



Hunt Institute for Botanical Documentation  
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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.

31st October 1968

Dr. Ernest E. Wahlstrom  
Dean of the Faculties  
Regent 306  
Campus

Dear Dean Wahlstrom:

It has come to our attention through Dr. R.M. Dougherty, that the Library is releasing three FLENSWITERS. We understand that they will be available to the various departments on campus dependent on their need of the equipment.

The Taximetrics Laboratory is working with INSTAAR and the Museum in the preparation of large and important data banks for input to TAXIR. (TAXIR, you may recall, is a high powered information retrieval system which has been built by the Taximetrics Laboratory under Grant Q-610 from the National Science Foundation. A formal demonstration of the working system was given on 7th and 8th October, 1968.)

It is an essential part of our research and development design to prepare data banks from various research organizations using TAXIR. INSTAAR's climatic data and the Museum's Bryophyte collection are the first such data banks. They have been chosen for several reasons:

1. They contain information important to the scientific community.
2. They are at hand at the University.
3. They are of the proper size and type.

In order to efficiently prepare these data banks, it would be of great importance to have access to FLENSWITER equipment. Thus, we would like to determine:

1. Can we obtain use of the machines released from the Library for our work.
2. If so, what procedures must we follow.

Dr. Ernst E. Wahlstrom.

31st October 1968.

Time is a major consideration in this project, and we would appreciate your earliest reply.

Sincerely,

David J. Rogers  
Professor of Biology  
Project Director

DJR/jep

cc: Dr. F. Thomas Galloway, Scientific Information Service, N.S.F.  
Dr. Hugo Rodeck, Director, University Museum.  
Dr. Jack Ives, Director, INSTAAR.

31st October 1968

Dr. Ernest B. Wahlstrom  
Dean of the Faculties  
Regent 306  
Campus

Dear Dean Wahlstrom:

We have entered into a project to prepare and mount our climatic data bank with the Taximetris Laboratory.

The successful outcome of this project is important to both us and for the development of TAXIR, a general and useful information retrieval system.

We would appreciate any support you could give us at this time, especially the assigning of a FLEXWRITER for our use.

Sincerely yours,

J.D. Ives  
Director

JDI/jep

29 October 1968

Miss Gladys L. Lytle  
Department of Zoology - Snow Hall  
The University of Kansas  
Lawrence, Kansas 66044

Dear Miss Lytle:

We would be pleased to see you sometime in November. The earliest date that would be convenient to us are Thursday and Friday, November 21 and 22. I hope that you can come at that time. You can see that we do not care for weekends. I hope it will not be too rough for you to come at that time. I hate to break into the weekends of my staff members.

When you do come, please bring along some of your data and other descriptive information about your problem. It is usually better if we can talk in terms of your own efforts rather than some hypothetical problem.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

29 October 1968

Dr. Howard S. Irwin  
The New York Botanical Garden  
Bronx, New York 10458

Dear Howard:

Would you be kind enough to have made Xerox copies of all the families and numbers which you use to order the Herbarium? This will be helpful to us in organizing some data on chromosome numbers which Aspell Löve compiles.

I am not sure whether your list includes pteridophytes and gymnosperms as well as angiosperms, but if it does would you please include those as well.

I'll be heading for the east coast some time late in November or early December. If there is time, I might drop by to see you folks. Will you be there? I'll let you know more definitely as the time draws nearer.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

29 October 1968

Dr. F. James Rohlf  
Department of Entomology  
The University of Kansas  
Lawrence, Kansas 66044

Dear Dr. Rohlf:

Dr. N. Jardine, whom we invited to chair the session on Mathematical Methods and Systematics, Wednesday afternoon of the Numerical Taxonomy meetings, 5th, 6th and 7th of this November, has indicated that he will not be able to attend. We would be most grateful if you would be willing to step in and act as moderator for this session.

I look forward to meeting with you soon.

Very truly yours,

George F. Estabrook

GFE:gm

29 October 1968

Dr. Arthur S. Boughey  
Population & Environmental Biology  
University of California  
Irvine, Calif. 92664

Dear Arthur:

I finally and belatedly have read your manuscript, "Computers in Taxonomy." I appreciate your sending it. Certainly the concepts given there do parallel my feelings. I have only two comments that you might care to examine. On page 4 of the manuscript you have indicated that Kew is the only organization which cuts up and files pages under the appropriate genera. As a matter of fact the New York Botanical Garden and the Gray Herbarium both do this. I believe as a matter of fact the idea originated in New York with the former curator,

Another comment is that you might be interested to read our paper,, "Uses of Computers in Studies of Taxonomy and Evolution," a copy of which is enclosed.

Other than these comments I find it an interesting summary of activities but one which I believe could be expanded today.

We look forward to seeing you next week.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

29 October 1968

Mr. Raphael J. Moses  
515 15th Street  
Boulder, Colo. 80302

Dear Mr. Moses:

I noted in the Camera your election as president of the Associated Alumni of the University. This prompts me to write to ask if you are interested in more dialogue with various members of the faculty, to become more familiar with the activities on campus, and perhaps to enlarge the scope of communication between alumni and faculty. I have felt that many activities, such as those we are participating in (use of computers in classification and information retrieval in biology), go unnoticed for reasons which we are both familiar with.

Perhaps you (and other alumni) would be interested in hearing about some of our activities which we, of course, find very exciting. Since some of the things we are doing in biology could very definitely be useful to various members of the community, I would be glad to give you a summary of our activities, if you so desire. I will be pleased to hear if you are interested.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

28 October 1968

Dr. John Popenoe  
The Fairchild Tropical Garden  
Miami, Florida 33156

Dear Dr. Popenoe:

I am pleased and honored by your invitation to deliver the David Fairchild Lecture in Botany. Friday evening, February 21, is satisfactory. I will probably come a little earlier and spend some time in the garden and surrounding areas. I will give you more details about the title when I have given thought to the scope of the lecture. I would like to combine the study of Manihot to some extent with our efforts on the use of the computer on such studies, but whether I can make a meaningful whole of both in one lecture I have not fully decided. It might be too much to try to tell people about the application of computers to these studies at the same time talking about the interesting research on the plants themselves. More on this when I have put the ideas together.

Enclosed is a carbon of a letter to Alcides Texiera, the director of the São Paulo Botanic Garden, now on leave at the New York Botanical Garden. If we get any cooperation from collectors in South America to send seeds and other propagating material to you, we will get it through dr. Texiera. I am compiling a list of other potential contributors to the Manihot collection and should have that list to you shortly.

I was very pleased to hear of the growth and health of the plants you have there. We have looked up the collections made by Gentry and have not found the documenting herbarium specimen supposedly at the National Arboretum. We do have the National Arboretum collection here. Perhaps a letter to Fred Meyer, curator, would discover whether some of the materials are still in their collection that I do not have. If the M. flabellifolia specimen you have from Quincy is in good health and of sufficient size to spare a document from it, I would like either to gather one when I come in February, or ask you for a specimen. Incidentally, the species, M. carthagenensis is an epithet which has been used as a sort of "garbage pail" when nobody knew what to call a particular specimen. As I recognize carthagenensis it is a well defined species occurring only along the dry coastal Caribbean areas from the northeastern end of Venezuela to the west, and stopping in Colombia.

I'll be in contact with you again shortly.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:qm

25 October 1968

Dr. Alcides Texeira  
c/o Dr. Clark Rogerson  
New York Botanical Garden  
Bronx, New York 10458

Dear Alcides:

Recently a very fine opportunity for improving our research capabilities with the genus Manihot has occurred as a result of Dr. John Popenoe, director of the Fairchild Tropical Garden in Miami. Dr. Popenoe has become interested in the genus and has an opportunity to raise many of the species there. I am encouraged by his interest because it offers an opportunity to have a source of living material for various types of studies much closer at hand than has been the case in the past. Dr. Popenoe has asked me to find for him people who would be interested in sending seed or other propagating material of both wild and cultivated species of Manihot.

Since you are in much closer touch with many of the workers in Brazil other other countries of South America I wonder if you would be willing to use your good offices to encourage not only the people at your own botanical garden but in other institutions (such as Rio, Recife, Belem, Brasilia, etc.) to cooperate with both Dr. Popenoe and me in getting material in. Please let me know if you have time and are willing to initiate the correspondence with these other workers and how we may best achieve a viable working arrangement. If you are hampered by lack of secretarial help at the moment, perhaps you could provide me with the names of the most likely persons who would cooperate.

Best regards to you and Beulah.

Sincerely,

David J. Rogers  
Professor of Biology

DJR: gm

CC: Dr. John Popenoe

25 October 1988

Mr. Dante Piacesi  
Information Systems Division  
U. S. National Museum  
Washington, D. C. 20560

Dear Dant

Just a short note to say the obvious: (1) sorry I'm late in sending you the similarity-clustering-package, but it did get off in this morning's mail; (2) as per usual, we haven't had the time and/or funds to invest in an Optimal Updating Machine (i.e., another Programmer-trainee) so the flowcharts you're getting do not reflect a complete correlation with the coding. However, since the coding has been liberally endowed with "comments" the program flow ought to be readily discernable, our lack of updating notwithstanding.

But enough - at least for a short note. Hope things are going well with you. Happy OCTOBER 31 and/or DECEMBER 25 depending on what base you read this letter in.

John Wong, Jr.

JW:gm

25 October 1968

Mr. Kirby W. Brown  
Department of Entomology  
School of Agricultural Sciences  
University of California  
Riverside, Calif. 92592

Dear Mr. Brown:

Enclosed is a copy of "How to Read the Printout," as well as the actual printout for your first study. It is most regrettable that neither your other two studies nor the Calcomp plot for the first have come out yet. This, however, is due to machine operations and the aforementioned will be sent within the week, after our Computing Center has had a chance to recover from a week of almost daily systems hand-ups and/or backlogs.

We felt that you would be anxious to see the results of your first study and would most likely make subgraphs from this print-out. We would be most interested in receiving Xerox copies of your subgraphs as this would help us to evaluate how well our program has served you. Again, we regret the short delay, but hope that this will occupy part of your time while waiting.

Sincerely,

John Wong, Jr.  
Programmer, Taximetrics Lab.

JW:gm

24 October 1968

Dr. Carlos A. Sanchez de Bustamante  
Instituto Nacional Agropecuario  
Buenos Aires  
Argentina

Dear Dr. Sanchez:

I would greatly appreciate receiving a "separate" of your article in Rev. Invest. Agropecuar, Ser. 2, Bio. Prod. Veg. V. 4, #17, 1967, entitled "Conservacion invernal de tallos de mandioca destinados a estaca-semilla, en la provincia de Misiones."

Please accept my thanks for your courtesy.

Sincerely yours,

David J. Rogers  
Professor of Biology

gm

24 October 1968

Dr. Biyl Afonja  
Fed. Dept. of Agricultur Research  
Ibadan, NNigeria

Dear Dr. Afonja:

I would greatly appreciate receiving a reprint of your article in EXP. AGR., Vol. 4, #2, 1968, entitled "Analysis of a Uniformity Trial on Cassava."

Please accept my thanks for your courtesy.

Sincerely yours,

David J. Rogers  
Professor of Biology

gm

24 October 1968

Dr. T. V. R. Nair  
Central Tuber Crops Research Inst.  
Trivandrum, India

Dear Dr. Nair:

I would greatly appreciate receiving a reprint of your article in Ind. Journal of Exp. Biology, Vol. 6, #1 (1968), entitled "Photoperiodic effects on tuber development in M. esculenta Crantz."

Please accept my thanks for your courtesy,

Sincerely yours,

David J. Rogers  
Professor of Biology

gm

24 October 1968

Dr. F. A. Stafleu  
106 Lange Nieuwstraat  
Utrecht, Netherland

Dear dr. Stafleu:

We assume that the enclosed page proof is the only one which you have sent out for correction. Therefore we return it having used our copy of the manuscript for correcting. In general the page proof is in good shape and a good job has been done setting type.

Since we received no formal reprint order form, may I submit herewith a request, as follows:

500 reprints, without covers, to be addressed to

Dr. Frank G. Hawksworth  
U. S. Forest Service  
Rocky Mountain Forest and Range Experiment Station  
Colorado State University  
Fort Collins, Colorado 80521

and billed to the USDA Forest Service at that address.

150 reprints, without covers, to be sent to me, and the bill addressed to Account #1708-48, Purchasing Office, University of Colorado, including my name and local address.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

24 October 1968

Dr. F. A. Stafleu  
106 Lange Nieuwstraat  
Utrecht, Netherland

Dear Dr. Stafleu:

I am looking forward to a trip to France on April 7 - 12, 1969, to attend the International Symposium on the Use of Computers in Archeology in Marseille. After the meeting I would like to have an opportunity to visit you in Utrecht. I would be willing during this visit to give a seminar on Computerized Information Retrieval for Biology, if you are interested and it can be arranged. Please let me know if sometime after the 12th April is a good time, and if this is an agreeable offer.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

24 October 1968

Dr. L. H. Rogers  
37 Edgewood Road  
Chatham, New Jersey 07926

Dear Lew:

Enclosed are the working papers given to the members who attended our demonstration on October 8. These papers were, of course, accompanied by verbal descriptions during the demonstration so they do not stand alone. However, with some careful examination they can be made to be meaningful. Perhaps from your point of view one of the most interesting aspects is the cost/efficiency study made on the system. In this connection however be careful to recognize that there are no comparative costs with other systems but the design of the method for cost accounting we feel is effective for anybody's analysis. Eventually we will make comparative analyses along these lines, but haven't had time to do so yet.

