



Hunt Institute for Botanical Documentation
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About the Institute

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

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

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

copy

Department of Environmental,
Population and Organismic Biology

April 18, 1973

Dr. S. A. Tucker
Plant Diseases Division
Department of Scientific and Industrial Research
Private Bag
Auckland, New Zealand

Invoice

Mailing charges for documentation of Programs-CHARANAL and Graph,
via airmail, 3rd class, printed matter.

\$6.00 (US currency)

Please Pay to EPO Biology, Univ. of Colorado.

David J. Rogers

April 18, 1973

Dr. S. A. Tucker
Plant Diseases Division
Department of Scientific and Industrial Research
Private Bag
Auckland, New Zealand

Invoice

Mailing charges for documentation of Programs CHARANAL and Graph,
via airmail, 3rd class, printed matter.

\$6.00 (US currency)

Please Pay to EPO Biology, Univ. of Colorado.

David J. Rogers

May 9, 1973

Dr. S. A. Tucker:
Dept. of Scientific and Industrial Research
Plant Diseases Division
Private Bag
Auckland, New Zealand

Dear Dr. Tucker:

The IBM version of GRAPH was written for the 7044. I am not sure whether it is still maintained, but you can try writing to SHARE Library, Program Information Department, IBM, 40 Saw Mill River Road, Hawthorne, New York 10532, use Library #3501 for this program. The title of the program was there called "similarity-clustering technique".

Aside from the above, I do not have any ideas to help you with the conversion. I think there is little difficulty, however, for identification of the areas where the program has to be changed. I really wouldn't recommend the 7044 version to you because it did not have some of the features on it that you would find very useful, such as the "skyline" which is a calcomp produced graph, and the "nodal distance array" which lists each object with its 10 most closely related objects. Both of these help the biologist in understanding the structure of his clusters.

Sorry that I cannot give you any help--I now have no programming staff of my own, and therefore, very little technical skills in the conversion process.

Sincerely,

David J. Rogers
Professor of Biology

April 18, 1973

Dr. S.A. Tucker
Plant Diseases Division
Department of Scientific and Industrial Research
Private Bag
Auckland, New Zealand

Invoice

Mailing charges for documentation of Programs CHARANAL
and GRAPH, via airmail, 3rd class, printed matter.

\$ 6.00 (US currency)

Please Pay to EPO Biology, Univ.. of Colorado..

David J. Rogers

UNIVERSITY OF COLORADO

BOULDER, COLORADO 80302

Copy

Department of Environmental,
Population and Organismic Biology

April 18, 1973

Dr. S. A. Tucker
Plant Diseases Division
Department of Scientific and Industrial Research
Private Bag
Auckland, New Zealand

Dear Dr. Tucker:

I had mailed documentation for CHARANAL and GRAPH, according to your request, and enclose an invoice for the postage. Sorry to have to inconvenience you with this.

^{Aster}
~~As~~ you have had an opportunity to examine the programs, and determine their usefulness to you, I will be very pleased to hear ~~whether the~~ ^{from you,} ~~programs prove to be useful.~~ We are always interested in the various applications which are made of our systems. If you have any ideas for improvement of the programs, we welcome your suggestions.

Thank you for your interest.

Sincerely yours,

David J. Rogers
Professor of Biology



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH
PLANT DISEASES DIVISION

Telephone 81 059

Telegrams: "Plantlab"

Postal address:
Private Bag
AUCKLAND

Reference:

NEW ZEALAND.
11 April, 1973.

Professor Rogers,
Taximetrics Lab,
EPO Biology Department,
University of Colorado,
Boulder, Colorado 80302,
U.S.A.

Dear Professor Rogers,

Thank you for your letter of April 6 offering to send us listings of the programs GRAPH and CHARANAL. I will certainly ensure that the documents are returned to you with expediency.

The matter of postage is however administratively 'sticky', without having the actual value of US funds involved. If your department would be prepared to advance us the postage and invoice me for it along with the listings, I could then process this through our normal channel which is Head Office in Wellington and the New Zealand trade Embassy in Washington. This way a postage of up to twenty dollars should present no problem.

Alternatively, could you please send me an estimate of the US postage cost and I can arrange it in the reverse order.

Thank you again for your kind offer.

Yours sincerely,

S A Tucker
S A Tucker.

