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A PROPOSAL TO ESTABLISH AN INTERNATIONAL CENTER OF TROPICAL PHYTOPATHOLOGY

AT

NORTH CAROLINA STATE UNIVERSITY

RALEIGH, N. C.

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

DEPARTMENT OF BIOLOGY

10 October, 1966

Dr. David Rogers
Taxonomy Laboratory
Department of Botany and Plant Pathology
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

Many thanks for the card. We all would have loved to come to the seminar on Wednesday, but since we have a Faculty meeting that day, this will be impossible. But, I hope Paul Winston will be able to convince you to give us a similar seminar here soon.

Best regards,

Askell Löve
Professor and Chairman

AL:mss

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

DEPARTMENT OF BIOLOGY

Boulder, October 8, 1966.

Dr. David J. Rogers,
Taxonomy Laboratory,
Department of Botany and Plant Pathology,
Colorado State University,
Fort Collins, Colorado 80521.

Dear Dave:

Many thanks for your good letter of October 3. As I said before, I am more than ready to give you whatever assistance I have available to set up your splendid project. I agree that we must come together soon to discuss this and other matters, but my trip to Japan left me with so many things to think about here, that it will be difficult for me to get away even for a day for some time to come. However, Fort Collins is so close that if one really wants to visit it, there ought to be many possibilities even when one wants to excuse one's laziness with something else, so when you press me with a more definite date, I dare to say that me excuses will melt away; we want to see your outfit and discuss with you there.

I have asked Dr. Paul Winston to contact you for a seminar, and hope he either has done so or will do it very soon. But he may feel that we should wait until we have had my brother here to speak about schizophrenia and intelligence later this month....but you will hear from Paul. My brother and his wife will be here just before October 20 and probably until Oct. 28, so perhaps it might be wise to visit you during that week?

Frans Stafleu has told me that he will be in America in March or April, but I do not yet have any definite dates. I will ask him when I write to him next time and see what can be arranged. I am sure he will be very much interested in visiting you to discuss the much more sensible things you are doing than those who have been fooling around with computers to impress taxonomists elsewhere.

With all good wishes to you all,

Sincerely,

Áskell Löve

ÁL/mss

- Taxonomy Laboratory

October 3, 1966

Dr. Askell Löve
Department of Biology
University of Colorado
Boulder, Colorado 80302

Dear Askell:

Thank you for your generous letter of 27 September. I would be very pleased to have your support and to ask your aid in soliciting support from IOPB and IAPT.

Certainly it seems wise to ask Frans Stafleu to come to Colorado. It might be possible to give him some aid through our local chapter of Sigma Xi. But before any commitments can be made, I will have to know when he plans to be in this country and whether we can arrange a date for his talk to this group. Other than Sigma Xi funds, we have none available to us in the Botany Department. For this reason I doubt that we could get additional support to bring Peter Raven here, much as I would like to.

I think that it would be wise for us to get together soon to try to make some arrangements. If you can and feel like doing so, we would like to have you visit us here. This will give you an opportunity to see more of our operations and at the same time allow us to gather the support necessary for the computer program in information retrieval.

Let me know what time is convenient to you and if you can meet us here. If your schedule is very full, I can arrange to meet you in Boulder.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

DEPARTMENT OF BIOLOGY

27 September 1966

Professor David J. Rogers
Taxonomy Laboratory
Department of Botany and Plant Pathology
Colorado State University
Fort Collins, Colorado

Dear Dave:

Many thanks for the excellent paper on the IR project. I thoroughly enjoyed reading it and found it not only stimulating for my own thoughts, but also of the kind we have been hoping for in the IOPB and IAPT for a long time. I am sure that if you contact Frans Stafleu for IAPT moral support, this would be given with pleasure, and if you feel IOPB moral support would be important, I could help solicite it. It is possible that Stafleu may be able to visit Colorado during his next visit to the States this coming winter, especially if we could find funds to pay for additional transportation; this could perhaps be done by inviting him to give a seminar at CSU or CU, or both?

As you said on the phone, this is also a system which would considerably shorten the time needed for the compliation of the Flora of North America. I do not know exactly how that project is coming along, though I know that Stanwyn Shetler at the Smithsonian will be its secretary and Peter Raven of Stanford the other substantial member on the Editorial Committee. Perhaps you may find it worthwhile to contact Peter by letter, though I am of the feeling that a personal discussion might be more effective, so perhaps he could be invited for a seminar at CSU and/or CU also?

I am sorry that your proposal is so good that I cannot improve it with any ideas -- it actually goes far beyond what I could think of. To show you that I read it critically, however, I may mention that I reacted when I read the word "commonality" in the third line on page three and wondered if you were picking the correct expression? I had learned that "commonality" had to do with the common people only, whereas you mean what I thought had been termed "commonness". You ought to know better than I do, but if I am wrong, I will be pleased to withdraw my finger also from this only small remark my great effort could allow me to do on this splendid proposal. Best of luck; it has been wanted by many for too long a time.

Sincerely,

Askell Löve
Professor and Chairman

AL:mss

— Taxonomy Laboratory

September 20, 1966

Dr. Askel Löve, Chairman
Department of Biology
University of Colorado
Boulder, Colorado

Dear Askel:

Here is the paper I mentioned over the phone. If this work is funded, it should provide taxonomists with a very practical system when working on large floras. This work does not overlap with our previous programs, but is intended to be used at another point in the taxonomist's work.

While we feel that the previous programs are of more real significance in taxonomy, we also recognize that it will take much more time before taxonomists appreciate their value, and learn how to use the programs for clustering. On the other hand, the information retrieval programs should be more readily acceptable because they do not get into those areas of taxonomy dealing with the theoretical aspects.

The enclosed paper represents a considerable amount of work already done, even before we have the funds to do it. It therefore represents quite an expenditure of funds and would, if placed in the hands of some computer-oriented types, be quite a loss to us. I'm sure you understand this, and that I need not add any admonitions.

I will appreciate any comments you care to make on the paper, and if any questions arise, give me a call.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taxonomy Laboratory

August 8, 1966

Dr. Askell Löve, Chairman
Department of Biology
University of Colorado
Boulder, Colorado

Dear Askell:

I am sending under separate cover several reprints you might be interested in. We have just completed the enclosed mimeographed "General write-up for similarity-clustering program." When you have had an opportunity to look through it, I would like to have this copy back inasmuch as it has a heavy run for requests and we are very short of them. Perhaps it would be well to read the paper by Wirth, Estabrook, and Rogers entitled "A graph theory model for systematic biology, with an example for the Oncidiinae (Orchidaceae)" before perusal of the program. My major reason in sending the flowchart (mimeographed paper) is to illustrate the nontrivial nature of taxonomic methodology. In a sense this flowchart is a good expression of what a taxonomist does as he processes his data for classification, whether or not he uses a computer. I suspect that if we wrote a program for a specific methodology in, say, physiology, we would discover a much less complex process.

The other reprints are for your files.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

- Taxonomy Laboratory

September 20, 1966

Dr. Arthur B. Callahan
Biology Branch
Office of Naval Research
17th and Constitution Ave., NW
Washington, D.C.

Dear Dr. Callahan:

Enclosed is a statement of our research aspirations in biological information retrieval. This paper only includes the research aspects, and is not yet a completed grant application. I am sending it to determine whether ONR is interested in supporting this type of research work. In spite of its obvious biological slant, I feel that the results of this type of work will have useful effects in other branches of science.

I will be pleased if you and others in ONR will comment on the enclosure. If this be a suitable project, we will continue with the development of appropriate schedules of personnel and budgetting.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

DEPARTMENT OF THE NAVY
OFFICE OF NAVAL RESEARCH 1444
WASHINGTON, D. C. 20360

IN REPLY REFER TO
ONR:444:PHT:ejk
26 September 1966

Dr. David J. Rogers
Department of Botany and Plant
Pathology
Taxonomy Laboratory
Colorado State University
Fort Collins, Colorado 80521

Dear Dr. Rogers:

Your letter of 20 September 1966 concerning your interest in biological information retrieval has been received during the absence of Dr. Callahan from the Office.

You may be assured that we will bring your communication to his attention immediately upon his return on 10 October.

Sincerely yours,

P. H. Tenniswood

P. H. TENNISWOOD
Assistant to the Head
Medicine and Dentistry Branch

- Taxonomy Laboratory

September 19, 1966

Dr. Sam Dietz
Regional Plant Introduction Station
Johnson Hall 59
Washington State University
Pullman, Washington 99163

Dear Dr. Dietz:

On the recommendation of Dr. Konzak, I am sending you a copy of a paper describing our anticipated directions in information retrieval in the biological sciences. This paper was prepared for the Office of Science Information Services, NSF, and therefore the first paragraph may sound a little strange. We are slowly working towards a grant, either from NSF, or from any other agency that we can get to fund us. While I am glad to share this information with you, I hope that you will understand its confidential nature and not distribute it.

Essentially, the paper describes some basic research that we want to do in the information retrieval area. In the past, we have found that our approach "paid off" in practical programs for classification, and we feel confident that the same approach will pay off in information retrieval. In our own mind, there is much in common between taxonomy and information retrieval, and a good classification is, or has, many elements of a good retrieval system. What we have done is to separate out the various parts of taxonomy, and try to work on each part as a building block in the house of taxonomy.

We have, as a team, two taxonomists, (myself and Henry Fleming whom you've met), a mathematician (George Estabrook) and a programmer (Bob Brill). We've been together long enough to recognize the nature of the problems--I know the biologist's desires, some of the mathematical terminology, and enough about the computer to understand the specific problems there. Henry is even more at home in these three areas than I am. The mathematician has had enough contact with us to understand some of the biological problems, and what he has to do to make a decent logic of the math to solve these problems. The programmer, too, is in on the other disciplines.