We just had a post card from Al saying he had been shifted to Minnesota - what a hell of a way to have to end one's career.

We have seen Fran and husband once since they came down to earth again, and got a full blast of the kind of things that are liable to happen to people at that age and stage. We hope that we lent a sympathetic ear.

Love,

David J. Rogers

DJR:gm

7

21 October 1968

Mr. R. L. Williams  
Director of Medical Systems Marketing  
Control Data Corporation  
8100 34th Avenue South  
Minneapolis, Minn. 55440

Dear Mr. Williams:

Some time, at your convenience, we would like to have your reactions to the demonstration of our TAXIR system. Perhaps you would be kind enough to share with us any reactions, positive or negative, to our developments, and to tell us how we may approach the medical community with the system.

Since we have little feed-back from potential users other than members of the museum biological community, we might benefit from your own experience with medically oriented workers who could be helped if TAXIR were made available to them.

Perhaps you would like to look more deeply into our software packages before any kind of evaluation can be made. We would be glad to give you the opportunity for an in-depth examination, if you so desire. Let us know, and I will arrange for our programmers to tell you what is there.

Thank you for your time, effort and observations.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

21 October 1968

The Honorable Senator Gordon Allot  
Senate Office Building  
Washington, D. C.

Dear Mr. Allott:

I read your recent letter to the magazine, Science, with what I hope is understanding of your position with respect to scientific effort in this country. I think you are asking us for a more realistic approach to cost-accounting and effectiveness of scientific endeavor, and a more practical way of explaining what our scientific effort is worth. Perhaps you would also ask us to explain our budgets requesting funds in these terms, and I sympathize with this attitude.

I offer one man's opinion as to why this has not been done more effectively up to this point, and also tell you the way we are attempting to rectify this situation with one grant from the National Science Foundation here in Boulder. First of all, in the training of scientists there is no formal requirement to take courses in business methods of cost-accounting, or methods of measuring real or potential effectiveness of any scientific endeavor. Perhaps engineers may receive such training, but not the large body of scientists, whether they be biologists, physicists, chemists, psychologists, anthropologists, etc. We are imbued with the idea that scientific endeavor is good worthy, and eventually, useful, but that it is for the entrepreneur to discover these values. Secondly, there has only recently been the demand that such considerations be made. In the years after World War II, money for science was freely given, because all of us (including scientists and legislators and nearly all other segments of our society) thought the road to problem solutions lay in research and development, and we did not feel that we had to account for such matters. Clearly, if by research we could solve the various problems of humanity, it would obviously be worth it, no matter what the cost. That we have not solved our problems by these routes is also very clear now. I think we all should share in the recognition of the naivete we had, and now find what more needs doing to rectify, balance, and change our ways of measuring scientific endeavor.

Since there is a division of activities in the places where scientists are trained such that the business aspects and the economic aspects are sharply differentiated from "science", neither the business and economic interests nor the scientific ones have an opportunity to discover that one has something to offer the other. And because the scientist is very poorly trained to make budgets meaningful, his budget-making efforts most frequently confuse those who read budgets to gain an understanding of what the scientist is up to.

I personally, as a biologist, must admit that I have no real training in cost-accounting and effectiveness studies. However, by some good luck,

I happened upon the idea of having the results of our work under the National Science Foundation grant evaluated for the costs, effectiveness and benefits to be gained from the results. (My efforts, incidentally, are to develop a computerized information retrieval system.) This will give us a much better means of communicating to the public the values to be derived from this work. I recognize that this effort is something that tells the costs and benefits after we have done the investigation, but I believe that by continuing to follow these procedures, we will come to a point where evaluation may be done in advance of the actual work.

Now I recognize that you need evaluation of over-all scientific endeavor in order to deal effectively with them in your area of legislative and fiscal control of the budget, and also that my type of evaluation is applied to a relatively small amount of money in one grant. But I can't help but think that the same methodology which I am attempting to employ in terms of fiscal control of my one grant could be employed by the agencies responsible for presenting their over-all requests for your consideration. Such a set of procedures would be useful in establishing priorities, evaluating costs, and allow more effective communication between the scientific and legislative communities. This type of activity might be a way to establish that which you seek, a better communication link between us. I trust the idea has some merit.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

21 October 1968

Dr. Lou Ann Roberts  
Computer Center  
Texas Technical College  
Lubbock, Texas 79407

Dear Dr. Roberts:

Gil Marsh and I (and others in the lab.) have read your rough draft proposal to NSF for funds for the wide-taxonomy, programming, and feasibility study work. Since we have been through many proposals for our own work, some with success, some not so successful, we have developed some ideas which you may wish to consider.

There are areas which you propose which are clearly very interesting to us. For example, the organization of a computer center for taxonomic work has many future potentialities, greater than just for biological taxonomy. What insights can we gain by considering these together? The organization of biological data themselves preparatory to going into hardware systems is an area of much concern to us, and to those at large museums. Perhaps investigations there could produce good and useful techniques to speed the data gathering phase, and we want to know what might be accomplished by your group. These types of problems, interests, developments seem to be amenable to cooperative efforts which will help us all and the larger community.

I suggest it is clearly within our mutual interests to make continuing studies of cost/effectiveness, some of which you heard about here. I believe that we can "sell" our ideas much better with the kinds of analyses which Gil Marsh brings to this work than we ever were able before.

It seems to us that our IR system accomplishes your goals as indicated in the box on your flow chart which reads "Programs, etc." Setting up the center is in itself interesting, but our programs seem to fit your needs very well. Could we integrate these programs with you when you set up your center? In this connection, we need very close, face-to-face, work to make the programs fit your organizational configurations.

For all of the above considerations, I hope that you will consider the possibility of visiting us here again (I believe that you mentioned some time after January 1st) to wire down some of these factors before submission of the final grant instrument. I hope you understand our desire to work with you now, before you get too far down the line, so that we can all benefit.

Hopefully, I have struck a responsive note with you. I look forward to hearing whether this is true or not.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

16 October 1968

Dr. J. S. Farris  
Department of Biology  
University of New York  
Stony Brook, New York 11790

Dear Steve:

I trust you and Vera are getting yourselves settled in your new environment. As you are aware the second annual meeting of Numerical Taxonomists is to be held here in Boulder at the University of Colorado November 5,6,7. The tentative schedule is as follows:

Tuesday, 5 November, Evening: Informal (social) gathering for the purpose of meeting one another.

Wednesday, 6 November, Morning, "The Relevance of Evolutionary Studies in Mathematical Systematics."

Wednesday, 6 November, Afternoon, "Mathematical Methods in Systematic Biology."

Thursday, 7 November, Morning, "Information Retrieval and Related Topics."

Thursday, 7 November, Afternoon, "What Should We, as Mathematical Systematists, Be Contributing to Biology?"

In an effort to provide for as much spontaneous dialogue as possible the four sessions will be each in two halves. The first part will be a plenary discussion under the direction of a discussion leader who will recognize discussants and moderate the discussion. This will last about an hour and a half. The remaining hour and a half will be a "coffee break" where we can discuss the topics raised earlier informally in twos and threes.

In order to keep the discussions lively we have tried to get lively discussion leaders. Towards this end, we would be pleased if you would be discussion leader for the Wednesday, Nov. 6, morning discussion "Evolution, etc." A prompt reply will make it easier for us to finalize this schedule.

Please bring your source list with you when you come.

I would further have you know that you are welcome to stay in my house while you are in Boulder.

All the best,

George F. Estabrook

P.S. Expect registration forms later.

15 October 1968

C. J. Jardine  
King's College  
Cambridge, England

Dear Dr. Jardine:

The second annual meeting of Numerical Taxonomists (sic) will be held here in Boulder, Colorado, at the University of Colorado this November 5, 6, 7. The purpose of this meeting is to assemble workers in Mathematical Biology so that they might exchange ideas of mutual interest. It is the intent of those of us organizing the meetings that their formal structure be conducive to interpersonal dialogue. With this objective in mind, the tentative organization is as follows.

November 5, evening. Informal (social) gathering of participants for the purpose of making one another's acquaintances.

November 6, morning. "The relevance of evolution to systematic biology"  
Afternoon. "Mathematical methods in systematic biology"

November 7, morning. "Information Storage/Retrieval, keys and related topics"  
Afternoon, "What should we, as mathematical biologists, be contributing to biology"

Each of the four sessions is of approximately three hours' duration of which the first half is under the direction of a discussion leader or chairman. At the end of the first half of each discussion, the plenary dialogue will cease and we shall break up spontaneously into twos and threes to pursue in more depth the points raised earlier.

Participation in the meeting is expected to be at about fifty, of which the majority of us will be American. For this reason, among others we would be pleased to encounter the new ideas which your participation would bring. We are further pleased to invite you to be Chairman/Discussion Leader for the first part of the November 6 Afternoon session, "Mathematical Methods in Systematic Biology." We are asking some of the participants to be prepared to express briefly ideas at this session. Your role as moderator will be to recognize participants and in general to moderate the discussion. You are, of course, welcome, even as chairman, to contribute to the discussion yourself.

Others of your countrymen which we shall invite to this meeting are

Gordon Sheals, Dept. of Zoology, British Museum (Natural History)  
Cromwell Road, London, S.W.7

John Cutbill, Dept. of Geology, Sedgwick Museum, Downing St.,  
Cambridge

P. H. A. Sneath, MRC - Microbial Systematics Research Unit,  
University of Leicester, University Road  
Leicester.

It is hoped that this letter of invitation will enable you to solicit  
the funds necessary to make your participation possible.

Very truly yours,,

George F. Estabrook  
Research Mathematician

David J. Rogers  
Professor of Biology

GFE:m

MEMO TO: Don Smith and Operating Staff, Computing Center  
FROM: Dr. D. J. Rogers and Staff, Taximetrics Lab, Dept. of Biology  
SUBJECT: Appreciation  
DATE: 15 October 1968

Just a short note to say that we are most appreciative of your friendly cooperation. We know that our demonstration last week must have been somewhat of a strain on all concerned and your efforts in "keeping us up" were an integral part of making our demonstration a success.

Also, we would like to thank you for allowing us ten minutes on interactive mode yesterday. We know that it must have been a break from usual Monday morning operations.

Thanks again.

16 October 1968

Dear Morris:

This is a follow-up to our luncheon yesterday afternoon. I felt that we were much too early for our conference with Bob Low. Perhaps it was my fault that I had written as a title to the first paper "A Proposal to the Ford Foundation."

However I feel that Bob Low simply does not understand the scientist who may perhaps be somewhat naive politically. I felt that I had a bucket of cold water thrown in my face by a representative of our own administration and am now loath to proceed with any ideas such as one originally proposed. As you are aware this was motivated by some altruism on my part. We certainly can proceed with our own efforts without any such interdisciplinary approach. I still believe the word "interdisciplinary" to be valid no matter what such an entrepreneur may think of the term. I would view Bob Low's activities as support for science, but I did not discover any from him yesterday. Perhaps I will feel like returning to the development of some such scheme later but certainly not now.

David J. Rogers  
Professor of Biology

DJR:cm

Dr. Morris Garnsey  
Department of Economics  
University of Colorado

14 October 1968

Sr. Alvaro Montaldo  
Apartado 97  
MAPACAY, Venezuela

Dear Sr. Montaldo:

The magnificent "Bibliografía" arrived today. You have done a very fine job on this, and are to be congratulated. I trust that we can extend this work together as new material comes along.

I would be very pleased if you can come to work with us for a while here in Boulder. I have some ideas about new computer procedures for producing bibliographies which we might work on together. I will be pleased to ask you to consider the possibility of working here.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

14 October 1968

Dr. John McNeill  
The Hartley Botanical Laboratories  
P. O. Box 147  
The University of Liverpool  
Liverpool, England

Dear Dr. McNeill:

I am very sorry to have delayed so long in our arrangements and information about my own activities. The reason that I was not able to make a firm commitment was that I had applied to the Fulbright people for a grant to go to Australia. As you are aware we have one of the greatest strictures on travel ever in the United States and only yesterday did I receive notification from them that I had been denied a grant to go. While this is not the only potential source of funds, it is by far the most likely source and all the others are strictly secondary. I will apply for other funds but do not hope for any success.

The only way that Dr. Löve could have arranged for funds for you to be here would have been my absence. Since that is not likely, we can only say that we're sorry.

I spoke to Dr. Boughey last week when he was here and he told me then of his arrangements with you. There was no agreement between Dr. Boughey and me but he said in a casual comment that we might make arrangements for you to stay here for part of the time you are visiting the U.S. I did not have an opportunity to pursue this comment any further at the time but if you care to have me do so, I would ask Dr. Boughey what he had in mind. I have considerable respect for Dr. Boughey's work and think that between him and the other members of his faculty you would probably find a very happy climate there.

