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About the Institute

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.

- Taximetrics Laboratory

January 31, 1967

Dr. Ralph W. Richardson, Jr.
The Rockefeller Foundation
111 West 50th Street
New York, N.Y. 10020

Dear Dr. Richardson:

I am pleased to hear that the plan for the International Symposium on Tropical Root Crops is progressing. I am also pleased to be able to participate in it.

However, in spite of Dr. Tai's impression, I have not made arrangements for travel funds and am therefore seeking these. If possible, I should like to approach you for such assistance.

In an earlier letter, I mentioned my needs, namely, \$582 for air and ground transportation plus \$210 per diem and expenses, for a total of \$792. I can give you more detailed information if you require it.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 31, 1967

Dr. Rowena Swanson
Information Sciences
Department of the Air Force
Headquarters Office of Aerospace Research
Arlington, Virginia 22209

Dear Dr. Swanson:

Herewith the proposal which, as you can see, has been submitted to NSF. I would like to have your comments on it and ask if there is any portion of it that might interest you.

This is about the best explanation I can give concerning our intended work, but it probably doesn't explain things somewhere. I will be glad to enlarge upon those areas which you would like to hear more about. Looking forward to hearing from you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taxometrics Laboratory

January 31, 1967

Mr. Donald P. Kennedy
Project Director
Computer Software Management and
Information Center
COSMIC
The University of Georgia
Computer Center
Athens, Georgia 30601

Dear Mr. Kennedy:

Enclosed write-up is sent according to your interests in your letter of January 23. We look forward to receiving the directory of computer programs. Thank you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR: ch

Enc.

- Taxometrics Laboratory

January 31, 1967

Miss Eeryl Robichaud
Vice President
McGraw-Hill, Inc.
Hightstown, New Jersey

Dear Miss Robichaud:

Just make the check payable to Colorado State University and send it to me. I will have it deposited in the appropriate Colorado State University account so that we can use the money for further computation.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxometrics Laboratory

January 31, 1967

Mr. H. R. Webb
Conference Secretary
CSIRO
372 Albert Street
East Melbourne
Australia

Ref. XI/640

Dear Mr. Webb:

I have decided not to submit a manuscript for the Biometric
Conference.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taxinetrics Laboratory

January 26, 1967

Mr. P. H. Haynes
Department of Agriculture-Crop Production
University of the West Indies
St. Augustine, Trinidad, West Indies

Dear Mr. Haynes:

I am wondering if you have had any success with the financial aid to participants to the symposium. I have had, so far, no luck with the federal granting agencies in the U.S.

I corresponded with Dr. Ralph Richardson of the Rockefeller Foundation who said that he was expecting to investigate the possibility of support early this month. He further stated that I should keep in touch with you to determine whether the support from Rockefeller Foundation will be forthcoming. I hope you can give me some positive information soon so that I should know whether to continue the preparation of the manuscript.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 26, 1967

Dr. Lorin I. Nevling, Jr.
Gray Herbarium
Harvard University
22 Divinity Avenue
Cambridge, Mass. 02138

Dear Lorin:

What are the chances for a half-day symposium at the AIBS meetings this year? I am hoping to be able to gather together enough people to report the results of our computer taxonomic studies. We have had enough success in the use of our computer-aided classification methods to make it worthwhile saying something about them. I hope there will be enough time in the ASPT program to allow it. Let me know as soon as you can, and I will make the arrangements.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxinmetrics Laboratory

January 26, 1967

Dr. Phyllis V. Parkins
Director, Biological Abstracts
3815 Walnut Street
Philadelphia, Penn. 19104

Dear Phyllis:

We will soon submit to Dr. Adkinson's group in NSF a proposal for the development of an IR system for biologists. Our take-off point is the fact that many folks have worked on IR systems for literature but very few have made efforts towards IR systems for raw data. As you are aware, the two ideas do not necessarily duplicate each other.

We are hoping, however, to be able to ask you (or some of your assistants) to give us some time and advice on the development of such a system. We feel that there is no more knowledgeable source than yours about biological information retrieval and that we could profit muchly by talking to you and your programmers. I won't go into any detail about our hoped for system because it would require considerable amount of time to explain our ideas. I am sending under separate cover copies of our grant request to NSF so that you can get an idea of what we are up to.

If the grant proposal is approved, we hope to get started next summer. If we do get started then, we would hope to be able to talk to you folks some time shortly after the beginning period of the grant. I hope that we can count on your aid and advice.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 26, 1967

Dr. Harve J. Carlson
Director of Biology and
Medical Sciences Division
National Science Foundation
Washington, D.C. 20550

Dear Dr. Carlson:

On November 3 I submitted an application for international travel grant on form #99-R005.2. I wonder if this application has been considered and whether I can expect any assistance in the travel requesting. I will appreciate an early reply.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 24, 1967

Dr. J. F. Danielli, F.R.S.
Chief Editor, Journal of Theoretical Biology
The University Health Center
414 Michael Hall
Buffalo, New York 14214

Dear Dr. Danielli:

We have just received reprints of Estabrook's paper "A Mathematical Model in Graph Theory for Biological Classification". We are wondering how to get a correction made on page 310 under the heading 'Note added in proof', that Biological Sciences Tokyo is something completely strange to the citation. The citation should read: BioScience 16(11).

Sincerely yours

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 24, 1967

Dr. Llewellya H. Colinvaux
Botany and Plant Pathology
College of Biological Sciences
The Ohio State University
Columbus, Ohio 43210

Dear Llewellya:

It was good to hear from you and know that you want to go along with the analysis of Halimeda, especially the H. opuntia complex. I do believe you can put the data together very easily, particularly so since we have sent the paper on setting up the characters (Bio-Science 16(11)).

Data coding can be most easily done on sheets similar to the one enclosed. If there are any questions about the techniques, please do not hesitate to say something about it.

After you have finished the data preparation, send it to us and we will make a run on it. After the thing has been computed, we will send you back the printout with instructions for its interpretation and use. I look forward to more work on Halimeda.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

January 24, 1967

Miss Beryl Robichaud
Vice President
McGraw-Hill, Inc.
Hightstown, New Jersey 08520

Dear Miss Robichaud:

Enclosed is a statement for computing expenses. I have sent it on University letterhead merely because I do not have any billing forms. To simplify the process, please make checks payable to me.

We enjoyed seeing you and hope that we can continue to work together. I sent off the remaining printout just this morning.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

January 24, 1967

TAXIMETRICS LABORATORY

to

Miss Beryl Robichaud
Vice President
McGraw-Hill, Inc.
Hightstown, New Jersey 08520

for

Programming and computing expenses. 12 runs of violet data.

Total \$150. Make checks payable to David J. Rogers.

- Taximetrics Laboratory

January 19, 1967

Dr. Pierre Dansereau
New York Botanical Garden
Bronx Park
Bronx, N.Y. 10458

Dear Pierre:

We are very pleased to receive your three separate papers. I am particularly pleased to receive the *Sarracenia* paper and the Puerto Rico vegetation study. They are very well done.

We are enjoying our collaboration with Miss Robichaud. She is certainly a knowledgeable person and we have been glad to collaborate. Our first computer run is awaiting her arrival next Monday and we trust they will produce something useful for both you and her.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 16, 1967

Dr. Frederick L. Wellman
Dept. of Plant Pathology
School of Agriculture and
Life Sciences
Box 5397
North Carolina State University
Raleigh, North Carolina

Dear Fred:

Last September 20, I wrote Dr. Lucas about possibilities of collaborating on the information retrieval project. I sent him a description of our methodologies in order that he might judge whether or not the procedures would be useful in your project. Since I have had no word, not even acknowledgement of receipt, I assume that you want to have no part of it. But I hope that that is not the case, for I am convinced that unless we follow procedures similar to the ones outlined in the paper sent to Dr. Lucas, there will be little chance of success.