GRAPH + CHARANAL - mailed 4/18/73
Air mail - printed material - \$6.60



DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH
PLANT DISEASES DIVISION

Telephone 81 059

Telegrams: "Plantlab"

Postal address:
Private Bag
AUCKLAND

NEW ZEALAND

Reference:

27 Mar 1973

*Ans.
4/6/73*

Dr D J Rogers,
Taximetrics Laboratory,
Dept of Biology,
University of Colorado,
Boulder, Colorado 80302,
U.S.A.

Dear Dr Rogers,

I was very interested in your account of taxonomic character analysis and clustering in TAXON Vol 21(5/6) of November 1972; it was very pleasing to find a lucid presentation with examples.

As we have an increasing interest here in this work, I am wondering if you could send me the FORTRAN listings and flow charts of GRAPH and CHARANAL. Naturally, these would be used purely to enhance our research.

Thanking you,
Yours sincerely,

S. A. Tucker
S.A. Tucker
(Scientist)

*Documents
Returned : May 8/73*

Ans

c/o Botany Department
University of Toronto
Toronto, Ontario
May 12, 1973

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

Dear Professor Rogers:

This is to acknowledge receipt of documentation packages for the programs GRAPH and CHARANAL. I apologize for the delay in answering, but your parcel was received just after I had left for a three week stay in Montreal. The material will be returned to you as promised within the next few days.

At the same time, may I take this opportunity to inquire whether applications are accepted at your institution for advanced training in systematics. I am very much interested in your approaches, and should like to submit a project proposal if possibilities for post-doctoral work exist in this area.

Again, thank you very much for sending the above documentation.

Yours sincerely,

Dieter Coepfert
Dieter Coepfert

/enclosed: cheque for US\$4.87, re postage

DOCUMENTS RETURNED : May 22.73

Comme:
Send the 2 programs

D. Goepfert
c/o Dept. of Botany
University of Toronto
March 20, 1973

Dr. David J. Rogers
Dept. of Environmental,
Population and Organismic Biology
University of Colorado
Boulder, Colo. 80302

Dear Sir:

Thank you very much for your letter of March 2, 1973. I am interested in analyzing the programs described in your recent publication in order to learn from your methods. Interest in computer-aided methods in systematics is lacking at the above institution, where I am a Ph.D. student, so that I am doubly dependent on published work in this area. I have a large number of questions and queries regarding your publication, some of which arise from my lack of understanding of the examples quoted, and hope that analysis of these programs will help to solve these problems.

Obviously I am willing to pay postage costs and to return this material as requested.

In thanking you,

Yours sincerely,

Dieter Goepfert

Mr. Dieter Goepfert

Out: 4/6/73

Documents - GRAPPA - CHARANAI
sent out under
separate cover and mail printed
material

Received \$4.87
on 5/16/73

January 28, 1973

DEPARTMENT OF BOTANY
UNIVERSITY OF TORONTO
TORONTO 5, ONTARIO

Dear Sir:

I would very much appreciate receiving a ~~reprint of your~~
~~article entitled~~ LISTINGS OF PGM CHARANAL AND IF
POSSIBLE PGM GRAPH, AS DISCUSSED IN
~~which appeared in~~ TAXON 21(5/6): 567-606 (1972)

Sincerely yours,

Dieter Goeppert

Dieter Goeppert



LINCOLN COLLEGE

UNIVERSITY COLLEGE OF AGRICULTURE

POSTAL ADDRESS
LINCOLN COLLEGE
CANTERBURY
NEW ZEALAND

TELEPHONE
HBL - 8029

In Reply Please Quote
Ref.:

Hold

Dear Sir

I should very much appreciate your sending to me a reprint
of your paper entitled _____

Characters and clustering in taxonomy
A synthesis of two taximetric procedures

which was published in _____

Taxon 21 : 567-606

send
letter

if copies remain available. I would also appreciate
a copy of your fortran listing if you have any spare.