Once again I am sorry that we have not been able to move fast enough to find the funds for your stay here. I do hope that we will have an opportunity to spend some time together.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm  
cc: Dr. A. Love

14 October 1968

Dr. Arturo Gomez-Pompa  
Dept. de Botanica  
Instituto de Ecología  
Universidad Nacional Autónoma  
México 20, D.F.

Dr. James H. Soper  
National Museum of Natural Sciences  
Ottawa 4, Ontario

Dear Arturo:

This letter is a follow-up on the concern about the systems manager for the Flora of North America. I spoke to Stan Shetler at length on this subject a week ago and discovered that no final decisions have been made at all and that the reason for this activity was a requirement from the Office of Scientific Information Services of the National Science Foundation to examine in more detail computing needs for the FNA. Apparently OSIS considers the FNA project more in the line of information retrieval than in terms of the Flora itself. They are apparently willing to give large sums to the actual operation of FNA once they are satisfied that the project will be as fully oriented toward computerized information retrieval as it can be within the framework of the Flora.

Stan apparently has not been used to communicating with his advisory board and has depended more on the editorial board and the steering committee (which is appropriate) for his advice. Both Askell Löve and I strongly recommended that he institute a method of communicating with the advisory committee especially in matters in which some of us have special concern. He said of course we would be consulted when it came to choosing an individual for the job of systems manager, but that the point was moot until we have funds from OSIS to actually look for some individual who might fill the post. Shetler is proceeding to seek for other funds for this operation.

Under these circumstances I do not feel that we should send forward any letter such as the draft which I sent to you but rather wait for developments and discover when the opportunity is ripe who the systems manager should be. I trust that you will concur in this feeling.

I am sorry that you did not have an opportunity to join us for the demonstration of our information retrieval system last week. We feel that it was a successful and useful gathering. Under separate cover I am sending you the working papers which were distributed to participants in the demonstration. While these papers are not entirely self-explanatory, I believe that with your own experience in this field you can see the direction which we have taken and the program which we have developed. There will of course be a much more detailed description of the system at a later date.

Sincerely,

14 October 1968

Dr. James H. Soper  
National Museum of Natural Sciences  
Ottawa 4, Ontario

Dear Jim;

This letter is a follow up on the concern about the systems manager for the Flora of North America. I spoke to Stan Shetler at length on this subject a week ago and discovered that no final decisions have been made at all and that the reason for this activity was a requirement from the Office of Scientific Information Services of the National Science Foundation to examine in more detail computing needs for the PNA. Apparently OSIS considers the PNA project more in the line of information retrieval than in terms of the Flora itself. They are apparently willing to give large sums to the actual operation of PNA once they are satisfied that the project will be as fully oriented toward computerized information retrieval as it can be within the framework of the Flora.

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Sincerely,

David J. Rogers  
Professor of Biology

11 October 1968

Dr. Howard L. Mills  
Department of Biological Sciences  
Marshall University  
Huntington, West Va. 25701

Dear Dr. Mills:

Here is a new invoice (in triplicate, since that seems to be what business offices want) and a photocopy of the previous one.

Dr. Rogers is at home with "flu", but he asked me to thank you for your letter and extend the hope that it will not be too long before you can get to Boulder again.

Sincerely yours,

(Mrs.) Genevra Metcalf  
Secretary

11 October 1968

Dr. Elizabeth M. Zipf  
Biosciences Information Service  
2100 Arch Street  
Philadelphia, Penna. 19103

Dear Betty:

I am terribly sorry that I was so rushed during the meeting that we really didn't have a chance to talk about the reclassification of Economic Botany and more generally, ideas for the reclassification of all biological endeavor. I am sending back with a few scribbled notes the present status of Economic Botany. I hope these are meaningful. Perhaps if we can establish a dialog by correspondence we can improve the cross indexing of even more facets of economic botany.

With respect to the overall classification of biology, I would love to see a new look in the Taxonomy Section of both botany and zoology such that we forget the differentiation of the two parts and reenter with one category called perhaps Systematic Biology. There is a sufficient overlap at the lower end of the taxonomic scale such that I am apt to miss some of the organisms whose systematic position shifts back and forth between plants and animals at the whim of the biologist.

But even more fundamental than this I would like to have an opportunity some time to run the present classification of biology through our Cluster Analysis technique to discover the similarities and differences actually existing in biology so that all of biology could be more meaningfully categorized. It's not impossible to make this kind of a scheme analysis, using our computer classification techniques. Maybe we want to think about this. I hope so.

Sincerely, yours,

David J. Rogers  
Professor of Biology

DJR:gm

10 October 1968

Drs Elizabeth M. Zipf  
Biosciences Information Service  
2100 Arch Street  
Philadelphia, Penn. 19103

Dear Betty:

I am terribly sorry I was so rushed during the meeting that you really didn't have a chance to talk about the reclassification of Economic Botany and more generally, ideas for the reclassification of all biological endeavor. I am sending back with a few scribbled n

10 October 1968

Mr. Robert Hefling  
Regent 125  
Campus

Dear Mr. Hefling:

Enclosed is the application from Mr. F. A. Bisby for recognition as a non-degree graduate student here. Mr. Bisby, who is at present enrolled at Oxford University, England, has been accepted by us as a graduate research assistant for six months beginning January 2 through the end of June 1969. His objective in being here is to work in our laboratory discovering computer methods for biology.

Would you be kind enough to process his papers and send him the necessary visa application forms? If more information is needed please let me know.

Thank you for your efforts.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

10 October 1968

Dean Lawson Crowe  
Regent Hall  
Campus

Dear Dean Crowe:

I have agreed to have Mr. Frank A. Bisby as my graduate research assistant at the rate of \$300 a month, chargeable to my research grant, account #1708-48, for the period January 1, 1969 to June 30, 1969.

Mr. Bisby will be working on problems in computer methods for Biology.

I have known Mr. Bisby's major professor for some time and have the highest confidence in his ability.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

10 October 1968

Mr. Dennis E. Puleston  
University Museum  
Thirty-third and Spruce Streets  
Philadelphia, Penna. 19104

Dear Mr. Puleston:

Thank you for your letter and paper on Brosimum. Please note my change of address. I have no precise recommendation on the determination of domestication. Some plants, be they herbs, shrubs, or trees, have what you might call loosely, a "weedy" aspect. These quickly colonize disturbed areas, and they may do so because of their need for extra sunlight. Many of our crop plants may have become objects of cultivation because of their ability to respond quickly to some man-made disturbance of the natural habitat. Brosimum, which you know to be in the family Moraceae, has rather close relatives used in other parts of the world, and may be, therefore, one of these types. But I have no way to judge this precisely.

You may gain some general insights into such problems by reading Edgar Anderson's "Plants, Man, and Life." I think this has been reprinted so should be found in "books in print." Andy said some rather interesting things about incipient agriculture in the tropics, and I have found his work a source of many excellent hints along these lines.

I am personally disappointed that more archeological evidence of root cultivation has not been found. As you know, I've been studying the origin and development of ManihotZesculenta for some time, and I believe the lowland Maya probably were the first to actually domesticate this crop. It would certainly be helpful to this hypothesis if some sort of evidence, either in pictographs, pottery, or actual pieces of plant remains could be found. You may have seen my publications on this crop, but if not, I'm sending along two papers which speak to this subject.

Thanks for sending your paper - it should be in print somewhere.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:am

9 October 1968

Dr. E. Rex Krueger  
Computing Center  
El Rancho Hansen Motel  
East Campus

Dear Rex:

We all very much appreciate the fine and extensive assistance you gave us for the demonstration. Clearly, your efforts made it possible for us to demonstrate the facilities of TAXIR in the best possible way. Thank you very much, and please extend my thanks to all of your staff.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

3 October 1968

Dr. L. H. Rogers  
37 Edgewood Road  
Chatham  
New Jersey

Dear Lew:

Thanks for the papers from Celanese. It's hard to tell from these papers just how deeply they have gone into Information Retrieval systems along the lines we are developing. I'm sure they have people either working on systems or aware of developments outside. Whether they would ever pick up news of our system or not is difficult to say. Perhaps later we'll do some "advertising" of it directly to them to determine their interest.

Enclosed is a paper which describes, very generally, in layman's terms what our system is about. Clearly it is directed at a biologically oriented group, but with careful reading, I think you can substitute some words of your own. A librarian, for example, could substitute the words "books and other documents" where we use "specimen." One major point that we make, though not specifically stated, is that we do away with the concept of "master file," ~~with~~ the idea that the specimens, books or other documents on a shelf constitute the master file and therefore the things we eventually wish to retrieve, and our system can be very fast in accomplishing such. There is, of course, the module which allows you to question the data bank directly, getting "information" from the stored data without going to the book, specimen or document itself.

Realize, too, that the enclosed paper assumes an underlying base of software, about which no mention is made. That is, we have not said how the programs operate to give you all the nice things you want, what efficiencies exist in terms of machine use, etc. though these documents will soon be available.

The enclosed paper is still an in-house document, but its contents will probably be made into a final published paper fairly soon.

We enjoyed your visit, short though it was. We haven't heard from the young married folks yet, but don't really expect to for a while.

Love,

2 October 1968

Mr. Kirby W. Brown  
Department of Entomology  
School of Agricultural Sciences  
University of California  
Riverside, Calif. 92592

Dear Mr. Brown:

You seem to be well organized and have understood the way to establish information for running our program. The list of characters you presented is well established and has good validity for taxonomic work. Let me make one suggestion which you may think more time consuming than we can afford (who can afford time these days?). As I look at your input characters I see that you have ordered every character or prepared a matrix for some of them. While this is indeed a useful arrangement, when attempting to indicate relationships, it sometimes "fuzzes the edges" of taxa which may form up, and make a really sound interpretation difficult. Therefore, try a run where no characters are allowed any overlap on a few (maybe 50 objects or OTU's) which you know or have some good intuitive understanding of. The purpose in this is for you to clearly see separation, so that you get the organisms (taxa) pried apart cleanly. I think you can see that non-ordered, non-matrix types of characters give a cleaner separation than would the ordered and matrix types. When you have seen this output then I believe you will be in a much better position to establish the ordered information than you possibly can be right now.

Please send us first 50 (perhaps 75) objects described with all characters, none ordered, nor with matrix-type. After this run, you will most likely have a better chance to decide about ordering the characters for the full run.

After this exercise then you can go full blast on all of your objects with data organized in the best manner for accomplishing your task. We are ready for you now and any time you get your data punched we will take it, run it, and fire it back to you posthaste. I am hoping the Mr. Reagan has not knocked your budget so badly that you can't afford to use the fastest mail service for sending things.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

1 October 1968

MEMO TO: Dr. Rex Krueger, Director, Computer Center  
FROM: Dave Rogers, Taximetrics Lab, Armory 101, Phone X 6712  
SUBJECT: Arrangements for I/R demonstration, Tuesday, Oct. 8, 1968, 2-3 PM

We have the following points to be emphasized with regard to the demonstration. Some of these items are back-up arrangements, others absolute essentials, which if not taken care of, will shoot us down and cause considerable embarrassment. Here are the main items:

1. Have the console keyboard ready by 2 PM on Tuesday, Oct. 8. We will had deck across input counter at 1:40 PM.
2. Give us names and how to get in touch with the operators and dispatchers assigned for Tuesday afternoon, as we wish to brief them in advance. We want to be sure that all concerned are clued-in with the demonstration, as much for the benefit of the reputation of the center as for the visiting firemen.
3. No long decks put in the card reader between 1:40 PM and 3 PM. This is a back-up arrangement in case the console driver fails, which it has recently. We want a quick restart procedure, so that our programmer, John Wong, can run out and get things going again.
4. Please, no changes to the operating system between Thursday evening before our dress rehearsal and Tuesday after the demonstration. For obvious reasons!
5. Please have CE's standing by in case of machine failure. Since a couple of big shots from CDC will be in the audience, it could be embarrassing.
6. Tune up the printer. Several characters are out of line, which is hard on reading. For example, L comes out as  $\text{L}$ , and Z comes out as  $\text{z}$ . Ray suggested we use the off-line 1401 printer, but since the character set on this machine is limited, and we use all the characters of the on-line printer, we can't go that route.

These are the items of primary concern. I'm sure you want the demonstration to ~~offe~~ off nicely as much as we do, and I think it will. Thanks for your and your staff's efforts.

1 October 1968

Dr. Richard F. Johnston  
Program Director for Systematic Biology  
National Science Foundation  
Washington, D. C. 20550

Dear Dr. Johnston:

We will be pleased to see you on Monday, the 14th of October. Give me a call when you arrive. My home phone is 447-1819; it's a local call on the metropolitan Denver exchange. The Brown Palace Hotel in downtown Denver adjoins the terminal for both airport limousine and the Denver-Boulder bus. (The University Avenue stop in Boulder is only two blocks west of the Armory.)

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

27 November 1968

Dr. Richard Cowan  
Smithsonian Institution  
Washington, D. C. 20560

Dear Dick:

I am hoping to spend some time in Washington the week of 9 - 13 December and would very much like to talk over some information retrieval ideas with you on Wednesday, 11 December. Is there an opportunity to see you then? Please let me know so I can firm up my plans. Let me know if other days of that week have a free spot or two for you in the event that Wednesday is out.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

27 November 1968

Dr. Richard P. Johnston  
Program Director for Systematic Biology  
National Science Foundation  
Washington, D. C. 20550

Dear Dr. Johnston:

I plan to be in Washington on Monday, 9 December, and would very much appreciate the opportunity to discuss with you plans that we are hoping to develop for mounting the University of Colorado Museum's information retrieval system using our TAMIR system. Before I make a formal application to you I would like to know some details about possible inclusions in the grant request and their chances of success.