Whatever decisions you make, however, I would like to know your reactions to my proposal. We are going ahead with the development of our methodology, and you can have the results of our work, if you decide to pick it up during the developmental stages. All it would cost then would be the time spent by your group in working with us. Afterwards, the costs will have to increase.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

January 17, 1967

Miss Amy Jean Gilmartin
Department of Botany
University of Hawaii
Honolulu, Hawaii 96822

Dear Miss Gilmartin:

I am unable (I'm sorry to say) to uncover our previous correspondence and so cannot recall the questions in your earlier letter. I think from the statement that you made in your recent letter, however, that I can get an idea of what some of these questions were. If I do not answer all of them, I trust that you will forgive me and ask the questions again.

Included herewith is a reprint of a paper published in Systematic Zoology describing the new graph theory clustering method. The graph theory clustering method is so superior to the earlier information theoretic model that we have completely discarded the latter. In a number of tests on a variety of organisms, both plant and animal and at hierarchical levels from family down to intraspecific variations, this model has proved its worth. Several papers with applications are now in press and should be available soon. The 1966 BioScience paper by Estabrook and Rogers describes the method of input to this new clustering method.

We have not salvaged any portion of the earlier information theoretic clustering model. While there were probably some excellent ideas in it, the difficulty in conceptualizing programming of the model itself were too complex. It is too bad if you are 2/3 of the way through the program of that model and still expect to get any good from it. It simply is not worth the effort.

If you want, we will give you a hand with some of your work, and run some tests for you. With the latest BioScience paper in hand you should have little difficulty in understanding how to set up characters for a run. Did you ever tell me the nature of your project? What size of input do you have? How many objects, how many attributes and characters?

Please pay close attention to our statement that no computer (or model) can dictate to you what information you must use to make a

Miss Amy Jean Gilmartin

- 2 -

January 17, 1967

classification. You cannot abrogate your responsibilities, you must make the choice. The old statement "garbage in, garbage out" cannot be too much emphasized. If you do not have 60 or 50 or some other dictated number of characters, please do not manufacture them to make that number. Use only those pieces of information that you as a taxonomist know to be valid and interesting to you. No statistical technique will tell you what is good or bad information. Please listen to these words!

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

January 17, 1967

Mr. Seymour H. Schmer
Department of Botany
The University of Tennessee
Knoxville, Tennessee 37916

Dear Sy:

The specimens that we have are listed here: 632, 633, 635, 636, 638, 640, 642, 643, 645, 646, 648, 649, 651, 653. If you have any other than these, then I would like to have them too, either on personal loan or on some arrangement convenient to both of us.

We stand corrected on Hanukah.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 16, 1967

COSMIC
Computer Center
University of Georgia
Athens, Georgia 30601

Gentlemen:

Please place us on your list to receive inventories listed with
abstracts of the NASA programs.

Are you by chance considering listing any programs written under
NIH grants? If so, I will be happy to send you flow-charts, docu-
ments and abstracts of our biological similarity-clustering pro-
gram.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 16, 1967

DENVER BOOKBINDING COMPANY
2715 17th Street
Denver, Colorado 80211

Attention: Mr. Axel Erslund

Gentlemen:

Under separate cover, I am sending to you to be bound 4 issues of ECONOMIC BOTANY. Please bind these in dark green (according to W. E. Morgan Library workers this color is #83), and use gold lettering on the spine. Thank you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 11, 1967

Miss Beryl Robichaud
Vice President
McGraw-Hill, Inc.
Hightstown, New Jersey

Dear Miss Robichaud:

Your data came last week. We have had to do some repunching because (1) either our instructions were not clear or (2) your punch operator added a few extra holes. However, the adjustments are minor and we will do the runs this week. I hope that all the print-out will be back next week and that we can get together to look at it shortly.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 10, 1967

Dr. Jerry S. Kidd
Program Director for
Special Projects Program
Office of Science Information Service
National Science Foundation
Washington, D.C. 20550

Dear Jerry:

Enclosed is a preliminary budget. I hope you will be pleased to note that it falls below the top figure that I gave you recently. I will be pleased to have any comments that you care to make which will make the project more reasonable.

From our point of view, we would be very pleased if this can be drawn up as a contract to pay the full costs. I trust that this can be organized in that way.

The remaining portion of the grant instrument is almost completed (duplicated to present 20 copies). I know you will be as glad as I will be to have this job formally presented so that you can go to work on it. Again, thank you for your considerations. Let me hear from you about the budgets as soon as you can.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

January 10, 1967

Denver Book Binding Co.
2715 Seventeenth St.
Denver 11, Colorado

Attention: Mr. Axel Erslund

Dear Mr. Erslund:

We are interested in having 4 issues of Economic Botany (6 3/4" x 9 3/4") bound into one volume. Would you please inform us of the cost for having these bound in dark green (#83) with the name, volume number and the year on the spine in gold letters?

Sincerely yours

David J. Rogers
Professor of Botany

DJR:ch

- Taxometrics Laboratory

January 10, 1967

Mr. Seymour Sohmer
Department of Botany
The University of Tennessee
Knoxville, Tennessee 37916

Dear Sy:

Thank you muchly for your Christmas card. Happy Hunnucka!

I am writing to ask if you deposited all your Manihot specimens there at Knoxville, whether or not you have any more duplicates (other than the ones I have already) which you would like to dispose of. Our work seems to be progressing fairly nicely. We are now writing up the Manihot esculenta classification and will soon start on the genus. How goes it with your work?

Best regards,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

January 9, 1967

Yale University
Comptroller's Office
Drawer 1602A
Yale Station
New Haven, Conn. 06520

Gentlemen:

This is a duplicate check. I have already received the additional reimbursement, and therefore cannot accept it.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

January 4, 1967

Mr. John R. Adney
Miles,
Iowa 52064

Dear Mr. Adney:

I have forwarded your letter requesting information and spare textbooks to Dr. Richard Pohl at Iowa State University, Ames, Iowa and suggested that it would be likely that he would have items useful to you. I am sorry to report that I have no spare books along the lines requested by you, but I think perhaps Dr. Pohl may be able to help.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taxinmetrics Laboratory

January 4, 1967

Dr. Richard Pohl
Department of Botany
Iowa State University
Ames, Iowa 50010

Dear Dick:

The enclosed letter was sent to me for some unknown reason. I would not know what he wants, but I suspect that you folks might have available to send him some extension publications free. Anyway, Miles is in Iowa, not Colorado. I hope you can take care of him.

Happy New Year!

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

January 4, 1967

Dr. Paul A. Meglitsch
Biology Department
Drake University
Des Moines, Iowa 50311

Dear Dr. Meglitsch:

Your letter requesting reprints of our paper published in Science has been forwarded to me at the above address. I will be glad to supply this paper if after the following explanation you would still like to have it.

As far as we are concerned the paper is now of historical significance only and does not represent our latest recommended procedure for clustering. First of all, it is an extremely complex and cumbersome procedure that does not lend itself well to computer methodologies. While the procedure would run on IBM 704 (and as I understand was later reprogrammed for a 7090 in England), it still takes a monumental amount of time and the results are not particularly satisfying.

We do recommend the program described in the enclosed paper from Systematic Zoology. We have had a number of test cases on both plants and animals and find it very useful. I recommend strongly that you read the companion piece that I am also sending. This paper, published in BioScience this past year (1966), is necessary to understand the procedures of preparing data for the clustering method described in the reprint from Systematic Zoology.

If after this you care to still have a copy of the paper from Science, I will have a Xerox copy made for you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

February 28, 1967

Mr. John L. Pflatz
Senior Research Programmer
Computer Science Center
University of Maryland
College Park, Maryland

Dear Mr. Pflatz:

Thank you for the programs and write-ups which I have recently received from you. Whereas I have not had a chance to discuss them in depth with our project programmer, Robert Brill, I have looked them over myself and feel that they might be applied to our problems. You were quite right in your conjecture that I am interested in the analyses of graphs, but these interests are related to biological interests as well. I have enclosed a reprint which will serve to explain this relationship between biology and graph theory. I would be most interested in continuing our exchange of research information as long as the practice remains mutually beneficial.