Yours faithfully,

M. J. Noonan

M. J. NOONAN

Microbiology Department

Department of _____



TAXIMETRICS LAB.
EPO Biology Dept.
University of Colo.
Boulder, Colo. 80302

Dr. M. J. Noonan
Microbiology Dept.
Lincoln College
University College of Agriculture
Canterbury, New Zealand

Dear Dr. Noonan:

I have your request for the FORTRAN listings and documentation of the programs CHARANAL and GRAPH||. Since these documents are large and expensive, and I have only a limited number, may I ask, before sending, if you would be willing to help me as follows:

1. Pay postage costs (via air mail).
2. Copy the documents and return the original to me.

Thank you for your cooperation in this matter.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR/cr

March 2, 1973

Dr. L. P. Lefkovitch, Director
Statistical Research Service
Research Branch
Canada Department of Agriculture
Ottawa, Ontario K1A 0C5
Canada

Dear Dr. Lefkovitch:

I have your request for listings and documentation of the programs CHARANAL and GRAPH. Since these documents are large and expensive, and I have only a limited number, may I ask, before sending, if you would be willing to help me as follows:

1. Pay postage costs (via air mail)
2. Copy the documents and return the original to me.

If this is an agreeable procedure, I will immediately post the documents upon receipt of your letter.

Thank you for your cooperation in this matter.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR/Jlr

Sent April 19, 1973
Documents-GRAPH & CHARANAL sent out under separate cover air-
mailed & printed material rates.

Paid \$ 1.55 ✓ 5/12/73



CANADA DEPARTMENT OF AGRICULTURE / MINISTÈRE DE L'AGRICULTURE DU CANADA

RESEARCH BRANCH / DIRECTION DE LA RECHERCHE

Ottawa, Ontario
K1A 0G5

YOUR FAX NO.
VOTRE RÉF. N°

OUR FILE NO.
NOTRE RÉF. N°

February 13, 1973

Dr. D. J. Rogers
Taximetrics Laboratory
University of Colorado
Boulder
Colorado 80302
U.S.A.

Dear Dr. Rogers,

I was most interested in reading the paper you wrote with Dr. Legendre which appeared recently in Taxon. Lately I have become interested in the problem of overlapping clusters and have taken some ideas from graph theory to help me. Using the sketch on page 599 of your paper, I distinguish the the maximally connected subgraphs (3, 4, 5), (2, 3, 5), (1, 2, 6, 7), (1, 7, 8) and (1, 4). At a lower level of similarity, there may be fewer of these, and more at higher levels. I am sure that you see how the logic may go from there; for example, it is possible to measure the 'resemblance' between subgraphs as some function of the intersection of the subsets of nodes and their union. These ideas are not original, of course, but they have been of use to me in trying to understand what might be happening in small data sets. I do have a Fortran computer program which examines similarities and for any specified level, identifies the maximally connected subgraphs which may occur in 200 objects.

My purpose in writing to you is to ask if you could let me have a listing of your program CHARANAL and the Graph flow chart; I have nothing, except the standard statistical techniques, to look at this phase of a taxonomic study. If there is any charge, would you let me know. I would appreciate having a reprint of your paper.

Yours sincerely,

L. P. Lefkovich
Director
Statistical Research Service

LPL/hb



Agriculture
Canada

Research Branch,
Ottawa, Ontario.
K1A 0C5

March 7, 1973.

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

Your file Votre référence

Our file Notre référence

Dear Dr. Rogers,

Thank you for your letter of March 2. We are willing to receive documentation of CHARANAL and GRAPH on the conditions you outlined, namely,

1. We will pay postage costs (air mail)
2. We will copy the documents and return the original to you.

If you could send me an invoice for the postage, it will considerably ease the problems of payment.

With many thanks,

Yours sincerely,

Cens. Dr
 7/19/73 → L.P. Lefkovitch,
 Director,
 Statistical Research Service.
 Research Branch
 LPL/jc

Ottawa, Ont.
 K1A 0C5
 Canada

Documents - Graph + Charanal sent out under
 separate cover air mail pre-paid
 material rates - \$1.55

May 15, 1973

Dear Pierre :

The two packages of documentation for GRAPH and CHARANAL arrived in good shape yesterday, and I very much appreciate receiving them. You have done a fine job. Now if we only had TAXIR so well documented!

As you may have heard, I plan to take another leave of absence from the university to go to Rome next January, to design an international network for information retrieval for genetic resource centers. FAO has just decided to add a new section on conservation of genetic resources for primitive ~~and~~ cultivars and wild relatives of crop plants around the world, and one of the objectives is to document the genetic material very carefully and use information systems to store and retrieve the data. Naturally I am very pleased to work on this because it brings together my two greatest interests--economic botany, and computer systems for biology--in one job. I will tell you more about the work when I know more about it myself. I will be going through Rome next month, on my way to a consulting job in Izmir, Turkey.

I hope that while I am away, the course in taximetrics will be kept going. I found a student this year who is almost (but not quite) as good as Pierre Legendre was, and I hope to twist her arm (yes, women's lib!) into keeping the course going while I am away.