The purpose of this explanation in this letter is to indicate to you that we are by no means making claims to be (or to become) <u>the</u> biological information retrieval center in the country. Far from it--

our goals are more in the direction of doing some of the work which can take away the difficulties which other biologists would have if they want to get a computer to do some specific information retrieval job. As with our classification programs, we hope to cooperate with workers interested in having a particular IR problem solved, giving aid and advice as needed so that the biologist can stay with his job and not be side-tracked by the maze of special knowledge required to make a computer work for him.

As I understand it, you are providing the same type of service for plant introduction in USDA. This being the case, I am not certain how we could help much with your project, but I would rather not close the door on some possible collaboration until we are certain that there is no area where some mutually beneficial work can be done. I definitely am interested in such collaboration, provided we can make it. We probably should have an exchange of ideas, once you've seen what we're up to, for I feel certain that we (in this group) could benefit from your knowledge, even though you might feel that it is a one-way street.

At any rate, we won't be in operation on this project for some months. The granting agency mills grind slowly, and as you can see, we haven't even made a formal request yet. This time, we're attempting to fix it so that there won't be a "no" to our request by asking for the advice and consent from NSF in advance. The critical element--money--is yet to be considered. There might, indeed, very likely will be, a hang-up on this unpleasant aspect. But, this project will not be ditched by one agency's refusal.

I shall be interested to have your reactions to the paper and to the possibilities of collaboration. While there is obviously no immediate press, I would like to know whether we have struck a resonant chord.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

September 20, 1966

Mr. Mark Halpern
Dept. 52-40, Bldg. 201
Lockheed Missiles and Space Co.
Palo Alto, California 94304

Dear Mark:

I hope you will be interested in the enclosed paper. Perhaps from it you can develop a little clearer picture of our aspirations, as well as the fundamental role XPOP plays in them.

Obviously, many details were omitted, but we hope that the structure and values show sufficiently. Our problem is to know just how much to say in applying to granting agencies for funds. Either too much or too little will have damaging effects; but when is it just right? Fortunately, the agencies seem willing to work with us in the development of the right grant vehicle.

I think that we will be successful in our search for funds, but just when, or with which agency, is beyond me to tell at this moment. Much more has to go into the grant request, but these are details which require more administrative work than anything else.

We were certainly pleased to have you visit us, and hope that we will be seeing you again soon.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

P.S. Any comments you care to make about the paper will be appreciated.

Lockheed
MISSILES
& SPACE
COMPANY

3251 HANOVER STREET • PALO ALTO, CALIFORNIA

Bob – hand it back when you're thru –

September 27, 1966

Professor David J. Rogers
Dept. of Botany and Plant Pathology (Taxonomy Lab)
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

Thanks for sending me a copy of your proposal draft; I do indeed find it interesting, and I'm pleased that you consider me to be sufficiently part of the team to be let in on these matters while they're still in a formative state. Since you invite my comments, I'll say that, on the basis of one quick reading, I think that XPOP (and computer techniques generally) seem to be given too central a place in the paper. This is not modesty - I think that XPOP is the last word in programming systems - but a feeling that matters botanical should be highlighted here. What I found most illuminating was the list of representative queries on page 17; this shows at a glance what the proposed system will be able to do, which is (I should think) what a potential sponsor most wants to know. The pages on supporting technology should, I would think, come toward the end, possibly even relegated to an appendix.

I've also, as an old English teacher, automatically marked any little irregularities in red ink as I went through the paper; if you are concerned with grammatical minutiae and don't find my making such corrections presumptuous, I'll send it to you.

Again, thanks for thinking of me, and good luck in getting the funds.

Yours sincerely,

Mark

Mark Halpern
Electronic Sciences Laboratory

MH:gmc

BioSciences Information Service

OF BIOLOGICAL ABSTRACTS

3815 WALNUT STREET PHILADELPHIA, PA. 19104 U.S.A.

Telephone: (215) 386-0414 • Cable BIOSIS Philadelphia • TWX 215-569-8821

Executive and Editorial Offices • PHILADELPHIA
Latin American Editorial Office • MEXICO CITY

June 6, 1966

Dr. David J. Rogers
Professor of Botany
Taxonomy Laboratory
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

Many thanks for your acknowledgment of our "Use" pamphlet, and I am glad to hear that it seems to be interesting.

Thanks, also, for your enclosures, and I will most certainly send this along to some of our more biologically sophisticated staff.

Best wishes,

Cordially,

Robert R. Gulick
Associate Director
for Administrative & Business Affairs
RRG/pj

Founded in 1926 as a non-profit organization by the National Academy of Sciences, The American Association for the Advancement of Science and the Union of American Biological Societies

Member, International Council of Scientific Unions, Abstracting Board
Member, National Federation of Science Abstracting and Indexing Services

- Taxonomy Laboratory

May 16, 1966

Mr. Robert R. Gulick
BioSciences Information Service
3815 Walnut Street
Philadelphia, Pa. 19104

Dear Bob:

Thank you very much for sending the little booklet on "How to use biological abstracts" plus the big yellow sheet of the subject classification outline. I am sure that many folk do not fully benefit from all the various ways that you have organized the literature for searching.

I am sending along herewith a couple of statements that I have made that I thought you might be interested in. We hope to use our classificatory methods and discover better means of classifying information for rapid retrieval. This is not to say that what you folks have done is not a good job. What I am suggesting is that we probably need to take a new look at the classification of the subject material in biology, and perhaps if we can get a new look at it, we may even shift some of our categories of classification. If this be the case using some sort of procedure such as we dimly outline in the enclosed statements, we may come to some more fruitful methodology. As you will see from the enclosed booklets, we are interested in trying to discover methodologies more than the actual output.

As you might suspect, these are preliminary words to be used in the going after grants from the National Science Foundation. I will be interested to know what comments you have about the papers included. I will be interested to have any reactions that you wish to share with me. I have already sent copies of this to Bill Steere and to people in the National Academy of Sciences who seem to have something to do with this new committee. I hope that this will stir something, and at least give us a chance to get going on an interesting project.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

Smith - Weeds - Subject Heading

1. Crop weed control
   A. General country weeds in particular crops
   B. Cultivation methods, including H_2O, transplanting vs dir. seeded, etc.
   C. Chemicals
   D. Soil types
2. Specific needs
   A. The kinds of weeds - a classificatinn of annuals, perennials, - names (common and scientific)
   B. Morphological growth habits and physiological
   C. Response to various chemicals
   D. Sensitivity of crop to chemicals which control this weed - see heading 1 above)
   E. Which crops is a weed a problem in
3. Crop - weed ecology
   A. Effect of weed populations on crop yield.
4. Chemicals
   A. Mechanism of action in control
5. Mechanism of herbical selectivity
6. Indirect effects of herbicides
   A On animals and other plants
7. Shift (with time) in the kinds of weed seeds found in crops
   A. Today's weed seeds mixed in crop seeds controled with yesterday's
   B. Areas of origin and spread of various weed seeds in a region.

Smith - Weeds - Subject Heading

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   A. General country weeds in particular crops
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   B. Areas of origin and spread of various weed seeds in a region.

2 October 1967

Dr. Robert M. Hayes
Institute of Library Research
University of California
405 Hilgard Avenue
Los Angeles, California 90024

Dear Dr. Hayes,

This letter is written in appreciation for the time you spent with Mr. Robert Brill. According to Mr. Brill you contributed greatly to our knowledge and understanding of the problems involved in the computerized information retrieval.

While it is a bit early to make any statements, I believe that because of your contribution and some of our own input we have a got an idea for efficient computer filing and retrieval. As soon as we have developed this idea sufficiently we will let you know of our efforts.

Let me issue a standing invitation to drop by and see us here at Boulder.

Sincerely,

David J. Rogers
Professor of Biology
Project Leader

DJR:gm

Taximetrics Laboratory

Armory 101

August 24, 1967

Dr. Robert M. Hayes
Institute of Library Reserach
University of California
Los Angeles, California 90024

Dear Dr. Hayes:

Not having heard from you to the contrary, I made plans to arrive in Los Angeles early on the morning of Wednesday, August 30. We have arranged for a friend of one of our colleagues to meet me at the airport and drive me to your office. This arrangement is especially suitable because this man is applying to us for a programming job and this will give me the opportunity to interview him as we get lost in Los Angeles traffic. As I don't know how long it takes to get from the airport to your office (even without getting lost) I can't predict the hour of my arrival, but my plane is scheduled to land at 8:15 A.M. and I leave it to you to guess when I'll show up. If you would kindly send me some directions for negotiating this journey we might conceivably benefit as I do not know how well my quondam chauffeur knows the city.

Would you also please reserve a room for me somewhere convenient to your office for the night of August 30. I plan to stay two full days. Whether we have that much to discuss I don't know and I will certainly not impose on your time longer than seems mutually useful to us. The two day schedule provides us a time margin in case we get carried away.

I'm looking forward to the pleasuee of meeting you and discussing our mutual interestes.

Sincerely,

Robert C. Brill

RCB:gm

IR
ILR-LA

Taximetrics Laboratory
Armory 101

16 August 1967

Dr. Robert M. Hayes
Institute of Library Research
University of California
Los Angeles, California 90024

Dear Dr. Hayes:

Our phone conversation of August 11 was most gratifying and seemed to hold promise of useful collaboration between our groups. Let me now formally introduce ourselves. We are the Taximetrics Laboratory of the Department of Biology of the University of Colorado. Taximetrics is another term for that field of investigation known variously as quantitative, numerical, or computer taxonomy, and which concerns itself with discovering algorithms for classification which can supplement the poorly understood intuitive processes of professional taxonomists. The programs we've developed over the last few years have (at least on some groups of organisms) yielded good results. When we noticed a conceptual likeness between classification and the organization of data banks, our studies led us into the field of information retrieval.