Yours very truly,

George F. Estabrook

GFE:ch

Enc.

- Taximetrics Laboratory

February 28, 1967

Bureau of Vital Statistics
Tallahassee
Florida

Dear Sirs:

Please send me a copy of my birth certificate. I was born
in Walton County, De Funiak Springs, Florida on October 19, 1918.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 28, 1967

Professor P. H. Haynes, Secretary
Symposium on Tropical Root Crops
Department of Agriculture, Crop Production
University of the West Indies
St. Augustine, Trinidad, W.I.

Dear Professor Haynes:

Could you please tell me the number of people that I might expect to have in the audience for the presentation at the symposium? I would like to hand out copies of some of the Figures that you have received already, and will need to know how many to prepare in advance. The sooner you let me know, the better.

Thank you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 23, 1967

Dr. Robert Menzies
Duke University Marine Laboratory
Beaufort, North Carolina

Dear Bob:

It was great hearing from you.

We will expect you and Strong on or about March 17. Bring a list of the morphological states that you expect to use as a basis for comparison of your taxa or specimens and anything else that you think pertinent.

Some data for you:

Address: Colorado State University
Taximetrics Laboratory
Dept. of Botany and Plant Pathology
Fort Collins, Colorado 80521

Telephone No.: 491-5326 (Laboratory) - Area code 303
667-7286 (Home) - " " "
491-5201 (Dave's Lab) - " " "

Home Address: RFD 1, #281B
Loveland, Colorado 80537

What I will want from you is date, flight number and E.T.A.

See you soon.

Sincerely,

Henry S. Fleming
Associate Professor of Botany

HSF:ch

- Taxometrics Laboratory

February 23, 1967

Dr. Lorin I. Nevling, Jr.
American Society of Plant Taxonomists
22 Divinity Avenue
Cambridge, Mass. 02138

Dear Larry:

Thanks for your letter of the 15th. I think we will just skip the whole thing. Our material cannot be handled adequately with only 15 minutes per paper. I think we will probably put the symposium on at Christmas time in the AAAS meetings. Thanks anyway.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxometrics Laboratory

February 23, 1967

Miss Beryl Robichaud
Vice President
McGraw-Hill, Inc.
Hightstown, New Jersey 08520

Dear Miss Robichaud:

Your check and letter came on time. I hope you will have a chance to talk to Pierre soon. The work does sound exciting.

Thank you for the information from your College Editorial Department. When I have prepared something on comparative morphology, I will get in touch with them.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 23, 1967

Mr. Paul H. Orr
Mid-West Sales Office, Suite 804
British West Indian Airways
6 North Michigan Avenue
Chicago, Illinois 60602

Dear Mr. Orr:

I expect to go to Trinidad via British West Indian Airways, flight No. 421, leaving JFK 3:30 p.m. April 1 and return by the same flight (420) leaving Trinidad on April 9 at 9 a.m.

I have not yet done so but I expect to include a trip to Tobago. As I understand it, if booked outside Trinidad, this may be done with no additional cost. Is this true? I shall certainly want to include it in my arrangements. I should like to know what travel documents will be required.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 23, 1967

Dr. Pierre Dansereau
New York Botanical Garden
Bronx Park
Bronx, N.Y. 10458

Dear Pierre:

First, it seems that the best chance to have a symposium will indeed be at the AAAS meetings next December. There was no room for us a symposium on the AIBS schedule.

Concerning the other aspect of our potential collaborative effort, I am pleased to hear you are interested in doing something. Perhaps you will have had an opportunity to talk to Miss Robichaud and have some idea about the nature of our work together. Perhaps we had better not make specific plans at the moment in view of your very extensive schedule, but I will be glad to give you some ideas about possible work shortly.

I, too, have a book to write but hope to be able to put some of the work of writing onto my assistants who really have done all the work.

Reference to your inquiry about Antony Santiago, I have been bothered by this paper on two previous occasions and have turned him down each time. I shan't bother you with the details of why.

Best regards to Francois.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 23, 1967

Dr. Lawrence Stark
Department of Information Engineering
College of Engineering
Box 4348
University of Illinois at Chicago Circle
Chicago, Illinois 60680

Dear Dr. Stark:

Thank you very kindly for your reprints and cordial letter.
Here are a few of my more recent papers in the same vein which
might be of interest to you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

February 23, 1967

Dr. Brian D. Ainscough
Zoology Department
University of the West Indies
St. Augustine, Trinidad, W.I.

Dear Dr. Ainscough:

Thank you kindly for your offer to help set up something for me on your computer.

It is not my intention to use the computer at all because I think that the participants will be more interested in the output than in the hardware. I will bring with me samples of the print-out and flow charts which should do the job. If all goes well, I will have a short 16 mm movie to illustrate some of the computer work.

Looking forward to seeing you,

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 14, 1967

Dr. W. Hardy Eshbaugh
Department of Botany
Southern Illinois University
Carbondale, Illinois 62901

Dear Dr. Eshbaugh:

Thank you for sending a copy of your dissertation abstract. It is difficult to know precisely what comments can be made concerning your dissertation.

Somehow or other, however, I feel that to say that "taximetrics" will not work (or does not agree with the cytogenetic method) is not appropriate. Also to say that the "cytogenetics" method differs from the "taximetric" method does not tell me anything unless I know precisely what is meant by both.

I can sympathize with you when it comes to differentiation of cultivated species from wild ones or vice versa. We have this difficulty in Manihot. However, I would not come to the conclusion that there is some valid difference between the species because of the manipulation of the data according to one or another scheme.

We feel very strongly that one has to do a considerable amount of work with one's input information, "characters", in order to reflect the desires of the taxonomist. After all you determine what your output should look like, not the computer.

Now, having said these things, I would like to know if you would be interested to try out the methodology we have recently developed. If so, we should get together to be certain each understands the other's problem, to know which taximetric method is appropriate. There is no one taximetric method which will satisfy all considerations. Let us see if ours has any merit for your problem.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taxometrics Laboratory

February 14, 1967

Dr. Robert S. Leisner
Editor, BioScience
3900 Wisconsin Ave. N.W.
Washington, D.C. 20016

Dear Bob:

Enclosed is a list of corrections that we find to be of importance for our paper published in BioScience Vol. 16, No. 11, pp. 789-793. Is there some way to include some notification of these corrections?

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

February 13, 1967

Mr. Seymour H. Schmer
Department of Botany
The University of Tennessee
Knoxville, Tennessee 37916

Dear Sy:

The 76 Manihot specimens arrived last week. Thanks heaps.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 8, 1967

Dr. Edward N. Brandt, Jr.
Director, Computer Facility & Biostatistical Unit
University of Oklahoma Medical Center
800 Northeast Thirteenth Street
Oklahoma City, Oklahoma

Dear Dr. Brandt:

Please find enclosed the listing of the program which you requested. The chart and appendices referred to in the associated comments are, unfortunately, in short supply presently. However, the program has been submitted to SHARE Library and complete documentation will be available from SHARE soon. I am sorry I cannot be of more immediate assistance at present. In an effort to meet the spirit of your request, I have enclosed two documents describing the input to the program--aspects of the total problem not dealt with specifically in the Journal of Theoretical Biology publication. I hope you find them helpful as well.

Very truly yours,

George F. Estabrook

GFE:ch

February 6, 1967

Dr. T. D. Pennington
Department of Forestry
Commonwealth Forestry Institute
University of Oxford
Oxford, England

Dear Terry:

We have received your interesting report on the computer analysis of the Meliaceae data. I believe there are several pertinent comments which may clarify some areas. We suffer from the fact that we can't communicate face to face. I am sure that had we been able to talk with you during the data preparation, we would have had a better chance of reflecting your knowledge and interests regarding Meliaceae. You should have had at your disposal the mimeographed paper ("A general method of taxonomic description for a computed similarity measure") we sent after we had done the computing before commencing the data preparation. That paper presented the ideas necessary to frame your data in terms more likely to produce meaningful results with our methodology.