Best regards to you, wife and F₁.

Sincerely,

David J. Rogers

March 7, 1973.

Dr. Dave Rogers,
Department of Biology,
University of Colorado, Boulder.

Dear Dave:

About the listings of CHARANAL and GRAPH: I could have some copies of those listings made here, in our printing office. Something like 30 or 50, perhaps. You could have most of them, and I could keep 10 of them here, in case somebody else writes for them. The only thing is that I am not sure to have the ~~last~~ edition: so, could you send me one complete copy, to be used as a master for Xerox ?

Here are also a couple of reprints, including that of Paper No. 23 from the Taximetrics Laboratory. If you wish to have a few of those copies in the files of the Tax Lab, they should be available in one week or two.

About Eric: I guess I simply forgot to tell you about him (Eric Legendre, that is). As a matter of fact, I have a tendency to forget very many things nowadays, due to the lack of sleep, if you see what I mean ! But we should bring ^{him} along next summer when we come to Boulder. In the meantime, I wish you the best to your wife and yourself !

Pierre

Replied: 4/19/73

Documents + Graph + Charanal sent out
under separate cover air
mail printed material
rates - \$1.55.



Université du Québec à Montréal

Case postale 8888, Montréal 101, Québec

Centre de Recherche écologique

February-26, 1973.

Dear Dave:

This is the first request I get for the listings, although I got quite a few reprint requests already. Can you handle this one and those which will follow ?

Furthermore, you are being referred to (Wirth, Estabrook and Rogers, 1966)- in a good paper: DEMOULIN, V. et R. SCHUMACKER. 1972. Utilisation du traitement de l'information par ordinateur dans la taxonomie du groupe de Lycoperdon umbrinum L. Molle (Gasteromycetes, Fungi). Bulletin de la Société royale de B-otanique de Belgique, 105: 265-287.

Mar. 2, 1973

Dear Pierre:

I have your postcard, with the request that I supply CHARANAL and GRAPH to someone in Toronto. I've had six other requests for the listings. In all cases, I have asked the requestor if he would be willing to pay the postage, and make a copy of the documents. The documents are in limited supply, and the budget is even more limited, and that is the reason for the above procedure. After all, if the programs cost us so much, it would seem only reasonable to ask the people who want them free to at least help that much.

I hear from the Lèves that you have a baby boy. Congratulations! But why are you keeping that a secret from me? Best regards to Ghislaine.

Sincerely,

Dave

March 2, 1973

Dr. Bruce P. Dancik
Department of Biology
Saginaw Valley College
University Center, Michigan 48710

Dear Dr. Dancik:

I have your request for listings and documentation of the programs CHARANAL and GRAPH. Since these documents are large and expensive, and I have only a limited number, may I ask, before sending, if you would be willing to help me as follows:

1. Pay postage costs (via air mail)
2. Copy the documents and return the original to me.

If this is an agreeable procedure, I will immediately post the documents upon receipt of your letter.

Thank you for your cooperation in this matter.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR/jlr

Sent April 19, 1973
Documents - GRAPH e CHARANAL SENT OUT UNDER SEPARATE COVER
AIR-MAILED PRINTED MATERIAL RATES|

DOCUMENTS RETURNED April __/73

SAGINAW VALLEY COLLEGE

2250 Pierce Road
University Center
Michigan
48710

Department of Biology
March 30, 1973

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

Dear Prof. Rogers:

Under separate cover I am returning the documents GRAPH and CHARANAL, which you so kindly lent to me. They arrived this morning in somewhat dog-eared condition, and I hope they make it back without being destroyed by the U.S. Postal Service. They are also being returned by air mail printed material rates.

Doc. Attached
I am enclosing my personal check for the cost of postage for delivery to me (\$ 1.10). Thank you very much for your kind assistance.

Sincerely,

Bruce P. Dancik

Bruce P. Dancik
Assistant Professor of Biology

Documents returned April 6/73

SAGINAW VALLEY COLLEGE

2250 Pierce Road
University Center
Michigan
48710

Department of Biology
March 14, 1973

Prof. David J. Rogers
Dept. of E., P. and O. Biology
University of Colorado
Boulder, Colorado 80302

Dear Prof. Rogers:

Thank you for your letter about listings and documentation of the programs CHARANAL and GRAPH. I would like to copy these documents and will pay the postage costs and return them to you by airmail within a day of my receipt of them. I am assuming that the one-way postage cost will not be over two or three dollars.

