mentioned above, is a more restricted organization and somewhat "more academic" in the sense that it is concerned with the development of and application of techniques in inter-cultural communications. One of the frustrations in the Office of International Education is that our entire business is inter-cultural communications and yet there is really no time to devote to the development of good programs in this field. Our orientation of foreign students, our preparation of American students for trips abroad, orientation of faculty going both ways, assistance to host families and assistance to American professors with large numbers of foreign students could all be carried out were we funded for adequate personnel. Many problems which arise due to the inadequacy of individuals to communicate, in the true sense of inter-cultural communications, could be alleviated with enough efforts from the Office of International Education. Part of our anticipated future expansion is to properly address this problem. Obviously continued association with organizations such as SIETAR is important.

C. Items of Personnel Structure

1. Personnel System

The one favorable comment which could be made about the Colorado State Personnel System is that many members of the staff were awarded significant raises which brought their incomes more in line with what they should have been. Every other comment made about the system is derogatory.

The system, as set up by the state and as practiced on this campus, is wordy, complex, bureaucratic, time and paper wasting, dogmatic, dictatorial, unimaginative, counterproductive and useless. It is totally devoid of sensitivity and creativity, and tends to crush the very human elements it purports to enhance. There's no way that this system can relate to the needs of the Office of International Education or of any other organization on this campus which has to deal with human beings rather than mechanical and electronic objects. It is the strong hope of the Office of International Education that all its personnel will be made by one way or another exempt from the state personnel system so that we may go about the business of selecting the best individuals by the means we know are best for selecting them. Until we are out from under the heels of this system, the staff members will be treated as second-class citizens compared to the faculty.

2. Lack of Sabbaticals and other considerations

In the past when discussions have arisen concerning sabbatical policies for faculty, the Dean of International Education has raised the question of sabbaticals of professional staff. He has been informed through the office of the Vice-President that such policies do or might exist, but have not either been properly formulated or have not been exercised. The situation is unclear. We assume that a breakthrough may have been achieved when the University Counsel was able to take a sabbatical. The professionals in the Office of International Education are just as deserving of sabbatical leave as any member of the instructional staff and this office will work toward establishing a policy such that these individuals are indeed able to take advantage of it.

VI. Campus and/or University-wide problems

A. General Comments

It seems important that tha situations which lead to problems for the Office of International Education and thus prevent that office from accomplishing its functions be discussed in this report, even when such situations are campus or university-wide. All units must be concerned since local problems may disappear as global ones are solved. These situations, some of which are dealt with in the following sections, have some common roots. One is the lack of management capability at many levels, due largely to lack of training. Another is the dogged determination of many members of the academic community to hold on to the departmental structure and disciplinary interest, however outmoded and reactionary these may be.

B. Unbalanced administrative structure

While it is the perception of many faculty members who have never held an administrative position that the university is administratively top-heavy, it seems evident to those in middle and upper management that such an observation is not correct. One can only surmise in some cases that there is inadequate top management when problems go unanswered for months at a time, and when suggestions which disappear into the suggestion box do so forever. This is the situation which has prevailed at this university for a long period of time. It is evident that this is being improved with some changes of personnel and functions, but the efforts of the administration to remain as lean as possible, admirable though they may be, are perhaps counterproductive.

One example which is extremely important, particularly at a time of anticipated personnel change, is the Vice-Chancellor for Academic Affairs. The Dean has in various capacities throughout the years dealt with various administrators whose titles have changed but whose functions have been essentially that of the traditional dean of faculties. The most discouraging aspect of dealing with the position, regardless of the person holding it,

has been that the individual charged with safe-guarding and enhancing the academic quality of the institution has instead been forced into the position of career budget officer. It has appeared from one or two levels below this position that the pre-occupation with money or more, with the shortage thereof, has occupied so much time of the person occupying this office that there has been little strength left in the individual to contemplate the real problems of academic quality of the institution. The Dean has ~~I have~~ in the past suggested that if the work is this extensive there should be still other individuals concerned with budget matters. We realize that there are people who have a primary budgetary concern in the office of the Chancellor and all three Vice-Chancellors and that a separate Vice-Chancellor for the budget might or might not be a suitable remedy, in as much as this person and its organization would have little to do without close communication with the Chancellor and Vice-Chancellors for academic affairs, research, and planning. Neverthless, the almost morbid preoccupation with our funding problems has led to an abandonment of consideration of academic excellence. Perhaps the emphasis which the Chancellor has placed in her charge to the various units to concentrate on academic excellence within the confines of the limited resources is the administration's answer to this problem and it may well be a satisfactory one. Nevertheless, we feel that consideration should be given to the possibility of some reorganization such that the Vice-Chancellor for Academic Affairs can worry about academic quality, the Vice-Chancellor for Research can worry about research, etc..