We assume that the data that you presented to us was a reworking of the information presented to the program for factor analysis. It is too bad that your input to our program was so structured because our methodology is intended to do the least damage to taxonomic data, whereas structuring the information for factor analysis forces upon the taxonomist some unhappy data structuring.

We should definitely emphasize that we do not intend the computer program to be a dictator. We intend rather that the results of the computer's run is only a hint to you, the taxonomist. It is not intended that you take this run on the computer and consider it to be the final answer. Rather, it is quite likely that the best use of this machinery is as a tester of ideas and as a methodology to suggest other organization of the data. In your particular case, much of the information probably applies rather specifically to certain groups within the Meliaceae, and there is little connection between "private information" of one group and that of another. The computer does not know this unless it is instructed. It cannot do anything precise about it. It is also the case that unless you put information in that you would like for it to use, you cannot expect to get back the desired information. It is also true that the value of the information in classification is known by you and not by the

computer. If you instruct the computer to use valueless information for the differentiation (or clustering), your output will be valueless. I mean by that statement that if you attempt to distinguish species within genera by using information only about genera, and vice versa, it is unlikely that you will succeed with the computer.

There are many different ways in which the print-out is useful. You claim that you find it impractical to describe the differences between genera with large numbers of objects using large numbers of descriptive states. If you had taken the first part of your print-out, namely, the presentation of the states describing each of the objects and listed the attributes of the objects which fell together in one cluster, you would quickly be able to discover that some of your characters were "carrying the load" as the descriptive agents holding that group together and that the different non-common information listed on the print-out were your "key characters." I suggest that had you used the machinery print-out that way, your complaint that multiple state differentiation would not be apparent.

Another note in interpretation of the relationships found is that all objects are put together first as pairs of objects. This being the case other objects joining these are likewise done in pairwise manner. This being the case, it is difficult to put together objects described by large numbers of different states. The overall similarity measure is a powerful tool. But as with any new instrument, its use takes a considerable amount of effort. We have found it useful, but only after much work to understand what is going on. If you expect to receive a monograph from the computer, you will be sadly disappointed, but if you use it as a tool, you can gain tremendous new insight into taxonomy.

Much as we would like to, we simply cannot accept any data from Mr. White or his students. We will be glad to send instructions to him to convey to his computer center (there must be one available) which can then make your data processing more convenient. As you can see, we spend much time in preparing your data before it is machine-ready. When we prepare it, we are never certain that we have done justice to your data. For these reasons, we prefer, if possible, to get our programs transferred to your computer, then you have the opportunity to experiment with the program much more readily. If Mr. White desires, we will send all the necessary programming information to him, and he can have your own programmer put it onto your computer.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 6, 1967

Mr. P. H. Haynes, Secretary
Root Crop Symposium
University of the West Indies
St. Augustine, Trinidad, West Indies

Dear Mr. Haynes:

Thank you for your letter of January 30. I will be glad to participate and please let me have a reservation at the Queen's Park Hotel.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 6, 1967

Dr. George S. Bass
Calle 31 #6-42
Bogota, Colombia

Dear George:

It is fairly definite that I will be in Trinidad April 1st to 9th. I could come on over to Colombia for a few days after that time. If you are interested in my coming over and can arrange some where between April 12 and 19, I could make some sort of survey of your problems then.

Let me know if you are still interested as soon as you can.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 6, 1967

Dr. Ralph W. Richardson, Jr.
The Rockefeller Foundation
111 West 50th Street
New York, N.Y. 10020

Dear Dr. Richardson:

A letter from Mr. P. H. Haynes, secretary of the Root Crop Symposium in Trinidad, has just arrived. He has offered to defray expenses to the symposium. As a result, I shall need no further support directly from Rockefeller. Sorry to trouble you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Tax metrics Laboratory

February 6, 1967

Mr. George W. Hess
Information & Education Administrator
Weyerhaeuser Company
Tacoma, Washington 98401

Dear Mr. Hess:

Thank you for your letter of December 30 concerning a publication of yours which we requested. We do not recall the arrival of this publication ("From Weyerhaeuser tree farms to you") and wonder if you would consider sending us another one. We are most anxious to have this fine booklet in our files.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

February 2, 1967

Dr. Azriel Rosenfeld
Computer Science Center
University of Maryland
College Park, Maryland

Dear Dr. Rosenfeld:

Your recent paper "Sequential Operations in Digital Picture Processing" which appeared in J. A.C.M., Oct. 1966, 13:4 interested me very much, for reasons essentially unrelated to digital picture processing. I am especially interested in the program mentioned near the bottom of page 488, which discovers proximity graphs, computes the order of connecturty for each node and actually draws the components. I would be most interested in any descriptions or other documentations (as well as any comments you would care to make) related to this program.

Thank you for your cooperation.

Very truly yours,

George F. Estabrook

GFE:ch

Taximetrics Laboratory

February 1, 1967

Dr. Howard Irwin
New York Botanical Garden
Bronx Park
Bronx, New York 10458

Dear Howard:

I am glad you are willing to participate in the symposium. I wrote to Lorin Nevling at Harvard recently asking for a spot on the program. I hope he concurs so that we can go ahead and get the thing.

News from New York is, to say the least, interesting. Gad, you sure have a stroke of the politician, or should I say the statesman, in you. I hope you weren't under the influence of one of your South American plant materials when you wrote me that letter and that things are really looking up.

I will be glad to have the material of Manihot as soon as you have time to box it and ship it. Send it to me through Dr. Harold Harrington in order that the thing may be recorded in the proper way. On the shipping tag, please label it as follows: For Dr. David Rogers, Old Music Bldg., Dept. of Botany, Colorado State University.

Perhaps with all the other happenings in New York, I shouldn't ask you how you are progressing with Cassia, but how are you progressing with Cassia? Did the recent reprint from BioScience on how to structure characters do you any good or did it confuse the issue? Let me know.

Things are in pretty good shape here. We are enjoying ourselves. The weather is great. I have just got through sending in a whopping big grant request to NSF to do a job of information retrieval. I hope it flies because I feel that this is a real part of taxonomy. Some day I'll tell you about it.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxinmetrics Laboratory

February 1, 1967

Dr. Frederick L. Wellman
Department of Plant Pathology
School of Agriculture and Life Sciences
North Carolina State University
Raleigh, North Carolina 27607

Dear Fred:

I am sorry to hear that your project bit the dust. I suspect the people at the various granting agencies are just not ready for this sort of thing. I have one or two suggestions which might help in the event that you folks are not so discouraged that you want to quit it entirely.

Why not start out on a little smaller scale, bite off a piece of the job and go after what you might call a pilot study for, say, a year or two of the operation? This might be more meaningful and something you could get initial support for and then go for broke. If such an idea appeals to you, we will be glad to go along with whatever support that we can give.

I have just sent in a big proposal to NSF on the work which was outlined for you in the various pieces of mimeographed paper that you have received from us. I spent better than a year developing that proposal. It was not something that I whipped together over night. Not only did I do about half the research required to accomplish the job, but I spent also a lot of time in Washington checking it out with the various granting agencies to see what it sounds like to them. We may be successful in getting the funds we have asked for.

It would be nice to be able to collaborate with somebody in your field, and we will be glad to do so in the event that our money comes in.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

OFFICE MEMO

TO: Dr. R. T. Ward

Date Feb. 1, 1967

FROM: Dave Rogers

SUBJECT: New Course

REMARKS:

Enclosed is George Estabrook's request for a new course. We do not know what number should be assigned to such a course. We have not asked for nor discussed with anyone else "formally" the need for this course. We know it to be needed. We know there is no duplication of it in the math department. Who else should see it?

- Taxinmetrics Laboratory

February 1, 1967

Dr. D. A. Corlett, Jr.
Department of Food Science and Technology
Oregon State University
Corvallis, Oregon

Dear Dr. Corlett:

Thank you for your reprints "Application of Replica Plating and
Computer Analysis for Rapid Identification of Bacteria in Some Foods,
I and II".