Thank you for your cooperation.

Sincerely,

Bruce P. Dancik

Bruce P. Dancik
Assistant Professor of Biology

Ans. 4/19/73

*documents - Graph & Charanal sent out under
separate cover air mail printed
material rates - \$ 1.10*

BRUCE P. DANCIK
Saginaw Valley College
2250 Pierce Road
University Center, Michigan 48710
Date: 2/21/73

Dear Doctor Rogers :

I would very much appreciate receiving a
reprint(s) of your paper(s) entitled: Characters
and clustering in taxonomy: A synthesis of two
taximetric procedures,
which appeared in: Taxon 21: 567-606.
Also - listing of program, Charcoal + graph flow charts
Copies of any related papers would also be
appreciated.

Sincerely yours,

Bruce P. Dancik

March 2, 1973

Dr. Saul B. Salla
Graduate School of Oceanography
Narragansett Bay Campus
Kingston, R.I. 02881

Dear Saul:

I have your request for listings and documentation of the programs CHARANAL and GRAPH. Since these documents are large and expensive, and I have only a limited number, may I ask, before sending, if you would be willing to help me as follows:

1. Pay postage costs (via air mail)
2. Copy the documents and return the original to me.

If this is an agreeable procedure, I will immediately post the documents upon receipt of your letter.

Thank you for your cooperation in this matter.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR/jlr

Documents-GRAPH e CHARANAL SENT AIR MAIL PRINTED MATERIAL RATES
April 19, 1973.

UNIVERSITY OF RHODE ISLAND
KINGSTON • R. I. 02881

Graduate School of Oceanography • Narragansett Bay Campus

Feb. 13, 1973

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

Dear David:

I recently read your article on "Characters and Clustering on Taxonomy" in Taxon 21 (5/6) 1972. As I've found with some of your other publications it made very stimulating reading.

If possible I'd like very much to obtain the CHARANAL Fortran IV listings as well as the Graph Flow charts.

Enclosed please find a reprint of a paper I did some time ago on lobster stock separation.

Sincerely,

Saul B. Saila
Saul B. Saila
Professor of Oceanography

SBS:bg
enc.



La Trobe University

BUNDOORA / VICTORIA / AUSTRALIA 3083
TELEGRAMS AND CABLES: LATROBE MELBOURNE
TELEPHONE: 478 2722

2nd May, 1973.

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

Dear Dr. Rogers,

Many thanks for your letter of 2 March in connection with listings and documentation of the programs CHARANAL and GRAPH. I am willing to pay air mail postage costs, copy the documents, and return the original to you via air mail.

With best wishes,

Yours sincerely,

Trevor Whiffin
Lecturer in Botany



La Trobe University

DEPARTMENT
OF BOTANY

BUNDOORA / VICTORIA / AUSTRALIA 3083

TEL 478 3122

TPW/kb

23 *dy*
29th June, 1973.

Dr. David J. ROGERS,
Department of Environmental
Population and Organismic Biology,
University of Colorado,
Boulder, Colorado. 80302.

Dear Dr. Rogers,

I am sending under separate cover, by
air mail, the copies of CHARANAL and
GRAPH. Please find enclosed here a
bank draft of \$U.S. 6.00 to cover outward
postage.

With many thanks for your help.

Yours sincerely,

Trevor Whiffin

Trevor Whiffin

Enc.

*received
Aug 1/73
\$6.00*

March 2, 1973

Dr. Trevor Whiffin
Lecturer in Botany
La Trobe University
Bundoora, Victoria
Australia 3083

Dear Dr. Whiffin:

I have your request for listings and documentation of the programs CHARANAL and GRAPH. Since these documents are large and expensive, and I have only a limited number, may I ask, before sending, if you would be willing to help me as follows:

1. Pay postage costs (via air mail)
2. Copy the documents and return the original to me.

If this is an agreeable procedure, I will immediately post the documents upon receipt of your letter.

Thank you for your cooperation in this matter.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR/jlr

Sent May 7, 1973
Documents-GRAPH & CHARANAL sent out under separate cover
air-mailed printed material rates.

Received
R/b - 7/25/73



La Trobe University

BUNDOORA / VICTORIA / AUSTRALIA 3083
TELEGRAMS AND CABLES: LATROBE MELBOURNE
TELEPHONE: 478 3122

February 7, 1973

Dear Dr. Rogers:

I read with interest your account of CHARANAL and GRAPH. I would be very grateful if you would send me listings of these programs.