Please let me know if it is convenient to see you on Monday, the 9th, morning or afternoon.

Sincerely,

David J. Rogers  
Professor of Biology

LJR:gm

27 November 1968

Dr. Stanwyn Shetler  
Smithsonian Institution  
Washington, D. C. 20560

Dear Stan:

I am hoping to spend some time in Washington the week of  
9 - 13 December and would like very much to talk over some  
information retrieval ideas with you on Wednesday, 11 December.  
Is there an opportunity to see you then? Please let me know so  
I can firm up my plans. Let me know if other days of that week  
have a free spot or two for you in the event that Wednesday is  
out.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gn

27 November 1968

Dr. Mason Hale  
Department of Botany  
U. S. National Museum  
Washington, D. C. 20560

Dear Mason:

I am hoping to spend some time in Washington the week of 9 - 13 December and would like very much to talk over some information retrieval ideas with you on Wednesday, 11 December. Is there an opportunity to see you then? Please let me know so I can firm up my plans. Let me know if other days of that week have a free spot or two for you in the event that Wednesday is out.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

27 November 1968

Dr. Frank Blair, Chairman  
U. S. Committee for IIRP  
National Research Council  
2101 Constitution Avenue  
Washington, D. C. 20418

Dear Frank:

I expect to be in Washington the week of the 9th - 13th of December and would like a chance to tell you about some of our ideas for information retrieval and its relationship to various IIRP programs in this country and abroad. Unless you have some "thing" about Friday the 13th that day would be best for me. Please let me know if this day is convenient.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

27 November 1968

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

Dear Howard:

I am hoping to spend Saturday and Sunday, December 14th and 15th in New York. Could I nick a piece of your time on either day to talk about information retrieval activities? Sorry I have to ask for a weekend, but I am trying to wrap up as much as I can on the East Coast in one trip and that seems to be the best time for me to make it. I am also writing to Bill in hopes that he will want to join us. Please let me know if you can arrange it.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

27 November 1968

Dr. William Steere  
New York Botanical Garden  
Bronx, New York 10458

Dear Bill:

I plan to be in New York Saturday and Sunday, December 14th and 15th. Could I nick you for part of your time to talk about information retrieval then? Sorry to make it a weekend effort but I don't want to spend any more time on the East Coast than I have to that time of year. Let me know if you can make it.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

27 December 1968

Dr. Gilbert Daniels  
Hunt Botanical Library  
Carnegie-Mellon University  
Schenley Park  
Pittsburgh, Penna. 15200

Dear Gil:

My schedule for arriving in Pittsburgh is via TWA 131, arriving 6:00 PM on December 15th. I suppose it will take me about 45 minutes to make it from the airport to the hotel. I'll call you as soon as the plane lets me off to see what arrangements we can make for a Sunday evening chat. I plan to leave Monday afternoon at 5:50..

Looking forward to seeing you and your operation there.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

27 November 1968

Dean William E. Briggs  
College of Arts and Sciences  
University of Colorado

Dear Bill:

We have just got wind of the fact that "somebody" is planning to move all of the newly-formed division of Population Studies over to the East Campus, PSRR #1. This is known to us by a rather round-about method, and is being arranged by the Graduate School without any real discussions with us. We understand that we are to divide up the second floor of the building with the Institute of Arctic and Alpine Research and with the Institute of Developmental Biology. Askell and I have just come from looking at the floor-space and facilities available in PSRR #1, second floor, and are much discouraged by what we see.

To us, it seems that we are being considered as second or third class citizens, whose desires and needs are of such insignificance that we need not be consulted, a situation which has existed for too long, and one which we find onerous. We now live in temporary quarters, and the move to the East Campus would be nothing but another shift to temporary quarters. This is not acceptable, desirable, fair, or any of a long list of adjectives which you care to apply. In all the long and tempestuous arguments you have heard about moving the Dance Department from the Armory, you have not heard from us once. The noise has come from INSTAR, a Graduate School institute, not from us, who still consider ourselves as part of the College of Arts and Sciences.

We would like to continue to consider ourselves as an academic faculty, not a separate institute, but to continue to operate, we need your active support for our needs. We have gone through a very difficult time to reorganize ourselves to make biology a more vital structure, with the assumption that having done so, we would get from you an extraordinary push to make biology less of a headache for you. But our needs have been for so long submerged by representatives of peripheral disciplines that we cannot long continue to operate. And now, we find that we are in desperate need of help in prevention of a pattern of operation too long found acceptable. We had asked earlier that the Population Studies group be housed in the Armory, and we ask again that this be considered. Plans for floor space have been submitted. Some of us are here now, and to move again would be extremely time-consuming and unprofitable. We will need some rearranging within the building, but not a considerable amount. To move to the East Campus, we would lose our contact with students, and this is unacceptable and intolerable from the standpoint of an academic group within Arts and Sciences.

But we already note that some other groups have been examining the Armory, and these are from the Institute of Behavioral Sciences. Who told them they could have this space? Why can't our needs take precedence over theirs? We can't fight against it because we don't know who told the Behavioral Sciences people that they had a hunting license. Who protects our needs?

I am willing to fight for our needs, and I am not willing to accept second best - we've already got that, and I want no part of any other temporary arrangement. It's our turn now, and I need help. May I have an appointment to talk about this?

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm  
CC: Askill Löve

P. S. Askill has seen this letter and approves.

26 November 1968

Dr. David C. Eades  
School of Life Sciences  
University of Illinois  
Urbana, Illinois 61801

Dear Dave:

I read with interest your recent manuscript "Some Procedures for Numerical Phyletics." I feel that you have succeeded in making some valuable points which need to be better understood by the systematic community. A few specific comments:

¶3. I question the overriding desirability of operationalism, and, for that matter, objectivity. This image of the scientists as a humanoid machine is "Maya" tempting us to confuse precision with correctness. Don't underrate "point 9"!

¶5. These discussions are very good. The concept of characters as real entities I think is misleading however. Characters are mental constructs; they exist in the minds of taxonomists, etc. To speak of "all the characters" is meaningful only in a very formal mathematical sense.

¶16. Discussions of the reasons for redundancy between characters is very relevant. Redundancy is not similarly bad but in many cases the very thing which gives us "natural" taxonomic structure. Classifying redundancy into cause classes is an important concept which needs more attention. Good and bad redundancy needs to be distinguished.

I was much more impressed with your discussions than with your methods or procedures. It strikes me as weak to make an extant classification primary for your evaluation techniques. Mathematical methods should be recognized as additional tools for the professional systematist, not as alternatives to him. The procedures are not for the purpose of duplicating his work (and need not be diddled to that end) but rather to shed more light on the problem he has set out to study.

In deference to the excellent general discussions in your manuscript, it might better be entitled, "Some discussions of .. etc."

I look forward to seeing you in Dallas.

Very truly yours,

George F. Estabrook

GFB:qm

25 November 1968

Dr. John L. Creech, Chief  
New Crops Research Branch  
Plant Industry Station  
Beltsville, Maryland 20705

Dear Dr. Creech:

Dr. Sam Dietz has recommended that I send to you the enclosed descriptions of TAXIR, a computerized information retrieval system. I send you this material so that you may have an opportunity to become acquainted with the nature of the system developed in our laboratory. I had the opportunity recently to visit Dr. Dietz in Pullman, and discovered that there were potential opportunities for applying our system to the wealth of data now residing in the various stations of the New Crops Research Branch. I hope that you will understand that the papers which I have enclosed here are not a complete description of TAXIR but they do give you some opportunity to find what facilities do exist in the system.

I look forward to the opportunity of presenting a more complete description of this information retrieval system on Thursday morning, December 12, in Beltsville, where Dr. Dietz has kindly invited me to meet with you. Please feel free to ask any questions that come to mind in advance of the meeting.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

*Letter also sent to Oakes, Wenters, Dolan, Langford.*

*SK:ada*

25 November 1968

Dr. F. A. Stafleu  
International Association for Plant Taxonomy  
106 Lange Nieuwstraat  
Utrecht, Netherlands

Dear Frans:

I am very pleased to have the invitation to participate in your symposium "Systematics Today." I will give you more details of the title and an abstract of my remarks soon.

I am hoping to have with me George Estabrook whose papers you have already seen, who might be considered to help with the presenting the talk to the members of the Nijmegen University faculty. However, Mr. Estabrook's participation still depends on our finding some funds for his travel. As soon as we can, we will let you know whether Mr. Estabrook will be coming along or not.

Once again thank you for your invitation. I am honored by it.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

25 November 1968

Dr. J. L. Cutbill  
Sedgwick Museum  
Downing Street

25 November 1968

Dear John:

Due to the close proximity of the meetings of the International Botanical Congress in Seattle, Washington, we will have to regretfully decline your invitation to join the Information Retrieval Symposium. We are expecting to put on quite a show for the botanists in Seattle, and having done so we will have shot down most of our travel funds.

As of this moment I am scheduled for a symposium meeting in Marseilles next April 5 - 12, after which I will go to Amsterdam for several days and would like to jump over to see you for one or two days on or about the 17th, 18th or 19th of April. Perhaps we could put on an informal session then. I am hoping that we will be able to have travel funds sufficient to bring George along for that group of meetings. Let me know if you will be at home about that time, and whether it interests you to gather a small number of people together informally. We could give a seminar or two to explain TAXIS then.

I look forward to hearing from you.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

22 November 1968

Dr. David C. Eades  
School of Life Sciences  
University of Illinois  
Urbana, Ill. 61801

Dear Dave:

I had already replied to Dr. Mallic when your letter arrived yesterday with the new copy of your manuscript. I said all the nice things necessary, I hope, to make you look like at least a super full professor. I am all in favor of taxonomists getting their just due, particularly in your case.

Concerning the manuscript: I have some reservations about it as well as some pleasant things to say. First of all, it is disheartening to us to see no reference to the work we have done, particularly with respect to the contrasting attitude between us and Sokal with respect to taxonomy. Our papers, particularly the chapter in the book Evolutionary Biology, Vol. I, edited by Th. Dobzhansky, M. K. Meeb, and Wm. C. Steere; George's papers in the Journal of Theoretical Biology, Taxon, and Bioscience give some of our philosophy and working procedures. I am sending along copies of the above-listed papers. Secondly, I had started to discuss with you while here the business of testing the value of any particular program. I was objecting, as you recall, to taking some conventional taxonomic output and using this as a yardstick for the value of any other procedure. My objection runs something like this. Suppose you did not get 100% agreement between the output of a computer program and the conventional taxonomy - how would you explain the difference? Or even if you did get 100% agreement between your processes and the conventional taxonomist's decisions, what assurance do you have that the next set of data will provide the same result? It seems to me that the most important feature is not to worry about whether the crank's turn gives you some particular result or other but rather that you know precisely what you have done in your own program, starting with well defined rules which you justify in terms of your knowledge as a taxonomist. I would further want to know how you justify the mathematical procedures employed. It is a critical element to know what the model actually says. Personally, I am not convinced that statistics is the basis on which we can build a strong mathematical base for procedures in taxonomy; particularly since the statistical process grew out of classical analytical math which was (and is) not intended to serve the synthetic function required in taxonomy.

Thirdly, I am not particularly convinced by your discussion on weighting - that still seems to be, in George's terms, "data diddling."

Now to lay on the pleasant side of the picture. It is extremely useful to try to take the sting out of Sokal in relationship to taxonomists of all types and it is particularly nice to see some recognition of the thought processes which have generated over considerable amount of time. I would hate to see Sokal in charge of a large museum, because I feel that he would do disservice to the community by forgetting the significance of "cruddy old collections." I do not believe that Sokal has ever had the need to work with the natural world as expressed in museums, but if he had I suspect that his disdain for the material kept would be considerably less than it presently is. So anything you can do to set to rights the place we work as persons interested in more precise methodology and relationship to taxonomists of all sizes, shapes and dispositions the better we all are. Your paper goes a long way to do this.

The impressions above are mine without the reading by George or any of the others here, and I have given them the manuscript and asked them to give you an independent opinion on it. Perhaps they will say things differently than I did.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:qm

22 November 1968

BioScience  
3900 Wisconsin Avenue, N. W.  
Washington, D. C. 20016

Gentlemen:

Is it possible to obtain more reprints for an article which was published in BioScience in November 1966, Vol. 16, No. 11, entitled "A General Method of Taxonomic Description for a Computed Similarity Measure," by G. F. Estabrook and D. J. Rogers? If more reprints would be available, would you please send us ordering information.

If by now the article is out of print, may we have permission to make "photocopy" reproductions in our offices for distribution?

We will appreciate an answer to our questions.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:qm

22 November 1968

Dr. Richard B. Walker,  
Coordinator of Demonstrations  
Department of Botany  
University of Washington  
Seattle, Wash. 98105

Dear Dr. Walker:

We should like to contribute a démonstration at the XI International Botanical Congress of our Information Retrieval Program for the Biological Sciences. The bench and poster space mentioned in the Second Circular of September 1, 1968, is probably adequate.