We would be pleased if we might have a copy of the program
developed by Mr. Wolfe which took care of the identification scheme.
Any documentation of the program will be appreciated.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 30, 1967

Dr. Donald A. Corlett, Jr.
Scientific Research Department
California Packing Corporation
215 Fremont Street
San Francisco, California 94119

Dear Dr. Corlett:

Thank you for sending the program for identification. If at some future time you decide to document the program, we would be happy to see it.

Under separate cover, I am sending three of our more recent reprints which I hope will be of interest to you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 28, 1967

Dr. P.H.A. Sneath
Medical Research Council Microbial
Systematics Research Unit
University of Leicester
Leicester, England

Dear Peter:

I was very pleased to have your paper "Trend-surface analysis of transformation grids." I think you are onto something here. I would have used a different set of words to describe it but I don't understand the math either. I think one of the nicest things you said was what you referred to as a digression (page 102).

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

P.S. Our address will change July 1 from that given on the letter-head to: Taximetrics Laboratory, Department of Biology, University of Colorado, Boulder, Colorado 80302.

- Taximetrics Laboratory

March 29, 1967

D. Van Nostrand Company, Inc.
Princeton, New Jersey

Gentlemen:

Would you kindly send me a desk copy of Davis and Heywood,
Principles of Angiosperm Taxonomy? I have been assigned to teach a
s section of a course for which this book is the required text.

Thank you.

Sincerely,

Robert C. Brill

RCB:ch

- Taximetrics Laboratory

March 29, 1967

Dr. L. R. Hill
National Collection of Type Cultures
Central Public Health Laboratory
Colindale Avenue
London N.W.9
England

Dear Dr. Hill:

Enclosed is a short descriptive statement concerning methodologies which we find useful and practical for biological classification. The statement intentionally does not include much computer program descriptions. We feel that the more important item is the biological description.

If it is desirable to have more descriptive words about the hardware, would you please indicate how this should be done? I trust that this is a satisfactory statement for Taxometrics.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

P.S. Please note that our address will change July 1 from that given on the letterhead to: Taximetrics Laboratory, Department of Biology, University of Colorado, Boulder, Colorado 80302.

Enc.

- Taxidmetrics Laboratory

March 29, 1967

Sage Books
2679 South York Street
Denver 10, Colorado

Dear Sirs:

Please send me a desk copy of "How to Identify Plants" by H. D. Harrington. I am an instructor of B 23 at Colorado State University.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

March 29, 1967

Dr. Howard Irwin
New York Botanical Garden
Bronx Park
Bronx, N.Y. 10458

Dear Howard:

A box of specimens arrived today. Since we are leaving Colorado State University and moving to University of Colorado, Boulder, Department of Biology on July 1, with your permission I will leave the specimens completely boxed and hope that you can assign them to the University of Colorado instead of Colorado State University. I will ask Bill Weber how to handle the specimens there.

The symposium is moving along well. Below is a tentative schedule:

1. Introduction - D. Rogers, University of Colorado, Boulder.
2. Mathematical models for taxonomy - G. Estabrook, University of Colorado, Boulder, 30 min.
3. Classification of Cassia, Section Apoucouita, using a graph theory model - H. Irwin, New York Botanical Garden, 30 min.
4. The genera of Chrysobalanaceae: a comparison of methods - G. France, New York Botanical Garden, 30 min.
5. A computer analysis of the species of Arcsuthobium - F. Hawksworth, Colorado State University, Fort Collins, 30 min.
6. A computer analysis of populations of Iris missouriensis - H. Metcalf, Montana State University, Bozeman, 30 min.

The titles are also tentative. I set this up for the program chairman of the Biometrics Society. If the title does not suit you,

Dr. Howard Irwin

- 2 -

March 29, 1967

please feel free to change it. I am sure we will have to submit an abstract of the paper soon but just exactly when I do not know. I will let you know.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

March 28, 1967

Dr. C. Clark Cockerham
Department of Experimental Statistics
School of Physical Sciences and Applied
Mathematics
North Carolina State University
Raleigh, North Carolina 27607

Dear Dr. Cockerham:

First let me say that as of July 1, I will be transferred to the University of Colorado, Boulder, as Professor of Biology. This explains the address given in the program below.

I have just completed the program for the symposium: "Taximetrics—Theory and Practice." We hope to have three hours, either from 1:30 to 4:30 p.m., or from 2 to 5 p.m., whichever is usual. I prefer the former timing, if this does not interfere with some luncheon meeting.

Larry Nevling suggested that we ask for a room capacity of 125. This was recommended because of the chance of attendance from both societies. I hope this figure is in the right ball park.

I think we should have both sizes (2 x 2 and 3½ x 4) of projector for our speakers.

The program lines up as follows:

1. Introduction — D. Rogers, University of Colorado, Boulder.
2. Mathematical models for taxonomy — G. Estabrook, University of Colorado, Boulder, 30 min.
3. Classification of Cassia, Section Apoucouita, using a graph theory model — H. Irwin, New York Botanical Garden, 30 min.
4. The genera of Chrysobalanaceae: a comparison of methods.— G. France, New York Botanical Garden, 30 min.

March 28, 1967

5. A computer analysis of the species of Arceuthobium — F. Hawksworth, Colorado State University, Ft. Collins, 30 min.
6. A computer analysis of populations of Iris missouriensis — H. Metcalf, Montana State University, Bozeman, 30 min.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxidmetrics Laboratory

March 24, 1967

Dr. G. T. France
INPA
Caixa Postal 478
Manaus
Amazonas, Brasil

Dear Ian:

I am pleased to have your letter of the 9th and to have your acceptance of the paper for the AIBS meetings. It is nice to know that you are planning to spend at least some time out of the bush, although the locality of this meeting (College Station, Texas) may not seem as far out of the bush as Manaus. We will let you know more details as we develop them. The plan right now calls for an introductory paper by George, one by Howard, one by Frank Hawksworth (Arceuthobium), Homer Metcalf (Iris missouriensis variants), and yours. I will chair the symposium. The date is Tuesday, August 29. I may have to put Pierre on but would rather not.

You probably should be thinking about a 250-word abstract of your paper which I hope you can get into me very quickly. The deadline is not too far away.

Big news from here is that I have resigned this position and am moving 50 miles to University of Colorado. This will be done July 1.

Best regards to you and your family,

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 24, 1967

Dr. Peter H. Raven
Division of Systematic Biology
Stanford University
Stanford, California 94305

Dear Peter:

I had just mailed out a letter to you when yours arrived. Most of the things interesting you are included in that letter, but now that you offer me an opportunity, I will add one or two other things.

Breedlove's specimens seem to be relatively immature. Can you get more mature ones? I am sending an extra set of instructions in this letter which I hope the collectors can read and follow those instructions.

As I pointed out in the first letter, one of Laughlin's collections (335) is exciting but I can't say much about it until more material is in hand. In addition to the specimens sent, it is extremely helpful in cultivar classification to have a scaled photograph of the plant. Failing a scaled photograph, at least a sketch of the branching pattern should be given with some sort of scale. I know that it is difficult to collect these kinds of data, but with this type of classification work, it is very significant.

Actually, the materials you sent are much better than most of the collector's, and I am pleased with them. I will be very pleased to have more materials. I am very much interested in the cultivation practices used with these plants to know how these tie in with those in Yucatan. Also I am interested in ethnological information that you may be able to gather.

Thanks.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

March 24, 1967

Dr. Peter H. Raven
Division of Systematic Biology
Stanford University
Stanford, California 94305

Dear Peter:

We received six specimens of Manihot from Chiapas yesterday, and assume that these were collected by your colleague (or students) in the combined anthropological-ethnobotanical studies.