In addition to the imbalance which may exist in the upper administrative structure there remains a significant imbalance among the various units on campus, particularly as regards to size. The campus contains one gigantic school of Arts and Sciences, several modest schools, Engineering, Business, Education, and some which are very small such as Pharmacy, Journalism, and possibly others. Inequities, therefore, exist in terms of budgets, in terms of influence of various schools, and probably most important in terms of difficulty of administration. A serious look needs to be taken at distribution of divisions and departments and a consideration of their redistribution into newly constituted schools and colleges of more nearly equal size.

C. Non-support of Interdisciplinary Programs

The modern university contains as part of its components certain interdisciplinary programs: The Institute for Artic and Alpine Research; the Institute of Behavioral Sciences; the Institute of Behavioral Genetics; The Telecommunications Program; American Studies; Black Studies. All of these are examples of interdisciplinary programs, some of them being more undergraduate curricular and some being more research oriented. The particular ones of concern to the Office of International

Education are, of course, the various area-studies programs.

For some time this office has been aware of the fact that faculty who engage in interdisciplinary efforts are not only unrewarded, they are negatively rewarded for these efforts. The files this office has collected document many cases of discrimination which could conceivably be made into reasonable court cases. As a result the young, vigorous, enthusiastic and creative faculty members with new ideas have to be told to stay away from extensive interdisciplinary efforts until they have fulfilled the requirements of strictly disciplinary contributions and been awarded tenure. The administration has been reminded of this mistreatment of individuals with some frequency over the past few years and has done nothing noticeable about it.

The problems of the world are interdisciplinary. Solutions are not achievable by businessmen or engineers or economists or philosophers. Exchange the ors for ands and solutions may be possible. It is a strange situation that universities insist upon academic celibacy in the young untenured faculty member until such a point as this person is probably no longer interested in interdisciplinary efforts. It is only through the efforts of several strong and determined faculty members that our area-studies programs survive at all.

In order to attempt to get the university to recognize this problem publicly and grapple with it officially the Dean prepared a document for consideration last year by the Council of Deans. The treatment which this was received at a COD meeting was definitely shabby, and the Dean has unfortunately not had an opportunity since that time to redraft the document, discuss the matter with the new administration and ask for its resubmission. Until there is a clear statement of principle and a show of enforcement behind it on the part of the administration that penalties for interdisciplinary activities will not be tolerated, such will continue and the achievement of quality in such programs will probably not be possible. There would also be some question as to whether the Office of International Education should even stay in business if this is the prevailing attitude.

D. Poor Management Preparation

The Dean has pointed out to the administration periodically during the last twelve years that universities are, on the average at best, run by the Peter Principle once and even twice removed and that until attention is paid to the problem of educating and motivating those in management positions such situations will continue. The average academic individual, bright and intelligent as he or she may be, is not trained in the art and science of management. The first level of personnel management and maintenance of fiscal responsibility lies with the department and division chairpersons. These are precisely those who, in deference to their colleagues, will grudgingly take

take a chairperson's position for a few years, as few as possible, and will maintain the boat in a steady position while attempting to make absolutely no ripples on the surface. The result is frequently poor personnel relationships, financial disaster and the imposition of the opinions and biases of a chairperson ~~upon his or her~~ the use of and his or her cronies upon the rest of the department. Until there is recognition that maintaining a department and improving it is a professional management job and steps ~~must~~ are be taken to achieve professional managers, we will continue to have the major management level at the university at a sub-standard level.

This is not to suggest that a long and expensive educational process is necessary to achieve reasonably good management. This Dean has outlined in the past an intensive one-week course which would make a significant difference in the level of management obtained by department chairpersons.

In addition to poor preparation of managers the university has for years drifted along with the policy of outright exploitation. A chairperson is a faculty member and is on a nine-month appointment. They may or may not receive a higher income than their colleagues. Usually the pay is more in released time. The fact that the chairman might not even receive as much as some of the older well respected professors in his or her department during the nine-month academic year is not important. What is important, however, is that any department worth keeping operates twelve months per year. Unless one-third of a chairperson's salary is added to that salary to cover this person's and/or a substitute's contributions to management during the summer this individual is being exploited. He or she is deprived of the pleasure of working in their laboratory or library, of taking a decent vacation, of revising their courses or working on a summer job. All other faculty do these things, or some mixture of them, and the chairperson at no pay keeps the department together. Until this is recognized ~~again~~ and resolved, the department chairperson is going to feel frustrated, cheated and disinterested in good management.