However, we should like to know what facilities are available for demonstrating the system on the computer at the University. We need to know what computer and peripheral equipment the University has available, including whether or not they have a cathode ray tube console unit on line.

Thank you for your courtesy.

Sincerely, yours,

Henry S. Fleming  
Research Biologist

HSE:gm

21 November 1966

Dr. Richard A. Howard  
The Arnold Arboretum of Harvard University  
Jamaica Plain, Mass. 02130

Dear Dick:

We have attempted on several occasions to establish working relations with McDonald on the development of the plant record system. Our experiences have been somewhat frustrating because when we think we have some sort of agreement we later discover that we do not. While I can appreciate his problems in getting started, I cannot see why we have so much difficulty in the continuation of what we thought to be agreed upon.

I would like to talk to you about the situation to see if perhaps you can shed some light on the activities. I cannot arrange a trip to Cambridge, but I have a suggestion which I hope you will be interested in. I have to be in New York on the weekend of December 14 and 15, and probably will be at the NYBG one or both of those days. Would it be convenient for you to meet me, say, on the afternoon of the 14th at the Garden where we may talk about our information retrieval system, the potential application of this system to the plant records, and try to discover some operating procedure whereby we can reduce the confusion with McDonald? Let me know if you can make it, or if not, can you think of any alternative?

Sincerely,

David J. Rogers  
Professor of Biology

DJR:qm

20 November 1968

Dr. R. E. Kallio, Director  
School of Life Sciences  
387 Morrill Hall  
University of Illinois  
Urbana, Ill. 61801

Dear Dr. Kallio:

I write to support the promotion of David Eades. My acquaintance with him is mostly through his scientific output and at various meetings. As you know he is working in one of the most exciting areas of biology today; the application of computers and mathematical models to taxonomic ideas. His endeavor can only pay increasing dividends for the whole biological community. It is to his credit that he himself has developed the necessary tools and skills to work in this area. His papers have indicated great insight into the problems and their solutions and we in this laboratory have considerable respect for his thinking and results.

Both you and he will be well served by recognizing his merit. He has demonstrated his ability to present his ideas in a meaningful way in both formal and informal presentations and coupled with that is a very pleasing personality. I have a manuscript of his on my desk which is certain to be a well received paper by one and sundry taxonomists. I recommend him highly.

Sincerely yours,

David J. Bohers  
Professor of Biology

DJR:gm

20 November 1968

Dr. John Creech  
USDA New Crops Research Branch  
CSD Plant Industry Station  
Beltsville, Maryland 20705

Dear Dr. Creech:

Sam Dietz has notified me that you are expecting us on December 12 in the morning. I will be happy to be there. Since I will be staying in Washington, could you give me directions for the most rapid means for getting to your office in Beltsville. I will appreciate having some sort of directions.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

20 November 1968

Dr. Robert R. Sokal  
Department of Entomology  
The University of Kansas  
Lawrence, Kansas 66044

Dear Bob:

We have all agreed that your write-up of the "Second Annual" is satisfactory. Thanks for doing it.

Four applications for the Classification Society went off in this morning's mail.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

20 November 1968

Dr. Theodore J. Crovello  
Department of Biology  
University of Notre Dame  
Notre Dame, Indiana 46556

Dear Ted:

I would be pleased to act as moderator for the Classification Society's contributed paper session 28 December at the AAAS Meetings in Dallas. I would like to know in more detail what will be expected of me in this capacity. Please be as explicit as possible. I am leaving Boulder 18 December so I would appreciate a prompt reply to these questions. Society dues and AAAS registration have been sent off.

It is with mixed emotions that I commit myself to this as it takes five out of the ten days available to me to visit my family and to be in New Hampshire. Whoever scheduled this meeting did incredibly bad work by me. At any rate, I will see you there.

Very truly yours,

George F. Estabrook

GFE:gm

14 November 1968

Dr. Nelson S. Hairston  
Museum of Zoology  
University of Michigan  
Ann Arbor, Mich. 48104

Dear Nelson:

I am planning a trip which will put me in Ann Arbor December 17 to go over with you the problems of getting up the herpetology data bank. Is there any chance that on that day some sort of a seminar could be presented to some group there? If so, I will be glad to "yak" for an hour. You might ask Herb Wagner if he wants to participate in this. He might even be able to reciprocate the honorarium we gave him for coming here.

More data on time of arrival, etc. later.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

18 November 1968

Mr. Dennis Boswell  
IBM Data Processing, Marketing Representative  
777 Grant Street  
Denver, Colo. 80217

Dear Mr. Boswell:

Thank you for your letter of November 13, 1968. To review our account, we should have two 026, Model 1 Alphanumeric Key Punch with "K" keyboard, or order from from a purchase request dated November 4, 1968. The pricing is fine but the delivery date is not. Obviously we need the machine yesterday. Is there any way of getting some machine very quickly, even if we have to wait three months to get one in good condition?

It may seem like poor planning on our part, but some of these development problems have arisen very quickly. We would appreciate any additional consideration you can give us.

Sincerely yours,

Gilbert H. Harsh

GNH:gm

~~IBM Data Processing  
Sales  
Mr. Dennis Boswell~~

~~18 November 1968~~

18 November 1968

Academic Press Inc.  
111 Fifth Avenue  
New York, New York 10003

Gentlemen:

Is it possible to obtain more reprints for an article which was published in the Journal of Theoretical Biology in 1966, Volume 12, pp. 297-310, entitled "A Mathematical Model of Graph Theory for Biological Classification," by G. F. Estabrook? If more reprints would be available, would you please send us ordering information.

If by this time the article is out of print, may we have permission to make "photocopy" reproductions in our offices for distribution?

We will appreciate any information you can provide.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

15 November 1968

Dr. Edward C. Weiss  
Special Projects Program  
Office of Science Information Service  
National Science Foundation  
Washington, D. C. 20550

Dear Ed:

As we review our budget we would like to make a set of changes which would require your approval. We have a surplus in the account for rental of time on computing machines. \$2,500 of this we wish to transfer to the travel account.

As you have heard from Tom Galloway and others, we are up and running on the basic TAXIR system. Between now and the end of the grant period we expect to have developed the other TAXIR modules. We find that we need additional data banks of various sizes and contents to test fully the basic system and to continue to build the other modules. Our single in-house data bank (the genus *Manihot*) is not sufficient alone for this purpose. Various collaborators have of themselves asked us to assist in mounting TAXIR for their data banks. It is essential to us for further development of TAXIR and the development of cost-effectiveness models to work with these other banks. It will be very beneficial to these curators to have TAXIR working for them.

In order to arrange operating procedures and to do system analyses of these banks in their home institutions, we need to visit our collaborators. Specifically, we wish to work with data banks from the Plant Introduction Station of the USDA in Pullman, Washington; for the herpetological and mollusk collections at the University of Michigan's Museum of Zoology; and for the American Horticultural Society's plant record collection at Longwood Gardens, Kennett Square, Penn. We hope to become deeply involved with several (if not all) projects of the International Biological Program.

Thus, to continue our development of TAXIR, the testing of the current system, collaborating and working out problems with potential users, developing cost-effectiveness models for TAXIR, preparing data banks for information retrieval systems, and developing new ideas for improving information we think it essential to visit the repositories of information.

May I therefore have your permission to transfer \$2,500 to travel from computing funds. Of course, we will maintain an adequate fund to cover all costs of computing operations.

Sincerely,

12 November 1968

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

Dear Howard:

Thanks a lot for sending the family lists. Sometime when I'm there I will ask you how that list got established, but won't bother you with it now because I am sure it will take a lot of digging around to find where the numbers came from.

With respect to Brieger I am sorry to report that the door clanked shut on symposia at such an early stage that nobody had a chance to propose a session on Taxonomics. I wrote way last spring and discovered that the people who make up the program for symposia (Billie Turner is in charge of systematics) got their own interests down and left no room for anything else. I have seen a list of symposia and find them to be the same unimaginative efforts that have damned such meetings for a very long time. All it does, apparently, is give certain people guaranteed tickets. We are left with the decision as to whether we wish to present a series of contributed papers and try to make an ad hoc symposium out of them or to put on a demonstration. These are the only two routes open to us, so I am sorry that you have absolutely nothing to offer Brieger.

There is not much I can say in reply to his two pages written to you from Kew. Unfortunately his comments are of such a buckshot nature that I get little from reading what he has said. Much as I would like to support Latin American efforts in this direction I simply have no way to communicate with Dr. Brieger unless he be willing some way or other to pass through Colorado; whereupon we can perhaps in a week give him a rundown on the present status in taximetrics and perhaps get through the pseudo-statistical wording which unfortunately damns this field.

Best regards,

David J. Rogers  
Professor of Biology

DJR:qm

P.S. You can, if you like, take what I have said about Brieger and pass it on to him. This seems to be the way he chooses to work, so we will continue to allow you to be the middle man.

12 November 1968

Dr. Arthur W. Galston  
Department of Biology  
Yale University  
New Haven, Conn. 06520

Dear Art:

This letter recommends Dr. Theodore J. Crovello. I have known Ted as a graduate student and later as a research worker, but I have not had any opportunity to observe his teaching capacity. My first acquaintance with Ted came through his initiative when he was a graduate student at the University of California. He had become interested in the use of computers in taxonomic studies and found no guidance there at Berkeley, so he and I kept up a correspondence (I was at the New York Botanical Garden at the time) in which I attempted to answer questions of his and give him some sort of guidance in his approach to taxonomic methods (for which you may substitute the words "numerical taxonomy"). Considering the fact that no one was available to give him any formal instruction, although he did form an alliance with some Berkeley psychologists under B. C. Tryon who were investigating cluster methods, and he did correspond with me and Bob Sokal at Kansas, Ted did a very fine job in raising himself by his own boot straps to become a sound investigator. Had I had the funds when he completed his graduate work I would have been happy to have him join me in taxonomic investigation. He went instead as a post-doctoral fellow to Kansas for a year where his connection with Sokal was much more intimate and therefore he has more or less been influenced by the Kansas school. I do believe, however, that Dr. Crovello's ability is such that he can design for himself good or useful aspects of any methodology.

He has proved to be an energetic worker and has gained some respect amongst the small band of us working in this area and at the same time has been able to work with the more traditionally oriented taxonomists without alienation. This speaks very highly to his personality in that anybody that can get along with traditional taxonomists and still forge new methodology must have a considerable amount of diplomacy. He is now attempting to help out with various projects toward automating many of the old "quill pen" processes in taxonomy for which we have such desperate need in biological endeavors.

I suggest that you will be happy to have Ted Crovello working at Yale. I do not believe him to be an innovator in his approach to some of the more theoretical aspects of systematic biology and probably the reason for this is that he needs to have working with him as wither colleague or staff under him men with much more fundamental training in combinatoric-type mathematics. He would certainly be well served by having a good computer programmer. It is my belief that the "New, new systematics" will require team efforts rather than individuals who seclude themselves between their herbarium cabinets.

Ted's qualifications are excellent for curatorial efforts and I would suggest that he would be very interested to employ automatic data processing devices to assist him in the process of curating the collections. He just spent some time with us getting the details of our new taxonomic information retrieval system and we hope that he will put them to work in behalf of whichever institution he eventually decides to stay in. Altogether you will be well served by Ted Crovello.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

12 November 1968

Mr. Kirby Brown  
Department of Entomology  
School of Agricultural Sciences  
Riverside, Calif. 92592

Dear Mr. Brown:

We are pleased to see how well ~~aggon~~ you are with the study in terms of the particular applications of the output. Now that you have got this much under your belt, I would suggest the following sort of investigations might be useful. It is likely that now you can go back and play with your characters a little bit and discover what is happening to each of them in each of the clusters. For example were I you, I would look very carefully at your characters 15 and 16 to see what they are doing in each cluster. I personally have a very great deal of wariness about ratios, and wonder if you really have done what you intended to do in the states of characters 15 and 16, and whether you really would want them to play the game they are playing in this study. I suspect you will find some aberrances among those states when you put them against the clusters formed.

With respect to the placement of your object #600 (lectotype of Gonacida elata) my guess is that in 1850 a fellow could have well been in West Texas and thought he was in Arizona. We have had other studies with such geographical anomalies and the machine program made us go back and look very hard for a more appropriate geography for the specimen.

At any rate we are pleased that your efforts are being rewarded. Maybe your next study, when you send it, will have those characters a little more tightly wired down as to how you want to play the game with them. We will be ready when you are ready.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

11 November 1968

Dr. C. F. Konzak  
USDA-ARS Regional Plant Intro. Station  
Johnson Hall 59  
Washington State University  
Pullman, Wash. 99163

Dear Cal:

We expect to be in Pullman on Thursday, November 14 at 9:06 P.M. via Air West. We will stay Friday night and leave Pullman at 10:50 A.M. for Spokane and Seattle on Saturday. I hope you have been able to make arrangements for our staying there. You might check with Sam Dietz to see what has happened. I prefer a single room.

Bob and I are expecting to stay with it Friday until finished, even if this includes a night session.

q

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

11 November 1968

Dr. Frank W. Martin  
USDA-ARS-CRD  
Federal Experiment Station  
Mayaguez, Puerto Rico 00708

Dear Frank:

With respect to the newsletter, do you wish to give a run-down on the potential collaboration that you, Al and I have made on sweet potatoes, and classification with relation to other species in the genus. It might be nice to reinforce the idea that people should send us seeds, since I haven't received any at all recently.