We are not funded by NSF to design and implement an IR system for biology. The principle investigator under this grant is David J. Rogers. On August 29 Dr. Rogers will be delivering a paper at a conference in Texas and so will not be able to join me in meeting you, but he is looking forward to doing so a bit later on. All of us here are enthusiastic about the prospect of fruitful discussions with you and your staff.

I have enclosed the technical core of our proposal to NSF. It is quite sketchy. Since it was written our ideas have firmed up somewhat, but as we are in the throes of creation we have nothing of our latest ideas on paper to show you. In particular, the section on TAXIR (in which some notions from classification take on new expression) has undergone considerable revision (not in principle, but in detail).

I have enclosed also Mark Halpern's paper on the XPOP system. The principal drawback of this paper is that the examples are all based on IBM 7049 assembly language, which will certainly cause some

difficulty for you if you don't speak the lingo. The paper describes only a few of the considerable battery of features XPOP possesses. Should take a serious interest in this processor, I will put you in touch with Halpern who can provide you with additional XPOP documents.

I am looking forward to our meeting. The best time for me will be August 30, 31. When my reservations are confirmed, I will let you know more precisely when you may expect me. If for any reason these dates give rise to a conflict for you, pl please let me know and I'll try to juggle my schedule.

Sincerely,

Robert C. Brill

RCB:gm

- Taxonomy Laboratory

September 19, 1966

Dr. C. F. Konzak
Plant Breeding and Genetics Section
IAEA
Kärntner Ring 11, A-1010
Vienna, I, Austria

Dear Cal:

I hope you've successfully completed your rounds of visits, and that this finds you "at home." Enclosed is our write-up for the NSF proposal. It will, I trust, straighten out some of the things we were making claims for when you were here.

I really appreciate your visit, for amongst other things, you gave us some much-needed confidence that the work we're doing is indeed useful. And confidentially, you were the first to receive a full-scale exposition of our ideas. Since this was the case, we tried out several approaches, and indeed, learned something about the whole thing ourselves. The exposition of the work wasn't as easy as we had hoped it to be. I only hope that you didn't get too confused by our gropings. Perhaps the enclosed paper will help to straighten out some of the crooked spots and routes we took in our explanation.

One thing that I tried to point out in the paper is the difference, as I see it, between an information retrieval system to be employed by a librarian and that for a working biologist. Much of the information wanted in a retrieval system wanted by the biologist has never been published, and in some cases will never be published, per se. On the other hand, a librarian wants to turn over all he can find already published for you to read along a particular line. We also tried to point out that there is a great need for both basic and applied research in information retrieval. Much of the latter has been tried, and a smaller amount of the former, but seldom, it seems, has one group carried through the whole process. This we want to do, and we want to help out in IBP. I hope we can.

I hope you will give us the benefit of your thinking about this paper, and how we can best fit into the IBP program. I trust that you will be able to pass these ideas along to others there, though I specifically do not want this to get to a strictly computer-oriented type. We could have our whole operation "scooped," and then we would be out of luck.

A copy of this paper is being sent to Sam Dietz for his information. We will offer our help to him, in case he wants to do something with it in his work. I hope we can be of service to him, for one of our goals is to provide that service.

We have today forwarded this document to NSF, and hope that you can write in to NSF* to advise them of your interest in it. That letter will do us more good, (and hopefully, you too) than almost any other letter that I could imagine.

Looking forward to hearing from you,

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

*In case you've misplaced the NSF address, write to:

Dr. Burton Adkinson, Head
Office of Science Information Service
NSF
Washington, D.C. 20550

- Taxonomy Laboratory
Telephone: 303-491-5201

August 16, 1966

Dr. C. F. Konzak
c/o Dr. F. T. Gardner
Local Arrangments Committee
American Society of Agronomy
Student Union Building
Oklahoma State University
Stillwater, Oklahoma 74075

Dear Dr. Konsak:

I trust that you received my cable, dated August 15. In the cable I suggested that it was highly important that we meet in Denver, or here in Ft. Collins if you prefer. Incidentally, we expect Dr. Knowles on August 26 or 27, as he intends to make a short visit at that time. Perhaps you and he will be attending the same meeting, and you could arrange to travel together. Please call me from Stillwater. I can meet you at the airport in Denver, if that is convenient.

I have previously suggested that a data retrieval system be established to underlie the IBP, but did not receive any encouragement from my contact, Dr. Ledyard Stebbins. However, I am pleased to see that such an activity is under way, and will be pleased to participate in it. The task is a large one, and will require the best efforts of a number of people, in a number of disciplines.

I have a small group interested in various aspects of information retrieval for the biological sciences, and we have particular interest in data retrieval in the same areas which you have outlined in your letter. Our interests, while not identical to those of Dr. Dietz's, are intended to complement his. While Dr. Dietz's system is intended to operate largely with a punched card system, and only use the computer as a method of placing data on tapes which can then be searched or sorted, our system makes consciencious and consistent use of the main computer memory units under direct control of a stored program. There are several differences between the two operational philosophies. In Dr. Dietz's system, the operator must make the assignment of storage space for an item of information, and subsequently, if he wishes to retrieve this item, he must make up a new set of instructions which precisely designates the place of storage of that item. This is known by Dr. Dietz, and he has made an excellent design for this operation.

The stored program system we envisage, however, gives more over-all flexibility to the storage and retrieval problem, allowing the investigator his own procedures, but which in turn are made into a universal system by the directions of the stored program in the computer's main frame. With this stored program, we can make correlations not initially made by the investigator, for a large number of parameters. While this goes farther than a simple retrieval system, we have found that the simple retrieval systems so far developed inevitably lead to further demands which they are not designed to serve.

I should like to outline to you some of the methodologies we hope to develop, but feel that we must have a conference with you to accomplish this. There are many facets to the problem, some of which we have worked out, others which still need to be solved. If an over-all program for IBP is to be established, we know that some such system as ours must be developed, and this should be started almost immediately.

Looking forward to seeing you.

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:chh

Cable to Konzak-Vienna, Aug. 15
Important visit me DENVER LETTER TO
~~for~~ you IN Stillwater

JOINT FAO/IAEA
DIVISION OF ATOMIC ENERGY IN AGRICULTURE

INTERNATIONAL ATOMIC ENERGY AGENCY - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

IAEA, KÄRNTNER RING 11, A-1010, VIENNA I, AUSTRIA - TEL: 52 45 25 - TELEX: 2645 - CABLE: INATOM VIENNA

9 August 1966

AUG 15 1966

Dear Dr. Rogers,

As you may know from Sam Dietz, we have been developing a programme of international standardization in crop research data recording as a cooperative effort between the FAO and the IAEA, carried on by the Joint FAO/IAEA Division of Atomic Energy in Agriculture and the FAO Division of Plant Production and Protection.

We have established a working group which, though small, encompasses aspects of the major crops which will be dealt with first. One of the main objectives of this programme is to develop a coordinated system of records on national and other collections of seed stocks of economically important plants all over the world. We are in the process of gathering information and developing cooperation from workers interested in the effort and especially from those who are actively studying procedures for computer handling the kind of information necessary. Our programme will also form a basic part of the International Biological Programme. Drs. J.L. Creech and Jack Harlan are members of the IBP Working Group which will be concerned mainly with the plant collection operations. The Joint FAO/IAEA Working Group is concerned with the design of the mechanism and standardization that will facilitate the processing of the records on existing collections, aid in the coordination of new collection work and in the maintenance and evaluation of germ plasm stocks. We expect to begin with wheat, rice and barley in the international programme but work on other crops should proceed as fast as possible also. The work started by Sam Dietz, Paul Knowles and, as I have learned, by your group, is of particular interest toward these efforts, and we would be most grateful for your cooperation and for detailed information on your procedures, coding principles, etc.

I expect to be in the U.S. later this month at the Stillwater meetings of the American Society of Agronomy, and will then go to Pullman to confer with the computer group, Sam Dietz and others there. I shall be rather pressed for time, but if you feel that it would be of special value for me to come through Denver, please write me at the Agronomy Meetings or cable me here before August 19, when I shall be leaving.

Sincerely yours,

Calvin F. Konzak

C.F. Konzak
Plant Breeding and
Genetics Section

cc: Mr. S. Dietz

Dr. David J. Rogers
Colorado State University
Fort Collins, Colorado
U.S.A.

- Taximetrics Laboratory

May 10, 1967

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

Dear Fred:

Thanks for your letter of the 5th. I am glad to know that things are forging ahead, both for the book and also for the International Center of Tropical Phytopathology. The last is indeed good news.

It is too early to make any formal notices and so forth (because we haven't been given any formal notices), but I think we are going to get the money to make the information retrieval study. If we do, we certainly want to spend some time with you people discovering what precisely is wanted from a group like yours in the way of specific information retrieval problems. I mean by that what sorts of information do you wish to retrieve and what possible combinations of information would be wanted. We hope to ask a large number of people such questions as these and once we have discovered some of the kinds of desired information retrieval systems, we will attempt to build IR systems which match the needs of varying groups.

I hope you will show this letter to Dr. Lucas so that he can get an idea what we are anticipating. More details will, of course, be forthcoming after the grant has been made.

I saw Dr. Alexander yesterday and spoke to him about you. He wishes to be remembered back.