In your letter of March 8, 1966, you mentioned that there seemed to be two varieties recognized by the natives in the Tenejapa area. I have attempted to relate these specimens (particularly the collections by Breedlove, numbers 14846, 14932, and 14935) to your descriptions of them, but cannot be sure that I understand what you mean by "shallowly lobed" versus "deeply lobed" leaves. The specimens here all seem to have a similar depth of lobing, though the shape of the lobes differ. One cv., Breedlove No. 14932, has narrow, almost linear lobes, another, No. 14935, has what we lump together as "obovate-lobed." Does this come close to your designation?

Although the other three specimens sent (Laughlin 335 and 1125; Breedlove 14574) are very interesting, the specimens are too incomplete to do anything with. I am particularly excited about Laughlin 335, collected near Acala on 26 February, 1966, for the foliage of that specimen is reminiscent of cultivars found almost exclusively in the Guianas and further south along the coast in northeastern Brazil. Too bad that specimen is so incomplete, both from the specimen and note standpoint. Are there more data for all of these?

I have progressed far enough in the cultivar classification to be able to assign Breedlove 14932, 14935 and 14846 to groups. These are:

Breedlove 14932: Group I, linear-lobed, silver stemmed group.
Breedlove 14935: Group II, obovate-lobed, silver stemmed group.
Breedlove 14846: Group III, linear-lobed, brown stemmed group.

Laughlin 1125 is a wild species of Manihot that has a description, but the names are confused, and I haven't straightened it out yet.

March 24, 1967

The three Breedlove specimens assigned to groups indicate some improvement in data collection, but still not quite far enough along to accurately designate the specimens. I hope he (and any others who will be making these collections) will reread the instructions I sent you last year. If more instruction sets are wanted, I can send you some.

I am assuming you intend these specimens for my collection. I trust this is the case, because these are valuable additions to our knowledge of manioc in Mexico. Please keep them coming, and I hope that the designations given are helpful.

On another subject, I enjoyed yours and Dick Holm's paper in Society of Systematic Zoology on the place of systematics in the level-of-organization approach.

Also, I have resigned here at Colorado State University and am moving over to Boulder to join the Biology Department there, and work with Askill Löve. I think we can move ahead more rapidly there. Things are too practically-oriented here to suit our taste.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

March 23, 1967

Dr. Boyd A. Martin
College of Letters and Science
University of Idaho
Moscow, Idaho 83843

Dear Dr. Martin:

I am pleased to support the application of Dr. Richard M. Klein for the position of Head of the Department of Biological Sciences at the University of Idaho. My comments about Dr. Klein are based on eight years as a colleague at the New York Botanical Garden where I was Curator of Economic Botany from 1957 to 1965. We worked closely together on a number of projects, both formally and informally. My comments are numbered according to your requested list.

(1) Dr. Klein's personality is not flashy. He definitely works well with individuals, and in formal sessions his tendencies towards aggressiveness are controlled and tempered. On occasions where I have seen adverse circumstances where there might have been a clash of personalities, Dr. Klein was able, by his personality, to smooth out an otherwise unpleasant situation. Dr. Klein's personality may not come across on one meeting, but it is my impression over the years that his personality is sound, sensible, somewhat reticent. I believe him to be firm but not dogmatic, pleasant but not cloying.

(2) My impression of Dr. Klein's administrative judgment is clearly an observation. He has never been my administrator and these statements, therefore, represents my observation of him in relation to others. Some of the attributes listed in (1) clearly play a role in this aspect. He will never come to a meeting without having done much work to discover answers so that his judgments will not be snap. In my dealings with him, I have discovered that his bases for judgments are factual, not hearsay. This I believe to be the most critical element as far as your question number 2.

(3) My firsthand knowledge concerning your third question is that Dr. Klein has planned complex programs of many sorts during his career. These give him the basis to develop good programs in teaching and research as head of department. In this connection I believe that

March 23, 1967

Dr. Klein will not be swayed by fleeting, popular, bandwagon-type programs. He will rather be able to suggest a proper blending of that which is new with that which has merit from older activities. Indication that Dr. Klein has these capabilities are the wide ranging efforts he has made in his own research and allied endeavors.

(4) Without question Dr. Klein is an internationally known figure, and his reputation outstanding. His knowledge of the people interested in biology in general, and physiology in particular, is very broad. His personal acquaintances range across the board. From his present position, he is able to keep in touch with Washington's granting agencies very well. I think Dr. Klein can uncover grants in some areas that have been forgotten by most research administrators.

(5) I do not believe Dr. Klein to be "a joiner." That is, he has not (to my knowledge) become a member of any fraternal organization nor has he had much contact with the business community per se. I doubt that this plays a particular role in your choice of a candidate for the position, but if that is a requirement, it should be stated to him as such and I am sure he will either accept or reject this aspect on logical grounds. He and his wife are good hosts in their home. Both are confirmed outdoorsmen and their vacations carry them to places of biological interest. For example, one of Dr. Klein's vacations was spent in the Okefenokee Swamp. This fascinating biological province would hardly be a type of locality to entice any but the most intrepid biologist. In other words, Dr. Klein's life is science and he contributes his total effort towards the development of activities with his purview.

I am a very strong supporter of Dr. Klein. I know of few other men whom I can endorse with such enthusiasm.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 21, 1967

Dr. F. A. Stafleu, Editor
TAXON
106 Lange Nieuwstraat
Utrecht, Netherlands

Dear Dr. Stafleu:

Returned herewith is the proof for Mr. Estabrook's paper. We are very pleased with the fine typesetting job. You will note our corrections.

We are a little worried about the figures, which will have to be changed about. If it is at all possible, we would be pleased to see the corrected proof of these, because they are central to the most critical part of the paper.

We wish to order, in addition to the 50 free reprints, 150 more. Please send the bill for these to me at this address.

Very sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

March 21, 1967

Mr. Harold K. Voris
Division of Reptiles
Chicago Natural History Museum
Roosevelt Road and Lake Shore Drive
Chicago, Illinois 60605

Dear Harold:

We are all anxious to hear of your progress, especially as it was enhanced or hindered with the computer techniques. Please communicate when you get a chance.

Very truly yours,

George F. Estabrook

GFE:ch

- Taximetrics Laboratory

March 13, 1967

Dr. Howard Irwin
New York Botanical Garden
Bronx Park
Bronx, New York 10458

Dear Howard:

I am afraid that it seems that I can't make up my mind (which is probably the case) but the symposium at the Texas meeting is back on again.

I had a phone call from the chairman of the Biometrics Society, and this time we were invited to put on a symposium. I had, you will recall, asked Nevling to allow us to put on the symposium and got turned down. Now the shoe is on the other foot and it feels much more comfortable. The final arrangements are (provided you and the others agree) that there will be a jointly sponsored one-half day symposium on Tuesday afternoon August 29. I would like to have the program something as follows: one theoretical paper presented by George; follow this with reports of applications starting with yours and Frank Hawksworth on Arceuthobium (species studies); then Homer Metcalf's studies of Iris missouriensis variations; and Pierre Dansereau's ecological study of the stemmed yellow violets. I don't believe that we will have time to put Ian's study on and give any of the rest of you enough time. This will make a one-half hour presentation for each person. I would suggest planning for about 20 minutes and allow 10 minutes discussion of each paper. I will try to summarize the whole at the end.

I do hope you can make this and I am sorry that it is inconvenient for Marion and you because of her commitments. I do believe, however, that the AIBS meeting can catch more taxonomists and these are the people whom we are particularly concerned to reach. I also believe that the joint symposium between the Biometrics Society and ASPT is a good deal. Please let me know at your earliest convenience if this is suitable.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxinetrics Laboratory

March 13, 1967

Mr. Homer N. Metcalf
Plant and Soil Science Dept.
Montana State University
Bozeman, Montana 59715

Dear Homer:

As I hinted in my post card, the AIBS symposium is on again. This time it is a jointly sponsored one between the Biometrics Society and American Society of Plant Taxonomists, and even better this time they invited us. We are on for Tuesday afternoon, August 29. I am writing to Dansereau and Howard Irwin at New York Botanical Garden to ask them to participate. I am sure Irwin will report on Cassias, and I hope that Dansereau will report on his ecological study of stemmed yellow violets. I will ask George to put on a one-half hour discussion of the theoretical aspects at the beginning and the others en suite. I hope you can still participate. Drop me a post card as soon as you can.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

- Taxinetrics Laboratory

March 15, 1967

Dr. Jerry S. Kidd
Program Director for
Special Projects Program
Office of Science Information Service
National Science Foundation
Washington, D.C. 20550

Dear Jerry:

On a separate page we are supplying information to be added to the grant instrument. I trust that we have come to grips directly with the questions you asked and the points that seemed to be in doubt.