Please note change in address from that given on the letter to me.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

November 7, 1968

Puerto Rico Chamber of Commerce  
San Juan  
Puerto Rico

Gentlemen:

We are doing research on the economic aspects of the products of Manihot esculenta (manioc, yuca, cassava, tapioca, etc.).

We are in need of the following:

1. A list of major producers of the crop in Puerto Rico (if possible their location, size in acres and yield in tons/year).
2. A list of major industrial consumers of cassava products in Puerto Rico.
3. A list of agriculturists, agronomists or scientists working with cassava in Puerto Rico.

Any other information you may have, or lists of persons with whom we may correspond will be helpful.

This information will be compiled as supporting data in an application for a research grant. The findings of our research should be of great help to all cassava producing areas.

We can read and write Spanish.

Your earliest response would be gratefully appreciated.

Sincerely yours,

Gilbert N. Hersh

GNH:gm

7 November 1968

Bank of Thailand  
Bangkok, Thailand

Gentlemen:

We are doing research on the economic aspects of the products of Manihot esculenta (manioc, cassava, tapioca, etc.).

We are in need of the following.

1. A list of major producers of the crop in Thailand (if possible their location, size in acres (hectares) and yield in tons/year).
2. A list of major industrial consumers of cassava products in Thailand.
3. A list of agriculturists, agronomists or scientists working with cassava in Thailand.

Any other information you may have, or lists of persons with whom we may correspond will be helpful.

This information will be compiled as supporting data in an application for a research grant. The findings of our research should be of great help to all cassava producing areas.

We read and write English, French, Spanish and German, and if necessary can get translations to and from Thai.

Your earliest responses would be gratefully appreciated.

Sincerely yours,

Gilbert N. Herck

GNH:gm

7 November 1968

Vice Consul for Economic Affairs  
Embassy of Brasil  
Washington, D.C.

Dear Sir:

We are doing research on the economic aspects of the products of *Manihot esculenta* (manioc, cassava, tapioca, mandioca, etc.).

We are in need of the following:

1. A list of major producers of the crop in Brasil (if possible their location, size in acres and yield in tons/year).
2. A list of major industrial consumers of cassava products in Brasil.
3. A list of agriculturists, agronomists or scientists working with cassava in Brasil.

Any other information you may have, or lists of persons with whom we may correspond will be helpful.

This information will be compiled as supporting data in an application for a research grant. The findings of our research should be of great help to all cassava producing areas.

We read and write English, Portuguese, Spanish, French and German.

Your earliest response would be gratefully appreciated.

Sincerely yours,

Gilbert N. Hersh

GHH:qm

6 November 1968

Dr. Nelson Hairston  
Museum of Zoology  
University of Michigan  
Ann Arbor, Mich. 48104

Dear Dr. Hairston:

I met Arnold Kluge last night at the Numerical Taxonomy meeting and I asked that he send us a photocopy of a few pages of his salamander catalog. From these I think we can determine average times for transcribing an average item.

I would like to come to the University of Michigan at Ann Arbor sometime at the end of December or in early January. Could you suggest a date at which time we could meet to review your operation and take a look at Dr. Kluge's entire collection? I think we can probably begin working on the collection shortly thereafter.

Sincerely,

Gilbert N. Hersh  
Economics Analyst

GHH:gm  
CC: Arnold Kluge

7 November 1968

Armory 101

Vice Consul for Economic Affairs  
Embassy of Thailand  
Washington, D. C.

Dear Sir:

We are doing research on the economic aspects of the products of Manihot esculenta (manioc, cassava, tapioca, etc.).

We are in need of the following:

1. A list of major producers of the crop in Thailand (if possible their location, ~~ages~~ cultivated and yield in tons/year).
2. A list of major industrial consumers of cassava products in Thailand.
3. A list of agriculturists, agronomists or scientists working with cassava in Thailand.

Any other information you may have, or lists of persons with whom we may correspond will be helpful.

This information is being compiled as supporting data in an application for a research grant. The findings of our research should be of great help to all cassava producing areas.

We read and write English, French, Spanish and German, and if necessary can get translations to and from Thai.

Your earliest response would be gratefully appreciated.

Sincerely yours,

Gilbert N. Hersh

GNH:gm

Modifications of same letter sent to German, Netherlands and Japan  
Embassies

7 November 1968

Vice Consul for Economic Affairs  
Embassy of the Republic of France  
Washington, D. C.

Dear Sir:

We are conducting research on the economic uses of the plants of the genus Manihot. From the tubers of these plants is produced flour and meal called manioc, manick, cassava and tapioca.

The reports of the E.E.C. (Marchés Agricoles) note that the Republic of France imports several hundred thousand long tons of manioc annually. We understand that much of this is used in the cattle feeding industry.

Could you provide us with the following information?

1. The names of Cattle Feeder Associations in France.
2. The names and addresses of major cattle feeders in France who are using manioc as a feed.
3. The names of researchers and experts (economists, biologists, agriculturalists, etc.) who work with the use of manioc in the cattle industry.
4. Reference to any published bibliographies, information, statistics, etc. concerning the importation and general use of manioc in France.

We read ~~the~~ ~~French~~ ~~language~~.

Needless to say, we appreciate your kind attention and assistance.

Sincerely yours,

Gilbert N. Hersh

GNH:qm

5 November 1968

Dr. Hernan Gacitua  
Plant Breeding and Genetics Section  
Joint FAO/IAFA Division  
Karntner Ring 11  
A-1010 Vienna, Austria

Dear Dr. Gacitua:

In response to your letter of October 11, I am enclosing a short description of TAXIR, our information retrieval system. This description does not, of course, go into any detail and we are in the process at the moment of putting together a User's Manual for the system.

In your letter you also asked to have a copy of "the operating taxonomic keys for plants." I am not just sure what is intended by this, but let me say that the TAXIR system has a part of its computer program that we call a "Key Facility." The Key Facility allows an individual to make an identification in a simultaneous manner describing an unknown organism in terms of the descriptors (characters) used by the expert in describing the data bank. As far as there being a whole data bank of keys, none exists. In this connection you may wish to write to Dr. Arthur S. Boughey  
Department of Population  
Biology  
University of California  
Irving, California 92650

who is also working on botanical keys.

We have added your name to our mailing list for our publications as they come out.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

6 November 1968

Mr. U. L. Riggs  
Accounting Officer  
Department of Entomology  
School of agricultural Sciences  
University of California  
Riverside, Calif. 92502

Dear Mr. Riggs:

Kirby W. Brown has indicated that you are the person to handle the financial aspects of the computer analysis we have done for him here at the University of Colorado Computing Center. Enclosed is an invoice covering our expenses in his behalf.

Could you make payment to the Taximetrics Laboratory, Account #1708-48? Thank you.

Sincerely,

David J. Rogers  
Professor of Biology  
Project Director

DJR:qmu

5 November 1968

Mr. Everett Ellin, Director  
Museum Computer Network  
27 West 53rd Street  
New York, N. Y. 10019

Dear Mr. Ellin:

Dr. Hugo Rodeck, Director of the University of Colorado Museum has just shown me your paper "Collections and Research. c. Scientific Documentation." If available, I would like to obtain a copy of that document and any other papers describing the work of the Museum Computer Network.

Would you be interested in receiving a description of TAXIR, our computerized information retrieval system? We have recently completed work on the system, and now have programs which are intended to serve the curator and research worker in natural history museums. TAXIR (Taxonomic Information Retrieval) was developed with the biological museum worker in mind, but we feel that there is a sufficiently common base to all museum type efforts that it might be useful to other museum workers.

If you are interested, I will send you copies of working papers which we prepared for a demonstration of the system last month. Looking forward to hearing from you.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

5 November 1968

Dr. Ernest Sohns  
Office of Information Services  
National Science Foundation  
Washington, D. C. 20550

Dear Ernie:

I was just wondering if you and others there in OSIS would like to have an informal report from me (perhaps in seminar form) on what we've been doing and what still needs to be done. If so, I could arrange to put one together for you some time in December, before Christmas. Let me know if this appeals and any ideas you may have about it.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

5 November 1968

Mr. Kirby Brown  
Department of Entomology  
School of Agricultural Sciences  
University of California  
Riverside, Calif. 92592

Dear Mr. Brown:

Here is your last study. We are keeping one of your decks in case you want plots later. Unfortunately, we were not able to supply you with plots this time around because the Computing Center is in the middle of change from a slow Calcomp to a faster (or less slow) one.

We will be billing the account specified in your letter.

Sincerely yours,

John Wong, Jr.

JW:gm

November 4, 1968

Dr. Mason F. Hale, Chairman  
Department of Botany  
Smithsonian Institution  
Washington, D. C. 20560

Dear Mason:

I think what you need now is something I could use very much myself - about six fingers of bourbon. I sense from your letter some frustration about the whole ADP operation, where it looks so simple at the outset, only to turn into a bucket of worms further along in the operations. If I have sensed your letter correctly, you are up against the data structuring and preparation problems, one of the most frustrating parts of all the work. There are so many things to get in gear at once that it would try the patience of a Chinese philosopher. Not the least of the difficulty is that which you're experiencing now - the transfer to some machine-readable format from the presently existing data files, specimens, or what-have-you! If it makes you feel any better to know that we're in the same boat, then let it be known that we are up against these same types of problem. If you're having to console a bunch of skeptics at the same time you're trying to make some headgag, this only adds to the frustrations. Some of your people are probably just waiting to say "I told you so, now go back and pick up your quill-point pen."

I certainly understand when you want to get a full-time botanist to handle the data-preparation work. Somebody knowledgeable about the botanical significance of this or that item of information, or how to interpret some particular twist to the wording on specimens or cards is very important. But there may be some help for you on the way in the procedures we're developing now without the help of a full-time botanist. Gil Hersh is developing exhaustive flow-charts of the data gathering system, instructions which can be read and followed by anyone capable of SCM operations, with built-in checks or stops for points of difficulty. Such a system allows the operator to proceed with easily read information, but stops him at the point of some problem. The problems are analyzed for the type of difficulty, and a flow of the system directs the problem to someone capable of resolving it. Sometimes these difficulties are systems-oriented types, and should be answered by a person familiar with the system, and sometimes the problems are curator-oriented, and probably have several levels of complexity, some of which require only a check by another technician, some requiring attention from you or others.

The point of such a technique is to reduce the burden on any one person, such as yourself, and to allow a continuous flow of work rather than grinding to a halt at some stage when you are not available. Of course, some of this flow of work is based on the TAXIR system which has, as one of its modules, the "Data Vet" which is built in to help with the necessary checking of the data after it has been made machine-readable. You don't have to have the TAXIR system to get such a data checking process, but it sure is helpful.

I expect to be in Washington in December, and I hope I can look over your work, and maybe even have a helpful suggestion or two. Do you plan any extensive trips away from home during that month? Let me know, if you do plan to be away, and I'll try to arrange a time when we can get together. My schedule for coming to Washington is rather flexible.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

Nov. 1968

Control Data Corp. Sales & Service  
7895 E. Prentice Ave.  
Littleton, Colorado 80120

Dear Sir:

Would you please send us all relevant information on your 3000 series remote terminals. We would be especially interested in any literature concerning your IMPORT and EXPORT; also any <sup>software package</sup> information relevant to the conjunction of the 280 console and your 3000 series.

Sincerely yours,

John Wong, Jr.

December 31, 1968

Mr. Harold A. Olsen  
Office of Science Information Service  
National Science Foundation  
Washington, D.C. 20550

Dear Harold:

I enclose my response to your request for evaluation of the Flora North America project. I have followed the outline given in your letter of Dec. 23, to answer the questions. The evaluation is not signed, in case you want some sort of anonymity, but I personally do not mind if you use my name as the author of it.

Hope the answers are pertinent, and clearly, I'm willing to answer any more, if you have need.

Perhaps I'll be in some time toward the end of January, to give a seminar to some NSF group. Ernie Sohns is organizing it, I think. If I do come in, I'll be sure to look you up.

Sincerely,

David J. Rogers  
Professor of Biology  
Project Director

DJR:sw

Comments on Proposal M-3155, "An Information System for Flora North America (FNA): Planning Stage." Responses given in same order as those in cover letter from Harold A. Olsen, dated December 23, 1968.

(1) Without question, the objectives of this effort are useful to a large number of life scientists. Inasmuch as the work of systematic botanists is largely in information retrieval, their efforts should be considered as fundamental procedures in all the life sciences. Given the addition of computing machines and good programs for them, a large body of workers will be well-served. That is, the concepts of biological information are well preserved in the workings of taxonomists, and the biological fraternity uses taxonomic output and methodologies, whether they recognize it or not. Therefore, there should be produced a very useful set of methodologies by funding this proposal.

As this proposal is conceived, there should be beneficial effects for other groups active in this area by making the separate groups more aware of what types of programs are being produced in the several places in this country and abroad, and perhaps foster more cooperative effort with less duplication. Clearly, this type of thinking is a two-way street, with as much going into the FNA effort as is coming out. Cooperation must be the main theme fostered by the FNA in its dealing with the numerous producers of programs which can be useful in various ways for the total FNA effort.