Sincerely,

David J. Rogers
Professor of Botany

DJR/ch

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

May 5, 1967

Dr. David J. Rogers
Taximetrics Laboratory
Department Botany and
Plant Pathology
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

Your letters were much appreciated. I have been purposely slow in answering until I was farther along drawing.

Herewith a copy of my letter to Dr. Klein that is self explanatory. You can see I'm going ahead and writing off the lost drawings. We are progressing again on the International Center of Tropical Phytopathology. It has, rightly, been revamped and properly trimmed down and is I think more likely to be looked at with interest. It is being re-presented to the possible Foundations. I think its hopeful.

I am much impressed with what you say about your program. I have little doubt but that you will succeed in getting what you want, and once you can go full tilt, the value and the necessity of this approach will become the more evident throughout the scientific world, not alone botany and associated studies. Certainly this is what is needed in plant pathology and in mycology.

You are going to find Boulder a fine place. I've been through there, and I liked what I saw. I consider it one of the great centers, and your presence is going to add to it.

In the Department of Zoology is Dr. Gordon Alexander. You may run into him, and if you don't by accident, do it by design. His wife Marion is a warm hearted, much loved cousin of mine, and Gordon is a wonderful man. I'm sure you will like them both.

My best regards to you, and special lots of luck.

Sincerely,

Fred

Frederick L. Wellman
Visiting Professor

cc: D. E. Ellis
FLW/ghb
encl

Frederick Lovejoy Wellman
1504 Ridge Road
Raleigh, North Carolina 27607

February 21, 1967

Dear Dave:

I am at home right now, in my well stocked study. I left the Department midmorning, somehow tired, and I am taking off maybe most if not all of the week. I have not had a restful stint for years, and I feel it.

However, I felt I needed a personal touch with you when I found this extra copy of a memo. I asked Lucas for it, and I have plain neglected to send it on and you should have it. You can see the turn being taken in this computerized handling of phytopathological information.

The whole project got out of hand as far as I was concerned. I gave up when the $3½ million showed, because, even if it needed a real start, this I cannot in comfort imagine. Five all my life worked on a shoestring!! This is still the proper attack with the project; after it is proved, as you say, it will then come in for the backing deserved.

Change the subject.

Tell me, do you hear from Doubleday as respects the book "Plants Have Diseases" that we worked on so hard? My Department is much interested, so is the Head and others. This, I believe, will be used quite widely and read in schools and out, when it appears.

In the last few months I've been to California (visited a dying Brother who was given an honorary degree in U C L A) and went also to Venezuela on professional business. Both were hard trips.

My text book work on Tropical Phytopathology is in pretty good progress.

Best regards.

Sincerely

Fred

For Dr. David J. Rogers.

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

January 16, 1967

MEMORANDUM TO: Dr. A. J. Coutu
Mr. I. T. Littleton
Miss Carmen Marín
Dr. F. L. Wellman

FROM : G. B. Lucas GBL

It is apparent that at this time Ford, Rockefeller and AID are not interested in helping establish an International Center of Tropical Phytopathology at N. C. State University. The AD HOC Committee, working on plans about this needed Center, met December 20, 1966, to discuss: 1) ways and means to obtain financial support for our present proposal or 2) modify the proposal to satisfy new developments so it may be given financial support. After some discussion it was decided that a possible solution might be to determine 1) what steps or plans are underway to develop in Peru the resources at the La Molina Agrarian University Library, 2) find out what we can do to help them develop a prosperous University library, and 3) possibly to incorporate components of the phytopathology project into an indigenous library development program. Such a project would shift the center of a phytopathology center to Peru and could become part of the institutional development activities at Universidad Agraria. Further, such an activity might include other developmental aspects of a national and international library development program at Universidad Agraria.

An abstract service on disease and insect pests of 8 or 10 crucially important tropical food crops would be developed at Universidad Agraria. This would be designed to serve as a model on how agricultural information can be disseminated to the working scientist. At the same time it would greatly assist in the fight against famine by supplying the continuously expanding body of information of crop plant diseases in warm regions to Spanish, Portuguese, and English-speaking plant pathologists in the American tropics.

The above project will then be submitted to proper administrative officials for possible inclusion in the overall plans of N. C. State University in the development of its international program.

GBL/pac

cc: Chancellor J. T. Caldwell
Dean H. C. Kelly
Dean W. J. Peterson
Dr. R. L. Lovvorn
Dean H. Brooks James
Dr. K. R. Keller
Dr. N. N. Winstead
Dean H. F. Robinson
Dr. J. A. Rigney
Dr. D. E. Ellis

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

February 13, 1967

Dr. D. J. Rogers, Professor
Department of Botany and Plant Pathology
Taximetric Laboratory
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

Your letter of February 1 was much appreciated. You are perfectly right; the granting institutions are not ready for such a thing as was proposed, and I can see their points of view and the why of the limitations they put on themselves. To be truthful and objectively correct the ones who should pay for and work out a project of the type and magnitude it must be to be most effective, should be those more directly helped.

It should be funded by commercial concerns, churches, social institutions, and scientific societies; not to mention outfits like FAO, CARE and the like. But this will never happen.

What we hope will finally come out of it is that it will be handled exactly as you suggest, on a much much smaller scale, thus getting something started and then going on from there. It has not hurt to have done all we did and put into it the energy required. I feel it has aided in making many people more alert as to what is coming in our responsibilities as to averting the spreading of catastrophic plant disease and its accompaniment of human hunger in the less fortunate world populations.

I certainly wish we could have with you a round table discussion of this, among plant pathologists, plant nematologists and herbicide workers, studying what part the kind of thing you are specializing in will play in the future of human welfare.

Can't you give a paper about "taximetrics and plant pathologists" at the meeting of the American Phytopathology Society to be held in Washington this coming August?

I wish we could get you here for a few days. I'm sure you know of the work Dr. George Hepting is doing in this state using modern retrieval techniques in connection with world wide Forest Pathology. His is an interesting approach.

My writing is progressing, and the "revision of the literature", as they say in Latin America, is teaching me a great deal. I am enjoying it. And you should see the cards I have building up the Disease List. It's getting up into more than a hundred and fifty thousand. When I consolidate of course it will scale down a lot.

Best regards,

Sincerely as ever,

Fred

Frederick L. Wellman
Visiting Professor

FLW:jj

CC: D. E. Ellis
G. B. Lucas

- Taximetrics Laboratory

February 1, 1967

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

Dear Fred:

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

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

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

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

Sincerely yours,

David J. Rogers
Professor of Botany

DJR:ch

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

January 30, 1967

Professor David J. Rogers
Taximetric Laboratory
Dept. of Botany and Plant Pathology
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

A lot of things have happened, and changes are in the process respecting our plans about the information retrieval project in tropical plant pathology.

I have not written you, as I should, about this. For a while I was not exactly expecting but at least hoping the project could be started. It costs money and people, and it is something new in an old conservative study. This is not easy. Ford, Rockefeller, and AID felt reluctant to subsidize it and I quite understand their points of view.

We have not meant to indicate that we were not interested in your proposal. In fact someone in plant pathology, someday is going to have to do just the kind of a thing you talk about and have made such advances in. And if I had my own way about it I would like to see someone working there right now in your laboratory with plant diseases.

It seems to me that we probably put too much enthusiasm into our Proposal. I'm so used to operating on a shoestring that this kind of a thing that might require more than at the most a few thousand dollars is beyond my habits of comprehension. On the other hand, such a serious problem as we want to solve deserves a bolder front than I am likely to muster by my own propulsion.

Anyway, Dave, we held back sending you a reaction because of the fact that we were receiving more and more encouraging and hopeful letters from the tropics, in fact I have one that came in this morning from Venezuela, in which the workers themselves express how well they could use such a Service. These letters we have been using, hoping it would indicate this Project's acceptability, but under the conditions it just is not going to be handled as we presented it. After all three and a half million is a lot of dollars, even if it would pay for itself in the century to come. And this it would do, amply.

I shall write you further soon. I wish we could, somehow, take advantage of what you are learning as to methodology in this work. I am going to talk this over with others here, and see what they say.

Sincerely,

Frederick L. Wellman
Visiting Professor

FLW:jj

CC: D. E. Ellis
G. B. Lucas

P. S. Meantime, Dave, I've finished rough drafts of 24 chapters of the text on Neotropical Phytopathology and am accumulating an extensive plant disease list for our tropics.

- Taximetrics Laboratory

January 16, 1967

Dr. Frederick L. Wellman
Dept. of Plant Pathology
School of Agriculture and
Life Sciences
Box 5397
North Carolina State University
Raleigh, North Carolina 58564

Dear Fred:

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

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

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

UNIVERSITY OF RHODE ISLAND • KINGSTON, RHODE ISLAND 02881

Office of the Dean *College of Pharmacy*

January 6, 1967

Dr. David J. Rogers
Professor of Botany
Taximetrics Laboratory
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

I enjoyed so much receiving your letter December 13, 1966, and especially to know that the table on page 168 of the Pratt and Youngken textbook is of some help to you. I hope that Lippincott gave you permission to reproduce it and if they have not cooperated with you, be sure to let me know.

I am rather pessimistic about the situation at NIH for funding of grants. Many of us with new grant applications have not been successful even though they have been approved. The U. S. Bureau of the Budget is very much "Viet Nam" conscious and, therefore, money for new research projects is extremely tight. Have you considered NSF or even a research foundation of a kind? If I were you, I would certainly not rely upon NIH at this time.

We finally squeezed a few dollars out of Walter Reed Army Institute for Medical Research. It amounted to $12,700 and is essentially for identifying alkaloids in certain existing plants of interest to the Army. I am hopeful that it will be continued but am not too optimistic even about that.