We are currently obtaining a large computer here and so I am now able to build up a program library for numerical taxonomy.

Yours sincerely,

Trevor Whiffin
Lecturer in Botany

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
University of Colorado
Boulder, Colorado 80302
U. S. A.



Courie: Please send

9 March 1973

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

Dear Dr. Rogers:

In response to your prompt reply (ltr dtd 2Mar73), I answer as follows. Yes, I agree to your request of my paying the postage and copying of the documents. The only question that arises in my mind concerns the dimensions of the program. I will be working at times with rather large numbers of OTU's (600) and attributes (200-300) because the OTU's will be plant communities and the attributes, species. If this is possible for GRAPH and CHARANAL then I look forward to receiving the programs.

Thank you very much for your help.

Kind regards.

Sincerely yours,

Stephen S. Talbot
Stephen S. Talbot

Out 4/6/73

*Documents - GRAPH & CHARANAL sent out under
separate cover air-mail provided
material rates - 96¢*

March 2, 1973

Dr. Stephen S. Talbot
Department of Botany
University of Alberta
Edmonton, Alberta
Canada

Dear Dr. Talbot,

I have your request for listings and documentation of the programs CHARANAL and GRAPH. Since these documents are large and expensive, and I have only a limited number, may I ask, before sending, if you would be willing to help me as follows:

1. Pay postage costs (via air mail)
2. Copy the documents and return the original to me.

If this is an agreeable procedure, I will immediately post the documents upon receipt of your letter.

Thank you for your cooperation in this matter.

Sincerely yours,

David J. Rogers
Professor of Biology

DJR/jlr

documents, ^{sent} april 6/73

DEPARTMENT OF BOTANY
TELEPHONE (403) 432-3484



THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 2E9

16 February 1973

Dr. David J. Rogers
Taximetrics Laboratory
Department of Biology
University of Colorado
Boulder, Colorado 80302 U.S.A.

Dear Dr. Rogers:

Your paper entitled "Characters and clustering in taxonomy: a synthesis of two taximetric procedures" which appeared in *Taxon* 21(5/6):567-606 is of considerable interest to me in my research on subarctic plant communities (Enclosure).

*Recd
april 73*

I would be most interested in working with the programs written in your laboratory along the lines of community classification if you would be kind enough to send the Fortran IV listings, CHARANAL, and graph flow-charts including a reprint of the *Taxon* paper.

Thank you.

Sincerely yours,
Stephen S. Talbot
Stephen S. Talbot

Thesis Progress Report - The Vegetation of the Heart Lake Area,
District of Mackenzie, Northwest Territories

The terrestrial vegetation of a 15 square mile area encompassing Heart Lake was described and mapped on a structural basis (Kuchler). Delimited structural units (=646) served as a framework for an intensive phytosociological study of 50 plant communities selected to represent the spectrum of variation within the vegetation of the area.

A stratified-random sampling method was employed using ten nested quadrats of the following dimensions: 1x1 m., 5x5 m., and 10x10 m. to measure the composition and structure of the herb-moss-lichen, shrub, and tree layers, respectively. Data collected included: cover, density, height, diameter, and age structure. In addition, cover values for epiphytic species of bryophytes and lichens were estimated from five randomly chosen trees per community. Two soil profiles were described per stand and soil samples collected from each. Soil temperature and moisture were monitored on a weekly basis in 16 sites using Coleman units. Air temperature, humidity and rainfall were also recorded in several stations. An attempt will be made to relate some of these factors with the vegetation.

Phenological records, i.e. flowering periods were recorded during the summer of 1972 for the majority of flowering species. Extensive collections were made throughout the area for vascular plants, bryophytes, and lichens of which, respectively, 230, 76, and 25 species have been verified to date. It is anticipated that these numbers will increase from 25% to 50% as new specimens are identified.

The stands will be classified using a combination of methods: (1) ordination (Bray and Curtis); (2) agglomerative hierarchical clustering (Pritchard and Anderson); and (3) Zurich-Montpellier (Geska and Roemer). Computer programs for methods (2) and (3) were developed and successfully run. The possibility of using "taxmap" (Carmichael) as an aid in delimiting structural types will be explored.

Field investigations in the summer of 1973 might include transect studies, continued monitoring of soil moisture and temperature, and community description according to the methods of Braun-Blanquet.