(2) It is difficult to conceive of any but adequate consideration to the current state-of-the-art in this proposal. After all, the funds are largely requested for a Systems Development Manager, and not for actual programming activities. As I see it, the SDM will gather together useful programs from around the country, survey them and incorporate them or ask the producers to modify in certain ways to meet some specific programming need for FNA. Clearly, the SDM must be above average if he is to evaluate this or that program for its generality, power, elegance, sophistication in hardware use, etc. He will certainly need to be educated by those of us who have had rather intimate contact with the types of problems in FNA.

(3) This is the weakest part of the proposal, in my estimation. I would require the principal investigator to name those in the botanical profession who will form the most knowledgeable back-up for the SDM. There is quite a bit of sophistication in our laboratory, and at one or two other places in the country. These people should be clearly identified by the principal investigator so that you can check the relevance of his advisors. The fact that I am a member of the Advisory Committee for FNA does not guarantee that the principal investigator will seek my advice. While I have no reason to believe that Shetler will not ask for my help, I am not assured that he will.

To achieve fruitful cooperation, I recommend that a standing sub-committee be established to aid in this aspect of the work of the SDM. I am thinking here of identifiable botanists whose efforts have already indicated some value for FNA. This committee should be formed after the appointment of the SDM, and formed by sending questionnaires to potentially interested botanists. The questionnaire would ask if the individual or group wished to serve, and in what capacity the individual or group could function. Then, upon forming of a committee be certain, somehow, that the SDM works with this committee.

I would further ask Shetler to prepare, with the idea that the preparation is preliminary only, a flow chart of the workings of the FNA as these impinge on IR systems. What will be the various types of input and output requirements of an IR system? What will the SDM finally devise? I think it possible to identify in advance much of the work the SDM has to do, and it would probably be advantageous at the point of hiring the man if he could be shown what types of programs will be useful to FNA.

One final bit of advice which I think valuable is that some sort of cost/effectiveness study be made. This isn't given in the proposal. I do not think that there need be a large budgetary factory to fulfill this type of task. We already have a pretty well worked-out system for making such an analysis, and only a few hours will be required of skilled time to direct such studies. I think that FNA and its SDM would be very much pleased to see the results of such studies. They are very enlightening.

But above all, I recommend the funding of this effort. I haven't seen as much cooperative effort exhibited by taxonomists ever before in this country. They seldom tell you why their work is good and useful, (and perhaps I haven't been too explicit myself) but let it be said that there is a fundamental importance to knowing what plants we have, where they are, and how do you identify or locate them. This will be the minimum value derived from the FNA effort, and the maximum is not known by any of us.

December 31, 1968

Dr. Mason E. Hale, Chairman  
Department of Botany  
Smithsonian Institution  
United States National Museum  
Washington, D.C. 20560

Dear Mason:

I have two good letters from you to answer, and had already started to write when your second arrived-so, I'm going to go ahead and comment on the second one at the end of the first. If this letter sounds disjointed-it is!

I, too, enjoyed my visit there. It was pleasant, among other things, to attend the seminar where I heard some talk about botanical problems (both Stone and Stern), away from the jargon of computers. But most of all, I enjoyed our visit where, at the interface (more jargon) with information retrieval systems, we talked about the problems of why we want to put such and such information into the computer's memory. Your questions about the need for putting in, say 30,000 bryophyte records, is very valid, and requires me (and all the rest of us) to think very hard about these needs. I think that we all believe that the label information on the specimens is valuable, and now we've got to say why it is important to go to the bother of extracting it onto some sort of machine-readable format. I have no doubt that we can justify this type of effort, because the information residing on the specimens is not readily available.

As of this moment, the label data, which describes much of the important knowledge about locality, geography, ecology, form habit, flowering time (or in the case of cryptogams, reproductive times), simply cannot be extracted without tremendous effort, by searches which are extremely inefficient. Using a well-designed computerized system, all the various pieces of information become available, in any format desired for any particular use.

You were worried about missing information. In our experience, this is not nearly so formidable a problem as it may seem before one has actually gone into a large data bank. What one specimen may lack, another, closely related specimen, has. By pooling the information from all the specimens, one quickly overcomes the lacks of individual specimens. I believe, after a moment's reflection, you can see that that is what we do now, without a computer. But also consider that by this process of lifting the label data from the specimen, we gain knowledge about

Dr. Mason E. Hale  
December 31, 1968  
Page 2

what more information needs to be gathered, thus precisely pointing to new research needs. Add to this benefit the saving of curatorial and research time which an IR system provides, and we gain more of the valuable knowledge of the botanist to do that which he should bend his talents towards anyway.

I was much impressed by the way you have decided to handle the exchange of type-specimen information with other institutions. This should be a tremendous aid to us all. I only hope that the cooperating institutions will come through with their part of the effort. I'm sure you won't get 100% cooperation, but I hope there will be sufficiently large response to get good returns. There's nothing like a working computerized system to convince people that they should get out of the 19th century.

On our offer to come and help with wiring up our TAXIR system, forget any worry about funding our trip. Chances are we'll be in Washington for some reason later this winter, and we'll just charge our expenses to some other source. But we do want you to have the TAXIR programs, and want to save any headaches the ISD might have.

We're working on your tape of types now and hope to have something useful as soon as we can transfer from your format to our define-item format--shouldn't be too long.

Thanks again for our conversations. I think the sherry was extremely beneficial, something we all need to make the wheels turn better.

Happy New Year,

David J. Rogers  
Professor of Biology  
Project Director

December 23, 1968

Mr. F. Thomas Galloway  
Office of Science Information Service  
National Science Foundation  
Washington, D.C. 20550

Dear Tom:

It was a pleasure to visit you and Harold Olsen recently. It is certainly valuable for me to get the "big picture" of problems, and your conversations with me certainly helped to get rid of tunnel vision, which I fear becomes a problem with any of us as investigators.

With respect to one project which we discussed, the Flora of North America, I hope that I was able to shed some light on things. After talking to you, I spent some time with Stan Shetler and believe that he is coming closer to a good and useful working arrangement with some sort of data processing manager. He, like so many other botanists, doesn't have a good grasp of computing milieus but I think he is an honest broker, and with help from some of the rest of us, will do a good job. The project as a whole, both from practical and scientific standpoints, is well worth the effort and since we have no other person willing to shoulder the responsibility he has, we must make him go, and he can, I sincerely believe.

Best regards to Harold Olsen, and best wishes for a Happy New Year.

Sincerely,

David J. Rogers  
Professor of Biology

December 26, 1968

Dr. Edward C. Weiss  
Office of Scientific Information Service  
National Science Foundation  
Washington, D.C. 20550

Dear Ed:

I enjoyed my visit with you just before Christmas. Several useful ideas were generated then, and I intend to incorporate them into development of further activities. You'll be hearing from me on these some time in January. I have proposed to give a seminar for the staff of NSF on January 31, Friday, and if I do give the seminar then, I'll bring along some ideas for a new proposal.

I recall your interest in having a small group of IR developers get together to share their ideas. This idea is good, and a couple of people I've talked to agree. So, if you want to pursue it, and you think it a good idea to hold such an informal session some time this coming summer, we'll be glad to do the organizing work on it. Again, I'll talk to you about this when and if I come for the seminar.

Hope to be seeing you in January.

Happy New Year.

David J. Rogers.  
Professor of Biology

DJR/mqs

December 26, 1968

Dr. John Gray, Deputy Director  
Office of Scientific and Technical Information  
State House, High Holborn  
London, WC 1 England

Dear Dr. Gray:

Dr. Ernest Sohns, OSIS, Washington, suggested I write to you of my plans to be in London in April, 1969, and that I visit you during this time. Dr. Sohns suggested that you would be interested to hear about an information retrieval system, TAXIR, which my colleagues and I have developed.

My plans for the trip have not been fully developed, but I hope to be in London some time during the third or fourth week of April. Please let me know if you will have some time during this two week period, and if you would like to have a description of our system.

TAXIR was designed to be a flexible, user-oriented information retrieval system. Perhaps the most unique feature of the system is the mathematical algorithm used for storage and retrieval of information. Rather than go into any descriptive detail at this time, I will await your reply indicating your interest in such a system.

Sincerely yours,

David J. Rogers  
Professor of Biology

cc: Dr. E. R. Sohns

December 26, 1968

Dr. Ernest R. Sohns  
Office of Science Information Service  
National Science Foundation  
Washington, D.C. 20550

Dear Ernie:

It was a pleasure to talk to you and others there in OSIS just before Christmas. From those conversations and with others in the Washington area, I am more convinced than ever for the need to continue our work both in development and in aid to others in putting information retrieval systems together. I intend to put together some ideas for this continuation, and hope to show these to you when I come in for the seminar (information below). In talking with Ed Weiss, it became clear that we needed to demonstrate that we had some strong base for support of our operations and for some national effort. While I would like to be able to demonstrate some such, I fear that we cannot demonstrate it in the way which would give the greatest assurance that we will not fall down on the job. Perhaps the way to such a demonstration is through the number of users of our system already. While we have not reached a consensus for our system from any society, I am sure that you recognize that a consensus from any particular biological society is almost impossible to achieve. We feel that consensus is best achieved through actual use of TAXIR, (Taxonomic Information Retrieval) in various institutions, (research labs, museums, etc.) rather than by some a priori agreement. Since we have put together a comprehensive IR system, and have had considerable experience with various biological problems, we feel that this group has a better chance of success than any other in the country.

Recognition of the merit of the system will come, of that we feel certain. But we simply do not expect it to happen without considerable effort on our part. This we wish to provide.

With respect to the proposed seminar to NSF, I would like to give one on Friday, January 31, which coincides with our semester break. I propose the title: "Systematic Biology and Information Retrieval Systems." Some descriptive sentences: Using as models and inspiration the present-day operating systems in Systematic Biology, information retrieval systems can be developed which meet many needs. Component parts of one system, TAXIR will be described.... I will not need any visual aid equipment, but a

Page 2  
Dr. Ernest R. Sohns

blackboard will be useful. There will be some handouts, and I will need to know approximately how many people are expected to attend.

I hope the time is acceptable. Does NSF provide any travel funds for such seminars? Looking forward to seeing you at the end of January.

Sincerely,

David J. Rogers  
Professor of Biology

Encl: Copy of letter to  
Dr. John Gray

December 20, 1968

Dr. Howard S. Irwin  
The New York Botanical Garden  
Bronx, New York 10458

Dear Howard:

It was good to talk to you even for the short time we had. With respect to an individual who might be considered by you to head your data processing activities and at the same time be knowledgeable about plant taxonomy, I was reminded today by George that there is a young man, Kent Bridges, now getting his degree under Arthur Boughey at the University of California, Irvine, (Department of Population and Environmental Biology). We have met him once when he came here for the demonstration. He was very knowledgeable about computers having spent time with systems at the University of California. We do not know anything about his botanical competence but you can check with Arthur Boughey if you like. I frankly would suggest a telephone call rather than a formal letter to investigate this matter. Possible you might also check with Herb Wagner who may have a student who has the necessary botany and computer knowledge.

Once again thanks for your time on Saturday. Have a good trip to Brazil and bring me back some Manihot goodies.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

December 20, 1968

Dr. James A. Peters  
U. S. National Museum  
Washington, D. C. 20560

Dear Jim:

We've just seen the note in MUDPIE #5 and appreciate the notice therein. I would be pleased, however, if we could get one concept clear by addendum or change in the next issue.

You have a sentence which begins, "At the present time, and with the 'descriptor states' built in by Rogers' group, it is perhaps solely functional for processing data in the plant genus Manihot, ..." The descriptor states are not built in, the descriptor states are supplied by any interested worker and are not confined to those described by us. Therefore the statement that it (MANIR) is "perhaps solely functional for processing the plant genus Manihot" is not true.

We can and are accepting descriptor states described by very different interest groups already; for example, for the Bryophytes collection of the University of Colorado Museum; for the plant chromosome number reports by Dr. Askeell Löve; for the USDA Plant Introduction records on Phaseolus species at Pullman, Washington; for weather data gathered by staff members of the Institute for Arctic and Alpine Research; and for salamanders at the University of Michigan Museum. These indicate the many applications of the system, and are not confined to our own descriptor set. I hope you can add a statement to this effect next time.

Merry Christmas.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

20 December 1968

Professor Francis E. Johnstone, Jr.  
Division of Horticulture  
College of Agriculture  
University of Georgia  
Athens, Ga. 30601

Dear Dr. Johnstone:

Thank you for your letter of December 11. As you have already suspected, I am quite interested in the study of cassava. In as much as there is a very great amount of work to be done from the very basic type of research up through the various agricultural problems to economics, it is almost impossible to pin point new projects which might specifically interest you.

I have recently served as a consultant to the Rockefeller Foundation for the development of an extensive research program on cassava which hopefully the Rockefeller people will incorporate in the new Lowland Tropical Research effort in Cali, Colombia. In that capacity as a consultant I designed for them a very extensive research and development program. I am not certain that the information included in the report to them is privy but I definitely would not care to release such a document without their prior approval.