My reaction to the points was, "I'm glad you asked that question." For as I look through, I discover that the points touched upon were not well defined by us and also indicated to us that your reviewers are doing a good job. It is certainly evident that to have picked out the points raised, the reviewers have spent much time.

Thank you for the letter and for the opportunity to clear up these points.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taxometrics Laboratory

March 13, 1967

Dr. Pierre Dansereau
New York Botanical Garden
Bronx Park
Bronx, New York 10458

Dear Pierre:

Recent developments have caused me to ask for your patience with me. I had a call from the chairman of the Biometrics Society inviting us to put on the symposium we had originally intended for the AIBS meetings in Texas. Dr. Cockerham, Chairman of the Biometrics Society, has arranged for a jointly sponsored symposium between the Biometrics Society and the American Society of Plant Taxonomists.

I am sorry that this development has occurred in this manner, particularly when I know of your very busy schedule. But it is my opinion that we have the opportunity to reach more biologists at the AIBS meetings than we get at the AAAS meetings. For this reason I am pleased that we have been invited, and I will be even more pleased to know that you will be able to participate. The arrangements are now for a one-half day symposium on Tuesday, August 29. I suggest the following arrangements for the symposium. Title: Taxometrics--Theory and Practice. I will chair the symposium. The first paper will be the theoretical aspects presented by George Estabrook. The remaining papers will be the various applications and include yours, Howard Irwin's, Frank Hawksworth's (species of Arceuthobium), Homer Metcalf's (variance of Iris missouriensis), and a summary. I do hope that you can participate for this is certainly an exciting application of our methods and will be a valuable contribution.

Please let me know at your earliest convenience if this is suitable.

Best regards,

David J. Rogers
Professor of Botany

DJR:ch

March 10, 1967

Mr. John Graham
The Computing Center
Post Office Box 5445
North Carolina State University
Raleigh, North Carolina 27607

Dear Mr. Graham:

I am enclosing a set of listings for the similarity-clustering program, together with a sample of the output it produces. In converting to the IBM 360, you should take note of the following problems.

(1) MDATA table (whose structure is described in the write-ups and in the listings) is unpacked and edited by a routine written in MAP (7044 assembly language). The editing function could easily be rewritten in FORTRAN. The unpacking function could be rewritten in FORTRAN too, but it would operate rather inefficiently. FORTRAN is not designed to manipulate information in less than full word modules. It can be tricked into so doing, sometimes quite effectively, but in this case, the performance would be a clumsy one. I would suggest rewriting the editing function in FORTRAN and rewriting the unpacking function in 360 assembly language. Watch out for the change from a 36-bit word to a 32-bit word.

(2) All FORMAT statements for output assume a printer with 132 characters per line. If your 360 printer has fewer characters per line, you must reformat the output.

(3) The carriage control characters work on the 7044 as follows:

Carriage control character	Action before Printing	Action after Printing
blank	none	1 space
0	1 space	1 space
1	eject page	1 space
+	none	none

If the 360 carriage control characters function differently, the carriage control character which begins each output FORMAT statement must be checked and in some cases changed. When working in this area, study the sample print-out enclosed for the desired print effect.

March 10, 1967

(4) In the 7044 operating system (IBSYS), the standard input tape is tape 5 and the standard output tape is tape 6. All READ 5 and WRITE 6 statements will have to be changed to fit the requirements of the 360 operating system.

(5) The statements CALL CHAIN(1), CALL CHAIN(2), etc., CALL CHNKIT, are peculiar to the 7044 method for permitting program overlay (the facility for calling in and executing sections of the program one at a time). The 360 operating system may employ different conventions for this feature.

(6) All statements prefaced with \$ are directives to the 7044 operating system and will have to be replaced by their equivalents in the 360 system.

(7) Limits on table sizes will depend on the amount of core storage available to you. This may require changes in DIMENSION and COMMON statements and tests for overflow of tables.

I think that all statements not affected by the above considerations can stand as they are, but program conversion being the nasty job it is, you will in the course of your efforts probably discover other areas of incompatibility. I wish you success in your efforts and if I may be of further assistance, please contact me.

We have had numerous outside collaborators running studies through this program and we have been interested to discover the wide variety of classificatory problems to which this method has been applied. We would be quite interested to know what applications you have in mind. In particular, we are curious to know how the method might benefit your School of Design.

Sincerely,

R. C. Brill

RCB:ch

Enc.

- Textiles Laboratory

March 10, 1967

Dr. Paul Smith
University of California
Davis, California

Dear Dr. Smith:

Charley Heiser suggested that I contact you. I am sorry that he did not give me your department, but I trust this letter will reach you anyway.

I had asked Charley for a black and white photo of one of the larger fruited chili peppers. The reason for the request is that I am writing a small popular account of economic botany and would like to illustrate Capsicum peppers with a good black and white photo.

First of all, would you be willing to allow me to use one of your photographs if one be available? And second, do you have any published illustrations which I might check to see whether that particular illustration could be used in my book?

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

March 9, 1967

Dr. Roger Revelle
Center for Population Studies
Harvard University
Cambridge, Mass. 02138

Dear Dr. Revelle:

Following the instructions in the appendix to Report #2 of USNC/IBP, I am submitting a copy of a proposal to the executive secretary of the USNC. The proposal for a biological information retrieval system has been sent to the National Science Foundation, Office of Scientific Information Services.

As I look through Report No. 2, I find no evidence that the problems involved in storing and retrieving the information to be derived during the IBP has been studied at the level of the executive committee. It would strike me as an important function of the central committee to guide the various activities in the process of storing and correlating data from the various areas independently and collectively. It seems that this function merits a subcommittee of its own whose function would be to examine existing methodologies and determine whether there are suitable computerized techniques available to the various disciplines involved.

I have not been active in IBP directly, but have been working with several of the national committee members and some of the subcommittee organizers. I have, for example, been in close contact with Dr. Sidney Galler and Dr. Don Squires. I have contacted Dr. Warren H. Wagner with a suggestion for the systematics subcommittee. I have also worked with Dr. Calvin Kopsak organizing some of the work on surveys of small grains for the IBP program. Dr. Kopsak is now on loan to the International Atomic Energy Agency - Food and Agriculture Organization of the United Nations. My work with him is to develop the information retrieval system for his committee's particular interests following the lines of the proposal submitted to the National Science Foundation.

The unique features of my proposal make it possible to tailor-make information retrieval systems for individual disciplines. It is also designed to allow maximum use of natural language instruction

Dr. Roger Revelle

- 2 -

March 9, 1967

to the computer. We feel the features embedded in this proposal have great merit for those about to embark on projects for IBP. And we feel that we can be of considerable service to IBP and would be glad to serve on a committee in which this aspect of the studies is given some recognition.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

enc.

cc: Executive Secretary USNC/IBP

- Taximetries Laboratory

March 10, 1967

Dr. Maynard A. Amerine
Professor of Enology
University of California
Davis, California

Dear Dr. Amerine:

I should greatly appreciate receiving a reprint of your article "The Search for Good Wine" published in Science 154 (3757): 1621-1627, and other allied papers.