This has been an extremely busy year but a rewarding one thus far, and I hope the same for you. I attended the 11th Annual Pacific Science Congress in Tokyo last August—the Section on Plant Chemistry and Pharmacology. I found the Asians a very active group, particularly the Japanese. They certainly have a full program in Pharmacognosy and Plant Chemistry.

Please give our best regards to your family and with them, a most Happy New Year.

Sincerely,

Heber

Heber W. Youngken, Jr.
Dean

HWY:BW

- Taxonomy Laboratory

September 20, 1966

Dr. G. B. Lucas
Dept. Plant Pathology
Box 5397
North Carolina State
Raleigh, North Carolina 27607

Dear Dr. Lucas:

Thanks for your letter of September 13. I will respond to you, hoping that Fred will see the letter as well. First, let me say that I cheer your ideas for a tropical pathology center, and second, present some of my ideas on how we might cooperate in the development of that center.

The enclosure is a statement of the scientific aspects of our intended information retrieval work. It is prepared for granting agencies, which will explain the first paragraph. Since the methodologies explained in it represent our thinking about the needed work, I trust that you will not circulate it.

From this paper, you can see not only the procedures, but also our plan to collaborate with other biologists in the development of an adequate IR system. We hope that you and your group might be interested in becoming one of these collaborators. We have several other groups interested in such collaboration, and yours would add an area not covered by these groups. You can also see that our approach to the IR problems is at a rather basic level. We have found this approach essential when dealing with biological classification using computers, and have no reason to believe that it will not work in IR areas. Let me emphasize that we do not expect to become the IR center for biology in the country. Such an aspiration would be absurd. But, if a good, standardized set of procedures could be used across the country, by special groups, then there is the possibility of later tying them together more expeditiously. This procedural development is our goal.

I hope you will be interested in this work, and that we can find suitable areas of collaboration. Any words that you care to say about the enclosed document will be appreciated.

Sincerely,

David J. Rogers
Professor of Botany

Enc.

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

September 13, 1966

Dr. David J. Rogers
Dept. of Botany & Plant Pathology
Taxonomy Laboratory
Colorado State University
Fort Collins, Colorado 80521

Dear Dr. Rogers:

Dr. Wellman is attending the Caribbean Division of American Phytopath Society meetings in Venezuela and he asked me to answer your kind letter of 8/23/66. We appreciate your interest and suggestions. We realize that there are many obstacles and pitfalls that may prevent our proposal from being successful but the overriding reason for our presentation is our feeling that something must be planned and started now to combat famine and what could we as plant pathologists do to contribute. We feel and hope that here at N. C. State and the Research Triangle (Duke, U.N.C., and N.C. State) that we have knowledgeable people who can help us make this thing a success. Moreover, we hope to invite cooperation and assistance from skilled people wherever they may be. One of our primary goals is to make the literature quickly available to the plant pathologists in the field who will in turn pass it on to the farmer. We believe with cooperation between plant pathologists, librarians, computer people and statisticians that we can at least get the project off the ground and correct our mistakes as we go. Somebody has to begin, sometime.

Dr. George Hepting of the U. S. Forest Service has prepared a key for coding tree diseases electronically. We hope that we can perhaps use this as a guide to help us cover the literature on diseases of the 8 or 10 principal food crops with which we will be concerned. We also plan to use data from the symposium on information retrieval published recently in Bact. Rev., Vol. 29. We plan to devote much attention to the "program which instructs the computer on the procedures to be followed".

Computer diagnosis will be difficult. But here again we want to make a start. And with the interchange of ideas from the many people who will be involved in the proposal and with the equipment and facilities we have we can at least try.

We wish you luck in your request for funds to determine techniques in electronic retrieval. We will be delighted to collaborate with you. Both groups

should benefit. And goodness knows there are few things more important to a scientist than keeping up with the literature. As you say, "fantastic loads of scientific information".

We have submitted our proposal simultaneously to Ford, Rockefeller and AID, indicating to each that they might want to subsidize it jointly.

I am sure Dr. Wellman will write you soon after he returns.

Sincerely,

G. B. Lucas

G. B. Lucas
Professor of Plant Pathology

GBL/pac

31-W

- Taxonomy Laboratory

January 14, 1966

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

Dear Fred:

I have your letter of the tenth requesting information and ideas for a retrieval system for plant pathology, using computers. Having been in the field a little bit longer than I was when I last talked to you about such operations, I have naturally gotten a few more ideas about them.

It seemed to me that your needs fall into more than one category. Some of the categories are things that you can take care of at any university and can be done at regional centers. Other problems are ones that need to have the facilities of a very large collection of mycological materials and at the same time a very fine library. This latter part deals specifically with the names of the organisms. As you know, this is critical to your operation and you've got to have some sort of a national or international system where the names of the organisms are studied, worked on, catalogued, and disseminated. With this available to you, then it would seem to me that regional centers could be established. Just exactly how this would work would take a tremendous amount of endeavor before one could approach a computer.

If this becomes something of particular interest to you and you can see it generate enough interest amongst folks to do anything about it, I would be glad to work with you on some more specific ideas that might make headway with whatever funding agencies are available.

In this connection you would want to certainly look at what's going on in oceanography these days. I know of at least two data retrieval centers, one at Pascagoula, Mississippi and

the other one is at Woods Hole in Massachusetts. There they have data retrieval centers in operation for various marine organisms. Another place comes to mind, and that is the Department of Oceanography at the University of Rhode Island. If they can get the money for the oceanographic work it would seem to be profitable to explore the possibilities of getting money for plant diseases. I concur that some sort of computer system is absolutely essential, but, yet cannot decide which system is most appropriate to the needs. The workers themselves have to define the problems and the project and set up their necessary outline of procedures before any kind of computer work can be done. Let me see what we can do here at this institution to back up your ideas and interests. I know that biology is getting a push here at C.S.U. and maybe we can interest some of the powers that be in the same kind of a project. I must explore this with the various heads of departments and so forth. I am glad to hear of your interest in this area and hope that we can continue to collaborate until something is actually in the works.

Thanks for writing.

Sincerely,

David J. Rogers
Professor of Botany

DJR/pam

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

January 10, 1966

Prof. David J. Rogers
Department of Botany and Plant Pathology
Colorado State University
Fort Collins, Colorado

Dear Dave:

In connection with thinking of the future in plant pathology, I have been wondering how soon our profession should go into using the computer approach, to at least some of the more routine things.

You probably remember that when you were in Rio Piedras at the Experiment Station in Puerto Rico that I was attempting, with absolutely no success, to have a project accepted for a plant disease clinic. In it, part would have been the accumulation of a card system to be referred to over the years taking care of some of the more commonly encountered crop plant disease problems. (They have lots of troubles, and I understand that a clinic is now in operation there.) It could be done in the small Island of Puerto Rico.

But someone will go after the possibility of our whole profession, putting plant diseases into computer analyses. I wrote you once before about this, but since then you have had much more experience. You were optimistic about it when I wrote first, and I am sure you have further thoughts on it now.

I understand the computer is being readied to help in human medicine. Here it is dealing with one host species and thousands of ills. There are infinitely more host species among plants and possibly hundreds of thousands of diseases (counting variations), especially in the tropical world. But your poor old computer doesn't need to encompass all of it, and could hardly be expected to handle things in the process of being learned.

On the other hand, there is looming before us the coming food shortage in the Latin American tropics. Births keep rolling along, fast. Crop-production goes slower, for some reason it isn't so popular. And the scientific workers in that region have a tremendous responsibility to equalize the situation. They are making hopeful but weak steps.

One of the things happening is slowly improved horticulture and agronomy, likewise more plant breeding and selection, with greater and greater attention to fertilization of the land, and slightly increased plant-disease-control. For true insurance and protection there has to be plant pathology right hand-in-hand with all other crop progress.

If a center in the United States, such as here in Raleigh, could be called upon at short notice to analyze and give an answer in a matter of hours about a tropical crop disease, on a wholly cooperative international basis, we would be making the kind of progress humanity strives towards. This is where I feel a mathematical handling of some things would be of utmost advantage. Once accomplished in the temperate zone at work with the tropics, I would soon expect the idea to be picked up by tropical specialists in the tropics and used by them there.

Now Dave, do you think some kind of a system of taped material could be worked out for this? Could I send up from a spot in the Amazon basin of Peru, a question about a disease of a crop Indians had depended on for a millenium, suddenly being killed? The questions to be answered would be: identify the crop, what is the disease, give the cause, how is it controlled?

As I look at it, I do not believe it possible to do away with any plant pathologists no matter how successful a job of computerizing we might work out. All we could or should expect is to take away the incubus of some of the more routine aspects. But I believe, my good friend, that sooner than later, we in the western hemisphere are going to be sorely hit with the problem of averting one famine after another because of plant diseases in our American tropics.

How are you progressing with your mathematical determinations of plant species? Are there new concepts coming out of your work with computers? Are mycologists showing any interest in this kind of research? Do you think plant pathology is too complex for this kind of a program?

Sincerely,

Fred

Frederick L. Wellman
Visiting Professor

FLW:jj

CC: Dr. D. E. Ellis
Dr. G. B. Lucas

- Taxonomy Laboratory

August 23, 1966

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

Dear Fred:

I have your letter and interesting Proposal for an International Center of Tropical Phytopathology. Incidentally, I think your secretary must have mistakenly sent me all your carbons, so I'm returning them with this letter.