With the above considerations in mind I would like to recommend that you come here to Boulder so we may spend a day or two discussing the kind of effort which we would find most meaningful. I hope that this is possible for you to do. If not, perhaps we would find it helpful for me to act as a consultant for you in your effort. Please let me know which of these proposals is most feasible for you.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

20 December 1968

Mr. R. L. Williams, Director  
Medical Systems Marketing  
Control Data Corporation  
8100 34th Avenue South  
Minneapolis, Minn. 55440

Dear Mr. Williams:

Thank you kindly for your letter of December 4. It is interesting to know that the University of Kansas is considering the development of a 6400 system. In this connection I know that Dr. Peter Neely of the Biology Department is much concerned with a data bank for a medical study. He was much interested in our description of TAKIR and because he sees a generality of value to him for his data (something to do with heart disease) he has decided to convert our program to a GE machine. Perhaps it would be worthwhile for you to contact him with respect to the installation there in Kansas of the 6400 system. Unfortunately we are not ourselves in a position to get next to a data bank directly out of some medical problem.

Thanks again for your letter. Best wishes for the holiday season.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

20 December 1968

Dr. William E. Walden  
Computer Center  
Washington State University  
Pullman, Washington 99163

Dear Bill:

This is to let you know that we will meet programming costs according to our verbal agreement, up to \$5,000, between January 1 and July 1, 1969.

Please submit a bill for programming services to me at the Taximetrics Lab.

Sincerely, yours,

David J. Rogers  
Professor of Biology

DJR:gm

<u>Datamation</u>	\$15/year	F. D. Thompson Publications 1830 W. Olympic Blvd. Los Angeles, Calif.
<u>Computer World</u>	\$9	14A Elliot Street Newton, Mass.
<u>Computers and Automation</u>	\$15	Berkeley Enterprises Inc. 815 Washington Street Newtonville, Mass.
<u>EDP Weekly</u>	\$50	Industry Reports Inc. 514 10th St., N.W. Washington, D. C.

890<sup>00</sup>

12 December 1968

Industry Reports, Inc.  
514 10th Street N.W.  
Washington, D. C.

Gentlemen:

Will you please enter us for a one-year subscription to  
EDP Weekly? I should be sent to

Taximetrics Laboratory ATTN: John Wong  
Armory 101  
University of Colorado  
Boulder, Colo. 80302

We would appreciate it if you would bill us at this address.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

13 December 1968

Computers and Automation  
Berkeley Enterprises, Inc.  
815 Washington Street  
Newtonville, Mass.

Gentlemen:

b Will you please enter us for a one-year subscription to  
Computers and Automation? It should be sent to

Taximetrics Laboratory, ATTN: John Wong  
Armory 101  
University of Colorado  
Boulder, Colorado 80302

We would appreciate it if you would bill us at this address.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

DEC 12 1968

Gentlemen:

Will you please enter us for a one-year subscrip-  
tion to Computer World? It should be sent to

Taximetrics Laboratory ATTN: John Wong  
Armory 101  
University of Colorado  
Boulder, Colorado 80302

We would appreciate it if you would bill us at  
this address.

Sincerely yours,

David J. Rogers  
Professor of Biology

Computer World  
14 A Elliot Street  
Newton, Mass.

DEC 12 1968

Gentlemen:

Will you please enter us for a one-year subscrip-  
tion to Datamation? It should be sent to

Taximetrics Laboratory ATTN: John Wong  
Armory 101  
University of Colorado  
Boulder, Colorado 80302

We would appreciate it if you would bill us at  
this address.

Sincerely yours,

David J. Rogers  
Professor of Biology

.DJR:db

F. D. Thompson Publications  
1830 W. Olympic Blvd.  
Los Angeles, California

MEMO TO: Mr. Ralph Stilson, O.R.S.

FROM: David J. Rogers, Taximetrics Lab

SUBJECT: Check #2-51006, drawn on the Bank of America, against  
the University of California's revolving fund.

This check is in payment for the shipment of cards and programs  
Please credit to our account 1708-40, subsection 5-511.

Thank you.

6 December 1968

Dr. Alcides R. Teixeira  
Director General  
Instituto de Botanica  
Caixa Postal 4005  
Sao Paulo, Est. de Sao Paulo, Brasil

Dear Alcides:

Thank you very much for your letter of the 27th  
November. We will hope to be able to receive Manihot  
propagating materials from the men whom you have listed  
for us.

Best regards for the Christmas holidays.

Sincerely,

David J. Rogers  
Professor of Biology

DIR:gm

5 December 1968

Dr. Richard Cowan  
Director, Museum of Natural History  
Smithsonian Institution  
Washington, D. C. 200560

Dear Dick: Hi.

I might be able to see you late on  
the afternoon of the 10th. Do you have any free time on the  
9th? In any event I will call you when I arrive, and we can  
tell better how our schedules will mesh.

Looking forward to seeing you.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

5 December 1968

Mr. Harvey E. Sheppard  
U. S. Committee for the IBP  
National Research Council  
2101 Constitution Avenue  
Washington, D. C. 20418

Dear Mr. Sheppard:

I have written to Frank Blair about my coming visit to Washington, hoping to see him (if he is in town) and other IBP people, on Friday, December 13. I would like to talk about our information retrieval system which is now being put into operation.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:ga

4 December 1968

Dr. John Popenoe  
The Fairchild Tropical Garden  
10901 Old Cutler Road  
Miami, Florida 33156

Dear Dr. Popenoe:

Herewith is my flight schedule for my trip to Miami in February. My son, Richard, aged 14, will be coming with me. We arrive in Miami on the 20th at 5:41 P.M. via TWA 478. Departure will be at 12:40 P.M. on Monday, February 24, via Eastern.

Incidentally, a suggested title (if you need one) for my presentation in February is Manihot, Man and Computing Machines. I will need a projector for Kodachromes (2 x 2) but no other projecting equipment.

Dr. Teixeira has responded to the request for Manihot propagating materials handsomely. I am enclosing a copy of his letter. We (either or both of us) will now have to correspond directly with the listed men. Would you care to write to them, or do you want me to? I frankly am not sanguine about response from any of the listed men, and fear that the only way we can get materials is by sending out our own collectors. In this connection, I'd like to suggest my graduate student, Mr. S. G. Appan, who would be an excellent man on such a trip. We can talk about this possibility when I come to Miami.

Sincerely,

David J. Rogers  
Professor of Biology

DJR:gm

2 December 1968

Dr. Nelson G. Hairston  
Museum of Zoology  
University of Michigan  
Ann Arbor, Michigan 48104

Dear Nelson:

I plan to arrive at the Detroit airport on Monday, December 16, at 6:44 PM (Northwest 363 from Pittsburgh) and take some sort of limousine to Ann Arbor. Would you be kind enough to reserve a room for me on Monday and Tuesday nights? I will leave Detroit Wednesday at 11:25 AM.

Gil Hersh has made observations (attached) about your information retrieval bank based on the copy of the ledger sheet which Arnold Kluge was kind enough to send.

Looking forward to seeing you,

Sincerely,

David J. Rogers  
Professor of Biology

DNB:gr

P.S.: A title for the seminar might be: An Information Retrieval System for Biology.

3 December 1968

Mrs. Ileen E. Stewart

Biomedical Communications Study Section Division of Research Grants  
National Institutes of Health Westwood Building, Room 2A-14  
Bethesda, Md. 20014

Dear Ileen:

Sorry we waited so long to get this review back to you. My opinion on the thing is that Hersey has not done his homework before coming to you and asking for 65 Gs. I think he should definitely go back and re-write this thing and come back in with a great deal more detail. Evaluations such as his should have an economist on the staff and I don't believe I see one. I am sure they have something in mind which would be useful, but frankly it is not written down here. I hope you will encourage Hersey to go into more effort to say what he is going to do, because I would like to see such a thing supported.

Sincerely,

David E. Rogers  
Professor of Biology

DJR:gm

3 December 1968

Area Director  
Honeywell Ind.  
Denver Technical Center

Dear Sir:  
Gen

As a research and development team of biologists, mathematicians and programmers we have designed an information retrieval system for application in many biological fields - medicine, agriculture, and more strictly biological activity. The system is now being adapted in a number of different laboratories around the country.

We continue our investigations into procedures and hardware which will improve the efficiency of the total system. One of the most critical parts of the information retrieval system is the initial capture of the data to be mounted in the data banks, and in our investigations we have discovered that your K-700 has great potential to speed the process of data-capture, to say nothing of its advantages in accuracy of the input.

Since we advise our users on various configurations of hardware which will serve the individual purposes best, it is to our advantage to know the merits of various devices which are potentially useful for the applications the users have. We are in the stage now of investigating various types of input systems available, and would like to try your K-700 to determine how it will fit into the total system.

I will appreciate your advice to Mr. Wong and Mr. Hersh, who have already contacted you, and who will be looking more closely at the speed, accuracy, and economy of the Honeywell K-700. We would also like to explore the possibility of some agreement to share the expenses of testing your machines with our programs on actual biological data banks. This will be an immense service to the biological community.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

3 December 1969

Area Director  
Honeywell Ind.  
Denver Technical Center

Dear Sir:  
Gen

As a research and development team of biologists, mathematicians and programmers we have designed an information retrieval system for application in many biological fields - medicine, agriculture, and more strictly biological activity. The system is now being adapted in a number of different laboratories around the country.

We continue our investigations into procedures and hardware which will improve the efficiency of the total system. One of the most critical parts of the information retrieval system is the initial capture of the data to be mounted in the data banks, and in our investigations we have discovered that your K-700 has great potential to speed the process of data-capture, to say nothing of its advantages in accuracy of the input.

Since we advise our users on various configurations of hardware which will serve the individual purposes best, it is to our advantage to know the merits of various devices which are potentially useful for the applications the users have. We are in the stage now of investigating various types of input systems available, and would like to try your K-700 to determine how it will fit into the total system.

I will appreciate your advice to Mr. Wong and Mr. Hersh, who have already contacted you, and who will be looking more closely at the speed, accuracy, and economy of the Honeywell K-700. We would also like to explore the possibility of some agreement to share the expenses of testing your machines with our programs on actual biological data banks. This will be an immense service to the biological community.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:gm

2 December 1968

Dr. Carlos E. Fernandez  
I.I.C.A. - Zona Andina  
Apartado 478  
Lima, Peru

Dear Dr. Fernandez:

We had hoped to hear by now from Dr. Jorge Leon about the details of the Manihot program but to date have received no information about it. You will recall that earlier I wrote asking about about the collection expedition that was at least projected. Since the time is becoming short that we need to make arrangements to support the travel of my graduate student, I wonder if you can give me details about your proposal so that I may make plans for any additional support needed from me. Would you please also give me Dr. Leon's address in Rome?

Best regards.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:qm

AEROGRAMME

2 December 1968

Mr. Frank A. Bisby  
Forest Herbarium, Dept. of Forestry  
Commonwealth Forestry Institute  
University of Oxford  
Oxford, England

Dear Mr. Bisby:

Since we haven't heard from you recently, we are assuming that the Admissions and Graduate School offices are taking care of you. ~~Inter~~-campus communications do tend to get bogged down.

Regarding fees: a minimum tuition charge of \$39 permits you to take up to three credit hours, which can be independent study. The student fee is optional (\$46.20) but it includes the services of the student health service, insurance, and other fee-supported activities.

We understand that your housing in a university dormitory is being taken care of.

Let us know about your travel plans, when you have them confirmed, and we will try hard to have someone at the Denver airport to meet you.

Sincerely yours,

David J. Rogers  
Professor of Biology

DJR:qm

2 December 1968

Dr. T. M. Barkley  
Division of Biology  
Kansas State University  
Manhattan, Kansas 66502

Dear Ted:

It was good to get the epistle containing Barkley type humor again, as well as the nuggets buried therein. I will respond in reverse order to the paragraphs in your letter. We are indeed interested in having Lorin C. Anderson as a post-doc next year, and we will make an application for a position in our next grant proposal. I am perhaps foolishly optimistic to think I will get funds from NSF going on the basis of our past success and continuing productivity. I would like to know more about what you mean by funding him on "standard sabbatical fare." What is meant by "need to be picked up with some eyre funds from somewhere else"? We would also like to know something about his work, interests, background, etc.

Now to the sticky problem of subspecific hierarchical categories of cultivated plants. Now that we have worked out the classification of *Maribot esculenta* (believe it or not, we are writing it up for publication now) I feel that the proposals of Jeffrey in *TAXON* don't help a hell of a lot more than what was given already in the International Code of Nomenclature for Cultivated Plants (*Revisio Vegetabilis* 10: 1-25, 1953)). He didn't even cite the work. We found that the words "convariant" and "group" satisfactory for our needs. Remember that I don't know anything about the inheritance patterns by actual breeding work, and we are describing organisms with similar morphology as groups. For other efforts, such as yours in the florist's *cineraria*, with such core genetic knowledge, you can probably be more detailed in your definitions. But remember that your clusters and classifications still must be information-carrying constructs, and too fine a division of the cultivars actually loses information. The balance is the thing, of course, and to strike it is what we all hope to achieve. But where does the balance lie? You need either a philosopher's stone or a much better computer than ours! But at least with our system, you can trace each organism's relationship, which is critical for cultivated plants.

Happy Christmas!

David J. Rogers  
Professor of Biology

DJR:gm