The problems of management extend on up the line because most Deans are ex-chairpersons, most Vice-Chancellors are ex-Deans and Chancellors are ex-Vice Chancellors, ~~those~~ though this is not necessarily the case. What starts out as poor management training continues on through the ranks, and the only difference that may exist is that those who are willing to take on the very difficult jobs at the top have indicated a willingness to be managers, and therefore have probably tried to learn from each and every success and failure in their past management experiences. Such people are motivated in a way the department chairpersons are not, and by sheer osmosis if nothing else, learn a great deal about management. Nevertheless, it would seem that the university could make a good investment by advanced management training of such persons, and continued up-dating of this training throughout their careers.

E. Lack of staff support

Members of the Colorado Commission on higher education and/or the Joint Budget Committee and/or the Legislature, none of whom apparently understand the degree of creativity that is stifled if not totally killed because inadequate funds are available for program support, have performed a disservice of monumental proportions by cutting rather than increasing staff support. It was said that they were trying to cut out staff/faculty ratio to that of CSU, when they should have tried instead to bring CSU's ratio up to ours, and then increased both. The Universtiy of Colorado is a very good institution, but can never achieve true excellence as long as the legislature insists on running a cheap show.

Studies have been made which show that there should be about one secretary for each four faculty members, i.e., each faculty member can generate about two hours' work per day. In technical departments, studies have shown the number of mechanics, electronics technicians, draftsmen, etc., needed (or at least those employed at the better, more productive institutions in the country). Faculty are not hired to type, weld, or run errands, yet many do so (usually poorly) at faculty salaries. An increase in staff support is an absolute necessity.

F. Poor Sabbatical Policies

The University has a good sabbatical program. There is one small glitch in the system, and that is that it is not adequately funded. About the most a department who allows a faculty member to go on sabbatical can expect in return is enough money to hire a graduate assistant or so. Consequently, we are faced again with the problem that academic excellence is being held back by inadequate financing. It is also true that some of the most interesting arrangements can be worked out when a faculty member exchanges with a colleague abroad, each person having a faculty fellowship and/or sabbatical arrangement, because under these circumstances, one professor can be exchanged for another, and the cost of doing so can be minimal. Nevertheless, some cost is involved. This office has requested funds in the past to assist either the CU or the foreign faculty member whichever is going into the worse economic situation, to survive during the period of time abroad. At this point, no funds have been allocated, and there has been no recognition that the request was ever made.

G. Inadequate proposal capability

It is unfortunate but true that most good things ($) come from Washington. This office, as do many others, must depend a great deal of time preparing, submitting, and following up on proposals. It has taken the Dean numerous trips to Washington to learn where to go, whom to see, and when. The cost of repeated trips to Washington, the loss of contacts between trips, and the general inefficiency of making such trips, plus the frustration of knowing that one has been unable to examine the possibilities with any degree of thoroughness, is a situation which should not exist at all. The Dean has proposed several times in the past, and other individuals have also supported this, that the University establish "our person in Washington". Other schools are able to have representatives in Washington, and it seems ridiculous that an institution of this size cannot afford such. A proposal was even made which made it reasonable for the university to risk no more than $30,000 in a one-shot effort to see how well this would work, with no commitment to continue the program should it be not satisfactory. This proposal was never acknowledged.

The Dean once mentioned to the director of a Stanford program that he, the Dean, tried to visit the Office of Education four times per year. The reponse from the Stanford director was, "We visit them once a week". If this is the way we are to manage our programs for procuring funds from Washington, we may as well admit that we wish to continue playing in the minor leagues.

Not only do we have poor representation in Washington, but we have inadequate proposal preparation facilities. There has been a significant improvement in the services offered by Contracts and Grants with the appointment of Dr. Litman as the Director of that office. Her surveys of information have been invaluable. The cooperation of the office, particularly when this office has had panic proposals (about the only kind we have had) has been excellent. The quality of service has generally been very good. However, that office is also understaffed, and consequently, partly due to the lateness of some of our proposals, we have had to do far more actual proposal typing than we should have had to do.

The inadequacy at this point is in our own office, in that we have no proposal writers. The Dean and his assistant end up writing a lot of proposals, many of them on subjects we don't even feel very qualified to

write about. We get a few statements from appropriate scholars, and must do the rest of it ourselves. The result is that we are far more immersed in details of proposals than we should be. This is due to the fact that the three associate dean's (or directors) positions, i.e., of academic, research, and training program support, are unfilled, even by part-time people, and the assistant and secretarial positions attached to those directors are also unfilled, as are the positions of directing various programs, such as the East Asian Studies Center. The result is that all of this is being done by the Dean and his assistant, and they are not able to keep up with the workload. If the University expects us to achieve any quality in our programs, then adequate staffing must be furnished.