This came at an opportune time, for we are in the process of developing a big request for funds to determine the best techniques of computer use in biological information retrieval. Yours is a demonstrated need for such techniques, and if we may, we would like to cite your proposal as an indication of the fundamental need for investigations in proper machine methods of handling the fantastic loads of scientific information in the biological sciences.

With this introduction, let me make a few (hopefully) useful comments on your proposal. First, as I see it, the problem of information retrieval itself is not sufficiently well worked out to make it possible to go right into a program for phytopathology, or for any of the other biological disciplines. We cannot take up traditional library techniques, for they are not designed with computers in mind. They (library techniques) are developments of hundreds of years of manual methods, and are mostly for the orderly storing of books and serials. In more unhurried days, with far fewer pieces of literature, a worker could take the indexing systems, the bibliographies, etc., available, put them together with his own knowledge, and in a few days or weeks, ferret out the information required by him. Note that the library did not "retrieve" the information--it merely stored it. The individual had to do the retrieving. How he retrieved what he was looking for is known only to him, and probably involved a trial and error, hit or miss procedure. This we cannot tolerate in a system which employs electronic data processing devices.

In the last few years, "computerniks" have attempted to convert the manual library system to a computerized practice. That this hasn't worked satisfactorily is indicated by the many different pragmatic approaches to information retrieval that have been cooked up, and by

the fact that none of the methods so far concocted have lived up to their advanced billing. Now I think that those agencies charged with the funding of proposals for information retrieval are beginning to be more wary of proposals which are not scientifically based investigations of the problems. Here is an area which needs as much scientific study as the primary problems in biology itself.

My intent in these comments to you is that you should be wary of any librarians's or computer programmer's claims to the effect that he (or they) can handle the information retrieval aspect of your primary goal for phytopathology. And for God's sake, Fred, do not be misled by the size of any computer installation, or the speed of operation of a particular computer. The most critical element in computer use is the program which instructs the computer on the procedures to be followed. And the design of the stored program is one of the biggest problems facing any of us--biologists, chemists, physicists, librarians. There are several facets to this design: first, what do you want as a biologist; second, how do you get what you want; third, can you design a logical system to meet your needs; fourth, is the physical size of the computer capable of handling what you want; fifth, are you duplicating someone else's procedures which you might adopt. There are others, but these serve to indicate the nature of the problem.

From your statement of the kinds and numbers of staff for your proposal, I feel that you have underestimated these requirements, and that you will need other types of disciplines to make it work. The most glaring omission I can see is that of a competent mathematician in the project. Our experience should serve to indicate that a well-trained mathematician (as differentiated from a half-baked biostatistician) is a central element to give you the kind of thinking needed to efficiently carry forward the development of satisfactory programs.

You mention as the last goal in the proposal, computer diagnosis of plant diseases, etc. This, in itself, is an extremely ambitious goal. May I ask your definition of diagnosis? I know that a number of medical investigators are attempting diagnosis by computers, but to my knowledge, none of these have produced reliable systems. One of the reasons (and there are many for failure is that they do not recognize that you cannot diagnose without having first some sort of classification. I suspect the same problem will arise in plant pathology. If you can equate disease diagnosis with disease identification, then indeed the same problem arises. You can't write a key to identify an organism unless that organism has already been placed in a classification. The classification must be in the computer memory, so that when a set of characters which may identify the organism are presented for identification, somewhere there will be a match between the classification and the organism.

From the foregoing, you can see that I have spent some time working on the general system which must underlie the type of work you and your group wish to accomplish. This being the case, it would seem wise to me to let us keep on with the project (we hope in an expanded way) and collaborate with your group in the most profitable manner. I say that we

can avoid much duplication of effort if we are aware that we are indeed involved in much the same sort of project, but at a more generalized level, as you are. I think your efforts would be enhanced, and I am certain that we would benefit by a regular exchange of expertise--you and your group from the phytopathological aspects, we from the computer aspect. This is not to say that I wish to undermine your project at all. On the contrary, I would hope to enhance your chance of success with such a project. Your ideas for an international center is a fundamental requirement for phytopathology, and I cheer them.

I would merely caution that there are many pitfalls in this information retrieval area, and I cannot advise anyone to enter this arena unless he be willing to give up his primary intent--the study of phytopathology. We have gone a considerable distance in this direction, indeed to the point where we cannot back out. We are too committed. Not that I would have it otherwise--we didn't drift in, but went after it with the certain knowledge that someday it would be a requirement.

May I ask how far along you are with the submission of your proposal? Where do you expect to get your funds? Is this from FAO, UN, NSF, USDA, AID, or where? Or am I being too nosy?

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

Enc.

NORTH CAROLINA STATE UNIVERSITY AT RALEIGH

SCHOOL OF AGRICULTURE AND LIFE SCIENCES

DEPARTMENT OF PLANT PATHOLOGY
BOX 5397 ZIP 27607

August 15, 1966

Dr. David J. Rogers
Taxonomy Laboratory
Dept. of Botany and Plant Pathology
Colorado State University
Fort Collins, Colorado 80521

Dear Dave:

You recall that a long time back I wrote you concerning computerized diagnosis of plant diseases, and of our interest here in its possible application in tropical phytopathology. Your answers have been used in many a discussion.

Here is a Project that we have been working on assiduously, and I wish you to see it because of the great importance of the most modern electronic techniques indicated. And you, Dave, know many of the problems, and how they work out in biology.

This kind of a Project, well carried out, can save billions for the U. S.

Remarks from you will be welcome.

Very truly yours,

Fred

Frederick L. Wellman
Visiting Professor

FLW:jj

Enclosure

CC: G. B. Lucas

rec'd Tan Lab NOV 25 1968

CANADA

NATIONAL ADVISORY COMMITTEE ON RESEARCH IN THE GEOLOGICAL SCIENCES

COMITÉ CONSULTATIF NATIONAL SUR LA RECHERCHE DANS LES SCIENCES GÉOLOGIQUES

Secretariat for geoscience data / Secrétariat pour données géoscientifiques
3303 33rd Street N. W., Calgary 44, Alberta, Canada / (403) 284-0110

November 19, 1968

Prof. John T. Andrews,
Associate Professor of Geology,
Institute of Arctic and Alpine Research,
University of Colorado,
Boulder, Colorado 80302,
U. S. A.

Dear Prof. Andrews:

Your letter to Dr. Robinson of October 22 concerning storage and retrieval programs was forwarded to me. Dr. Rogers' system sounds most interesting and I hope that my travels will permit me to visit Boulder in the near future to examine it first-hand. Thank you very much for providing us with this information.

Yours very truly,

C. F. Burk, Jr.,
National Coordinator

CFB'lf

June 5, 1968

Dr. Frederick Wellman
Department of Plant Pathology
North Carolina State University
Raleigh, N. C. 27607

Dear Fred:

I hope that Dick Klein answered your inquiry satisfactorily; he told me that your book is now in the process of being printed.

I am glad to hear of the continuing interests that you and others there have with regard to an information retrieval system for plant pathology. As you probably already have heard we got a grant from NSF which began last July and runs for a two year period. This has allowed us to pursue our development and at the present time we have made such progress that we can see the end of the initial phases of writing a computer I.R. system for biology by the end of this summer. We are sufficiently optimistic to think of putting on a demonstration of the procedure for interested people some time next September.

The demonstration will be given for a variety of interested biologists who represent several disciplines, and the demonstration for them will clearly show what our machines and programming can do with regard to their specific interests.

If you and your colleagues care to join us we will put you on the mailing list and let you know of developments as they occur. I believe that our methodologies are sufficiently general to accomodate almost any kind of biological data, and at the same time be capable of answering specific requests for information from its data bank.

We will be pleased to collaborate with you in the organization of an information retrieval system tailored to your needs. We hope that you will consider this invitation inthe light in which it is intended. Our goal is to aid and assist biologists with such fundamental problems as those you have already outlined. If you need to know more about the system in advance, let me know.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

9 April 1968

Mr. Mark I. Halpern
IBM, Dept. 234, Bldg. 062
Monterrey and Cottle Roads
San Jose, Calif. 95114

Dear Mark:

Here is a copy of the letter we sent to Herman Goldstine and a copy of his reply. If we hear anything from Dr. Porter, I'll let you know.

I'll be in touch with you.

Sincerely,

Robert C. Brill

RCB:gm

IBM
112 East Post Road
White Plains, New York 10601
914/WHite Plains 9-1900

International Business Machines Corporation

Bob - for your info - Return for filing.

April 16, 1968

Professor David J. Rogers
University of Colorado
Taximetrics Laboratory
Department of Biology
Boulder, Colorado 80302

Dear Professor Rogers:

Dr. Herman Goldstine has sent to me a copy of your recent letter.

Your work in classification procedures has been followed with a great deal of interest by members of our IBM New York Scientific Center who have been working in related areas. They, however, do not feel that the documentation of the program would be of immediate value since it was not written for an IBM machine. We do thank you for your offer.

IBM is indeed investigating the technical problems associated with the writing of a new version of "XPOP". This investigation is just now getting underway, and we are not currently able to say if or when it might be available.

Thank you for your recent letter.

Sincerely yours,

John C. Porter

John C. Porter
Director of Scientific Development

/cbs

International Business Machines Corporation

Thomas J. Watson Research Center
P.O. Box 218
Yorktown Heights, New York 10598
914/WG 5—3000

March 27, 1968

Prof. David J. Rogers
University of Colorado
Taximetrics Laboratory
Department of Biology
Boulder, Colorado 80302

Dear Prof. Rogers:

Many thanks for your kind letter of March 25 regarding your various programming plans. Since last we talked, I have moved to a new position in the Company and I am no longer directly concerned with the things I was before. I am, therefore, taking the liberty of sending your letter to Dr. John Porter, Director of Scientific Development, since I believe he is the man to answer your various queries.