Thank you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taxometrics Laboratory

March 9, 1967

Executive Secretary
U.S. National Committee
International Biological Program
Division of Biology and Agriculture
National Research Council
2101 Constitution Avenue
Washington, D.C. 20418

Dear Sir:

I am submitting herewith one copy of a proposal submitted to the Offices of Scientific Information Services of the National Science Foundation. This proposal is sent to you because I feel that many of the areas of the International Biological Program could be well served by this type of information retrieval system. I will be glad to respond to any questions which may develop as a result of submission of this proposal, and I look forward to hearing from your committee.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

March 8, 1967

Dr. Warren H. Wagner, Jr.
Director, Botanical Gardens
The University of Michigan
Ann Arbor, Michigan 48105

Dear Herb:

Small things first. Please let me know the name of the program chairman for the botanical science section of AAAS for the December meetings.

On examination of the USNC/IBP Subcommittee on Systematics and Biogeography Supplementary Questionnaire, I find that I cannot contribute greatly to the activities listed therein. I do, however, have a proposal which I am sending with this letter of a procedure for a computerized information retrieval system. The proposal is now in the hands of NSF.

It has been my experience, and I am sure yours, that biologists tend to attack such large sized problems much in the same way as pack rats. They go into the field with the idea of gathering specimens and data but with never a thought in their heads about how they might most efficiently gather the data for others to use. Witness, for example, the magnificent collections of unsorted and unused materials of Hevea and Cinchona during World War I and II.

To do any good, we would best start out with some satisfactory system for data gathering and structuring such that when the information is returned it does not get lost but can be kept in some easily accessible, correlated system. This is as important for ecologists, geneticists, and molecular biologists as it is for taxonomists. Therefore, I propose that before IBP gets going there be some decisions made, preferably through the Subcommittee on Systematics and Biogeography to the full United States National Committee for IBP, to adopt an information retrieval system.

We have already done a considerable amount of the research necessary to make the system which we propose workable. Much more work still needs to be done, as you can see from the enclosed grant request.

Dr. W. H. Wagner, Jr.

- 2 -

March 8, 1967

I trust that you and the committee can see fit to endorse this particular project. I am sending copies of the grant request to several other members of IBP to bring the same thing to their attention. Please let me know if this proposal strikes a sympathetic note with you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

March 8, 1967

Faculty Service Desk
College Sales
The Macmillan Company
866 Third Avenue
New York 10022

Gentlemen:

I would like a desk copy of Development in Flowering Plants
by John G. Torrey. I plan to use this book in a new course to be
offered at Colorado State University in the Department of Botany.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 8, 1967

W. H. Freeman and Company
660 Market Street
San Francisco, California 94104

Gentlemen:

I would like a desk copy of Comparative Morphology of Vascular Plants by A. S. Foster and E. M. Gifford. I plan to use this book in a new course to be offered at Colorado State University in the Department of Botany.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 7, 1967

Denver Bookbinding Company
2715 Seventeenth Street
Denver 11, Colorado

Attention: Mr. Axel Erslund

Dear Mr. Erslund:

I am sending under separate cover 4 issues of Economic Botany to be bound into one volume. Also enclosed with these 4 issues is a bound volume (Vol. 12, 1958) which I would like you to use as an example for the color and position of printing on the spine.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 6, 1967

Dr. Thurman T. Grossnickle
Executive Secretary
Medicinal Chemistry B Study Section
Division of Research Grants
National Institutes of Health
Bethesda, Md.

Dear Dr. Grossnickle:

Enclosed are two maps, one to get you out of Denver and one into Fort Collins. As a resume: on leaving the airport take Quebec Street north to Interstate Highway 70 west. From there take Valley Highway (Interstate 25) north towards Cheyenne.

Stay on 25 to the Fort Collins area (about 65 miles). Take second Fort Collins exit which is Highway Colorado 14. About 4 miles west at the second traffic signal you will encounter, turn left (south) on College two blocks to Laurel Street. Turn right on Laurel and look for alley entering on left (1/2 block). My building is the one-story red brick building, the first one on the campus.

Looking forward to seeing you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

MEMORANDUM

March 3, 1967

TO: Dr. Kenneth Medearis, UNIVERSITY COMPUTER CENTER
FROM: David J. Rogers
SUBJECT: For Use in the NSF Computer Proposal

- Project names:
1. Use of computers in classification
 2. Biological information retrieval systems
 3. information processing systems
 4. Use of IBM equipment in processes of biological classification
 5. A computer-aided classification of Cinchona.
 6. Classification of Cassia
 7. World monograph of marine Isopoda
 8. Classification of Iris missouriensis
 9. Monograph of Manihot esculenta
 10. Classification of sea snakes (Hydrophiidae)

Brief description: The first four projects listed above are attacks on various aspects of the total process of classification. Within these projects are such problems as pattern recognition, similarity-clustering procedures, information processing and retrieval, and several others not yet defined by this group. The work involves the development of rules and logic for the biological problem, the discovery of mathematical models and algorithms, the development of practical and efficient computer programs, and practical testing. The projects listed from five through ten are the applications we make of the programs developed in the first four. These are in conjunction with a variety of biologists around the country, plus our own in-house interests. The projects give feed-back concerning the value of the programs, and corrections to be made in the programs, plus ideas for the development of new methodologies.

Principal Investigators: ROGERS, David J., Professor; FLEMING, H. S., Associate Professor; ESTABROOK, G. F., Instructor; and BRILL, R. C., Programmer.

- Taximetries Laboratory

March 2, 1967

Director of Computer Center
University of Colorado
Boulder, Colorado

Dear Sir:

Will you please check the accuracy of the time for job
#56073, date 03/01/67? The time seems inordinately long for
the output.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

- Taximetrics Laboratory

March 2, 1967

Mr. Homer W. Metcalf
Plant and Soil Science Department
Montana State University
Bozeman, Montana 59715

Dear Homer:

We were unable to get a spot on the meeting of the AIBS next August. The program had already been filled. We will try instead to get a spot on the AAAS meetings next December in New York. I hope this is not an impossible thing for you. I think the other people--Dansereau, Irwin, and Hawksworth--will be able to participate in the meeting at Christmas time. Let me know whether you can participate in the symposium or not.

I have proposed your name to Dick Foskett for the job as Associate Dean of Agriculture. If you do not hear from him within the next week, I suggest strongly that if you really are interested in the position, that you send in your application saying that I have recommended you.

I am enclosing herewith a statement of computer charges. I wish we could provide free services, but can't any longer.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taximetrics Laboratory

March 2, 1967

To Professor Homer N. Metcalf for computer services on Iris
data \$100.00. Please make check payable to Colorado State
University and mail to Dr. David J. Rogers.

- Taximetrics Laboratory

March 1, 1967

Dr. L. Edgar Lee, Jr.
Assistant Chief for Clinical Programs
Research Grants Branch
National Institute of General Medical
Sciences
Bethesda, Md. 20014

Dear Dr. Lee:

According to provisions of Section F - Costs, 540. Direct Cost Expenditures, B. 42. Travel (pages 49, 50), (b) Foreign Travel, I am submitting a request for the remaining funds presently in the grant proposal #GM 13974-02. The needs for this travel are explained as requested. I trust I may have approval of this request shortly as the trip is planned for April 1 through April 10.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

cc: James R. Grace, Contracts and Grants Administrator

P.S. A statement of full expenses is attached.

REQUEST FOR OUT OF DOMESTIC TRAVEL FUNDS FOR FOREIGN TRAVEL

Request that the amount of \$140 presently extant in the budget of grant #GM 13974-02 be okayed for assistance in travel to Trinidad. This travel is in conjunction with the presentation of the computer methods developed by this laboratory and under the tenure of this grant. Two presentations will be given of computer methodologies before an audience where this type of work is greatly needed. Specifically, this is the International Symposium on Tropical Root Crops. The University College of the West Indies is the sponsoring organization. Travel to the meeting is partially covered by funds from the University. It is my anticipation that about 80-85% of the funds for the travel will be met by the University and about 15% is necessary for me to provide. The funds will be largely for per diem and ground transportation during the 8-day meeting.

David J. Rogers, Principal Investigator

Richard T. Ward, Department Chairman

James R. Grace, Contracts and Grants Administrator

Date _____