Let me also take this occasion to congratulate you on the progress you indicate in your letter.

I am sure that you will hear directly from Dr. Porter.

Sincerely,

Herman H. Goldstine

HHG/am

cc: Dr. J. Porter

25 March 1968

Dr. Herman Goldstine
T. J. Watson Research Center
P. O. Box 218
Yorkstown Heights, New York 10598

Dear Dr. Goldstine:

You may recall that we were fortunate enough to receive funds from you to reprogram, document, and flow chart some programs on classificatory procedure. Due to our change of location we had to shift again from one machine to another, but since moving here to Boulder we have completed the reprogramming, documenting and flow charting of a program which we started to work on at the time of our grant from you. The program is now written in FORTRAN IV for the CDC 6400. Since this is not immediately written for any IBM machine, I am wondering if there is any use in sending the documented, flow charted program to you or some other agency of IBM. I would be pleased to follow your suggestion.

Since last summer our research team has been developing (under a grant from the National Science Foundation) an information retrieval system for biology called TAXIR. We expect the first version of TAXIR to be running for demonstration onthe CDC 6400 by sometime this coming summer.

According to our original proposal to the NSF we planned to implement our system via an extremely powerful and flexible language processor called XPOP, developed by Mark Halpern at Lockheed Missiles and Space Company for the IBM 7094. When we learned that a CDC 6400 version of XPOP could not be prepared in time for our first implementation effort, we decided to build the preliminary version of TAXIR using CDC FORTRAN IV. This implementation is well underway.

We've recently learned that Mark Halpern has left Lockheed and has joined the IBM staff at San Jose, Calif. As we are still very much interested in using XPOP for the next, more sophisticated, version of our system, we would like to impose on your good offices to try to discover whether IBM has any p plans to use Halpern's ideas on macro-processing to build an IBM "XPOP" or its equivalent. To our knowledge there is no other language processor in the field or under development with quite the range of powers displayed by XPOP or which is quite so suitable to our needs.

You may note that TAXIR - version I - will run on CDC equipment. This, of course, is because we are obliged to use the University of Colorado's hardware for our initial development and testing. However, a number of potential collaborators from other institutions housing large collections of biological material have shown interest in having TAXIR mounted on their hardware. In particular, we are engaged in preliminary discussions of this nature with Dr. Nelson Hairston, Director of the Museum of Zoology at the University of Michigan, who is in charge of automating the records for animal collections numbering over 6.25 million specimens. The computing machinery available to him is an IBM 360, Model 67.

Again, I will be pleased to have any information you may care to give me about the potential availability of "XPOP." Thank you for your considerations.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

1 April 1968

Mr. Mark I. Halpern
IBM, Dept. 234, Bldg. 062
Monterry and Cottle Roads
San Jose, Calif. 95114

Dear Mark:

It was a pleasure talking with you Thursday. I appreciate the effort which you, Dan and Morty have made on my behalf. I am hopeful that with your comments and those of your colleagues, we (Bob and I) will be able to put our paper into acceptable form.

Please find enclosed the appendices which I said I would send you, If there are others who are willing and whose opinions you feel might be of value to us, I would be pleased to have their comments as well.

I hope your project receives the support you feel that it deserves and needs.

Very truly yours,

George F. Estabrook

GFE:gm

2 October 1967

Dr. Phyllis Parkins
BioSciences Information Services
2100 Arch Street
Philadelphia, Penna. 19013

Dear Phyllis,

This belated note is written to thank you and your staff for their time cooperating with us during our visit. As usual I learn a little each time I see you and the operation you are running so well. We are very impressed with Mr. Zabriskie whose knowledge about information retrieval we respect and hope that we can again have a chance to exchange ideas.

Best wishes for your 40th Anniversary celebration. I am sorry not to be able to attend.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

SEP 5 1967

UNITED STATES DEPARTMENT OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
WASHINGTON, D.C. 20250

OFFICE OF THE DIRECTOR

August 31, 1967

AIR MAIL

Professor David J. Rogers
University of Colorado
Department of Biology
Taximetrics Laboratory
Boulder, Colorado 80302

Dear Professor Rogers:

Many thanks for the prompt provision of the write-up of your project for storage and retrieval of non-documentary, biological information.

On reading the description, I find that the relationship to our project is not as direct as I initially thought. Nevertheless, there is much of interest to our Systems Staff in the XPOP, BIRD, and TAXIR transubstantiations. With respect to the nature of data, however, ours is very much of the applied nature as opposed to your taxonomic kind.

Not withstanding all this, I think a brief get together would be very much worthwhile, especially since you will be in Washington anyway.

If you care to, please call me at DU 8-2578 to arrange a brief meeting at your convenience.

Sincerely yours,

Ljubo Lulich, Assistant Director
Field and Special Services

91-1-202

Taximetrics Laboratory

Armory 101

10 August 1967

Mr. Ljubo Lulich:
National Agricultural Library
United States Department of Agriculture
Washington, D. C. 20250

Dear Mr. Lulich:

Enclosed is a copy of the scientific part of our grant proposal. This explains in some detail our operation. From this I hope you can get the direction we are taking. We would be pleased to know how we can work with you such that our own program would be improved.

If after you have read our description, you find anything of merit therein, perhaps you would be kind enough to indicate whether we could be useful collaborators to you. We are already collaborating with the systems people in the Smithsonian (Nick Suszynski is the leader). We (three of my colleagues and I) expect to be in Washington working with the staff from the Natural History Museum sometime between September 6 and 13. If convenient to you, we would like to review our project with you and discover any mutual ground. Let me know if this is convenient with you, and we will be glad to visit during this time.

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

BIOMEDICAL COMMUNICATION CENTER PLANS ANNOUNCED

Plans for development by the National Library of Medicine of a center for biomedical communications have been disclosed by Martin M. Cummings, M.D., NLM Director.

He discussed the project at the International Symposium on Communications in Science: Documentation and Automation, in London, but listed no timetable.

"The National Library of Medicine plans to perform a research and development role with the establishment of a new center for biomedical communications," he said.

"This center will conduct systems analyses, and perform operations research on all elements of the medical library network.

"The proliferation of units collecting, processing, and disseminating biomedical information demands improved methods of guiding information users to information sources," he said. "A national biomedical clearinghouse and referral center should be established to perform that function.

"Emphasis should be placed on identifying data of interest to user groups, directing users to information contained in specialized information centers and collecting forms of data which might otherwise be lost, such as unpublished reports, negative reports of scientific investigations, and translations.

"A single point of entry into the many complicated information systems in the biomedical communications network would result from the establishment of such a center."

Dr. Cummings said that "The extension of the forms in which useful biomedical information is now found, combined with its total expansion often make needed information highly inaccessible. While there are comprehensive bibliographic services and clearinghouses for scientific information, none broadly cover the biomedical area.

"The Subcommittee on Reorganization and International Organizations of the Senate Committee on Government Operations in its report on interagency drug coordination cites extensive support for its belief in the establishment of Federal medical clearinghouses.

"The NLM center for biomedical communications intends to serve as a national referral focus as well as a clearinghouse for non-traditional information focus," he said.

Dave,

*****

Thought this might be of interest to you. Did I hear that you may or are leaving for CZ?

14

Bob Johnson
NSF (Comfy 6521)

- Taximetrics Laboratory

June 23, 1967

Dr. Robert M. Johnson
National Science Foundation
Science Development
Division of Institutional Programs
Washington, D.C.

Dear Bob:

Thank you for sending the cutout on the Biomedical Communication Center. I will contact the people listed in that announcement.

We are indeed moving to Colorado University. Plans did not work out here in the Department of Botany as I had hoped they would, so we accepted an offer that had been standing for some time from Boulder. I will drop in to see you sometime.

Sincerely,

David J. Rogers
Professor of Botany

DJR/ch

added new Boulder address to original.

Taximetrics Laboratory

Armory 101

19 July 1967

Mr. John S. Jasper
Data Processing Financial and General Corp.
575 Lexington Avenue
New York, New York 10022

Dear Mr. Jasper:

I would like to thank you for your recent letter. The fact that you were willing to write two pages of details about the XPOP-Librascope situation even though you are no longer with Librascope was very much appreciated by me and my colleagues.

We are looking forward to further information from Mr. Lanheady. Our hardware choice is between the 1-3055 and the CDC 6400 already running at the computer center here. A look at the Diagnostic Compiler manuals will indeed be very useful in aiding our decision.

Sincerely,

Robert C. Brill

RCB:gm

13 July 1967

Dear Mr. Brill:

In answer to your query concerning LAMP the following information should be of interest to you:

1. Since you talked to Mark Halpern I have left the employ of Librascope and am now with Data Processing Financial and General Corp., 575 Lexington ave., NY, NY 10022.

2. The LAMP processor (compiler) was never implemented. However, a version of XPOP known as the Diagnostic Compiler (DC) was written and used as part of Librascope's diagnostic programming project for the L-3055. This compiler is in some respects more powerful than XPOP. However, some of the XPOP features such as the algebraic equation processing and the ability to re-define punctuation were never included. The DC program is structured so that these features could be added with little trouble.

3. The available documentation on the Diagnostic Compiler includes a program maintenance manual and a user's manual, both of which are reasonably up to date. The symbolic deck and the relocatable deck are also available. The Diagnostic Compiler must operate under control of the 473L Diagnostic Support Monitor (not to be confused with the Operational Monitor) and generates object code suitable for immediate assembly by DAP. DAP (Diagnostic Assembly Program) is a slightly modified version of LAP. Symbolic and object decks are also available on these latter two programs.

4. Mr. Dennis P. Lanheady is the last person left at Librascope who is familiar with this software. I will request that he immediately send you copies of the available manuals on the programs mentioned above. He will be able to provide you with the program decks themselves if you require them, as well as any additional technical information concerning them. The manuals need not be returned.

5. With regard to the implementation of language processors, the only activity at Librascope was an investigation of the feasability of implementing JOVIAL (not feasable) and some work in the area of implementing a list processing language. This latter effort was not completed and the work done is not well documented. I know of no other efforts of this type done for the L-3055.

6. Only 3 L-3055 systems were built by Librascope, and and as far as I know there are no plans to ever build another. As a result, there is no activity of any nature at Librascope pertaining to this software and you will have to use it at your own risk.

7. Should you require on-site assistance in using this software or programming the L-3055, I am sure Data Processing Financial and General would be interested in discussing a consulting agreement with you. For problems which can be answered by mail, I will be glad to assist you in any way that I can.

I hope the information in this letter will prove helpful to your project. From articles I have read on numerical taxonomy it looks like you are attempting a very challenging bit of work.

Sincerely,

John S. Gasper

Info Retr Rele

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

Taximetrics Laboratory

DEPARTMENT OF BIOLOGY

Armory 101

July 7, 1967

Mr. John Jasper
Librascope Group of General Precision Inc.
808 Western Avenue
Glendale, California 91201

Dear Mr. Jasper:

I am part of a small research group at the University of Colorado which has just begun work under a grant from the National Science Foundation for the purpose of developing an information retrieval system for use in biology. My responsibility in this effort is to design and implement the system with the help of a small programming staff.

We have decided to build our system on an XPOP base. My friend, Mark Halpern, the developer of the XPOP system, told me two very interesting facts: (1) the University of Colorado is the recipient of a Librascope L3055 (gift of the Air Force) and (2) among the available software for this machine is a system called LAMP which possesses some or all of the XPOP powers. It becomes plausible then for us to consider developing our system on the L3055.

I spent most of yesterday with Ron Hall of CU's Engineering Dept. looking at and learning about the L3055 hardware. Ron loaned me the Programmer's Reference Manual and the LAP manual which I'll be looking into during the next few days. One of the key pieces of missing information at the moment is precise knowledge of the LAMP system. I'm writing to you, at Mark Halpern's suggestion, to learn what I can about LAMP. I would be particularly grateful if you would send me the LAMP manual, if only on a loan basis. I promise to be good and return it to you by whatever date you stipulate.

I would be interested also in knowing if there have been any language processors written using LAMP (such as ALTEXT, which is a rather interesting offspring of XPOP). Another question: does your shop maintain the LAMP system? (i.e., correct errors, add improvements, update the documentation, and inform your customer(s) of such changes.)

For all this and whatever information you should volunteer I would be most grateful.

Sincerely,

Robert C. Brill

INSTITUTE FOR SCIENTIFIC INFORMATION
325 Chestnut Street Philadelphia Pa 19106 / Telephone 215-923-3300
Cable SCINFO

Eugene Garfield, Director

January 26, 1967

Dr. David J. Rogers
Dr. George F. Estabrook
Colorado State University
Fort Collins, Colorado 80521

Dear Drs. Rogers and Estabrook:

I was most interested to receive the reprint of your recent paper from BIOSCIENCE entitled, "A General Method of Taxonomic Description for a Computed Similarity Measure".

I had been vaguely familiar with your previous work on computer programs for classifying plants.

I am taking this opportunity to send you some literature that will bring you up-to-date on the activities of the Institute for Scientific Information and hope that you will not hesitate to contact me if I can be of any further service.

I am hoping to be able to apply the methods of numerical taxonomy to our citation index files one of these days, but there are always many more projects than time available.

Have you had a chance to use the SCIENCE CITATION INDEX for any of your literature work?

Sincerely yours,

Eugene Garfield

Eugene Garfield, Ph.D.
President

EG/kaf

Enc: 1. KARGER GAZETTE No. 13,2 (March 5, 1966)
2. ASCA Packet
3. SCI Brochure
4. "Can Citation Indexing be Automated?"
5. SCIENCE, 144(3619), 649-54 (1964)

_ Taximetrics Laboratory

June 22, 1967

Mr. Mark Halpern
Dept. 52-40, Bldg. 201
Lockheed Missiles and Space Co.
Palo Alto, California 94304

Dear Mark:

We have left Fort Collins, but we are sitting in Boulder with bare walls and a solitary telephone that only gets incoming calls and no secretary to answer it. For what it is worth, the number is: Area code 303, 443-2211, extension 6712. If you still have access to a Lockheed telephone, would you call us some morning soon?

We are trying to get organized now and make plans for the summer, including a trip to see you. It would be nice to know where you will be.

Keep trying to call us. Sooner or later one of us will hear the telephone ringing in the office of the non-existing secretary. If you care to write instead, the address is:

Taximetrics Laboratory
Department of Biology
Armory 101
University of Colorado
Boulder, Colorado 80302

Best regards,

Bob Brill

BB/ch

- Taximetrics Laboratory

November 3, 1966

Mr. Mark Halpern
Dept. 52-40, Bldg. 201
Lockheed Missiles and Space Co.
Palo Alto, California 94304

Dear Mark:

Since we last communicated, the preliminary information retrieval proposal has been going through the mill at NSF. Dave just returned from Washington with some unofficial encouragement from NSF and a few hints about how to present the formal grant request. They would like (1) to see a more detailed explanation of XPOP, and (2) to know if there are any systems in operation or in blueprint which are competitive with XPOP.

If we can sell NSF our IR plans at all, I'm sure they'll take our word in the end that XPOP is the system we should build on, but it will go down better in the formal request if we present a brief comparative study. I think I can handle point one above, but would certainly welcome your suggestions. I turn to you as the leading compiler-compiler expert for help with point two. In your paper XPOP: A Metalanguage, etc. you cite 3 projects which are at least in spirit similar to XPOP. Any help there? Anything new since then?

Sincerely,

cc: D. J. Rogers

JOINT FAO/IAEA
DIVISION OF ATOMIC ENERGY IN AGRICULTURE

INTERNATIONAL ATOMIC ENERGY AGENCY - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

IAEA, KÄRNTNER RING 11, A-1010, VIENNA I, AUSTRIA - TEL: 52 45 25 - TELEX: 2645 - CABLE: INATOM VIENNA

DAT/411

20 October 1966

Dear Dave,

Thanks for your kind letter of October 13. I am sure also that Sam would like to have your group tied in on the retrieval business he is concerned with, too.

Your suggestion of getting information from Mark Halpern has been most fruitful. He sent a pack of material which we will find useful. He indicated sending some also to my colleagues at WSU. I think we will need all the cooperation we can get on these projects. We will be looking forward to your doing a big portion of research and providing advice on the IR parts, so please stay with it.

Dr. Frankel has just made arrangements for me to be in contact with the IBP Convener in the US, and I will try to stimulate some activity. The meeting in Rome was held last week, and plans were made for another meeting. Data records are only a small part of the problem. Keep with it, though, and keep me informed.

Best wishes,

Sincerely yours,

Carl

C.F. Konzak
Plant Breeding and
Genetics Section

Dr. David J. Rogers
Professor of Botany
Department of Botany and
Plant Pathology
Taxonomy Laboratory
Colorado State University
Fort Collins, Colorado 80521
U.S.A.

- Taxonomy Laboratory

October 13, 1966

Dr. C. F. Konzak
Plant Breeding and Genetics Section
IAEA
Kärntner Ring 11, A-1010
Vienna, I, Austria

Dear Cal:

You did a beautiful job in your letter to Burton Adkinson. I appreciate that boost tremendously.

Also, I appreciate your informative letter of the 5th, particularly the part about USDA's interest in surveying the needs of personnel for ADP. I'll get in touch with Sam Dietz on that. That may be another way to foster this research, and we need to explore all avenues.

Thanks, Cal. I hope we can come through for you.

Sincerely,

David J. Rogers
Professor of Botany

DJR:ch

JOINT FAO/IAEA
DIVISION OF ATOMIC ENERGY IN AGRICULTURE

INTERNATIONAL ATOMIC ENERGY AGENCY - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

IAEA, KÄRNTNER RING 11, A-1010, VIENNA I, AUSTRIA - TEL: 52 45 25 - TELEX: 2645 - CABLE: INATOM VIENNA

DAT/411

5 October 1966

Dear Dave,

Thanks for your letter of 19 September and the copy of the proposal. You really took action fast, something we like to see! Yes, we will be pleased to support the effort, and I will explore places where your project will be most helpful. For the moment, anyway, you will have a lot of work to do and so will we before we even get to the point where we can think in terms of the IB mechanism. I think that we can also promote your project as part of an over-all cooperative effort of significance to the IBP, which, incidentally, is a 10-year effort.

You will be interested to know that the USDA has a consultant firm surveying the needs of USDA personnel for automatic data processing. Sam has been in contact with them and I have also just written to them.

The first IBP meeting will be next week. This gave me virtually no time to prepare, but perhaps we can get the show on the road. It looks as if we will have good cooperation everywhere. The main immediate problems I see are administrative, then to arrange finances cooperation, etc. Much work in the right direction is already under way.

My meeting with Scotty and with Ed James was very informative and encouraging. We are also now in contact with the International Committee on Biological Nomenclature.

Please pass my special greetings on to your wife and family, as well as to Dr. Fleming and his wife. I had a very pleasant time and look forward to seeing you again. Thanks for all your kindness.

Sincerely yours,

Carl

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