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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.

516 - 246 - 5026

Dr. Vera Farris *

20 November 1968

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

Dear Bob:

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

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

Sincerely,

David J. Rogers
Professor of Biology

DJR:gm

"SECOND ANNUAL" CONFERENCE ON NUMERICAL TAXONOMY, UNIVERSITY OF COLORADO

November 6-7, 1968

| | | | |
|--------|-----------------|----------------------------------|--|
| Nov. 5 | 8:00 P.M. | Mt. Shadows Club House (see map) | Informal, Get-acquainted, Social Gathering |
| Nov. 6 | 8 - 9 AM | Alumni Hall, UMC* | Registration (\$5.50**) |
| | 9 - 10:30 AM | Room 156, UMC | Phylogenetic Considerations, J.S.Farris, Moderator |
| | 10:30 AM | | Coffee |
| | 10:45 - 12 | | Informal, continuing discussions of phylogenetic considerations. |
| | 12 - 1:30 PM | UMC Cafeteria | LUNCH |
| | 1:30 - 3 PM | Room 156 | Mathematical Methods, F. James Rohlf, Moderator |
| | 3 PM | | Coffee |
| | 3:30 - 5 PM | | Informal, continuing discussions of mathematical models |
| | 7:00 PM | Aspen Room, UMC | DINNER |
| Nov. 7 | 8:30 - 10:30 AM | Room 156 | Information Retrieval, G. F. Estabrook Moderator |
| | 10:30 AM | | Coffee |
| | 10:45 - 12 | | Informal, continuing discussions of information retrieval |
| | 12 - 1:30 PM | UMC Cafeteria | LUNCH |
| | 1:30 - 3 PM | Room 156 | Where Are We Going? R. R. Sokal, Moderator |
| | 3 PM | | Coffee |
| | 3:30 - 4:30 PM | | Informal, continuing discussion on "Where are we going?" |
| | 4:30 PM | | Summary, R. R. Sokal |

* UMC = University Memorial Center

** includes price of dinner and coffees.

NOV 18 1968



THE UNIVERSITY OF KANSAS · LAWRENCE, KANSAS · 66044

DEPARTMENT OF ENTOMOLOGY · SNOW ENTOMOLOGICAL MUSEUM

November 14, 1968

Dr. David J. Rogers
Taximetrics Laboratory
Dept. of Biological Sciences
University of Colorado
Boulder, Colorado

Dear Dave,

Many thanks again for your kind hospitality last week. The conference was indeed very successful.

Enclosed are copies for you and your staff of the draft of the summary for Systematic Zoology. Please have suggestions for corrections, amendments, etc., sent to me within a week of receipt.

Best wishes.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bob".

Robert R. Sokal
Professor of Statistical
Biology

RRSs jk

THE SECOND ANNUAL CONFERENCE ON NUMERICAL TAXONOMY

The Second Annual Conference on Numerical Taxonomy was held at the University of Colorado at Boulder, November 5-7, 1968, hosted by the Taximetrics Laboratory of that institution. Twenty-five invited participants representing eight universities were registered for the informal sessions which followed the format of the previous year in featuring several short talks on the topic of each session, followed by general discussion. The four sessions dealt with phylogenetic considerations, mathematical methods (cluster and network analyses), information retrieval, and the future of numerical taxonomy.

The phylogenetic work discussed at the meeting dealt mainly with the estimation of cladistic sequences by means of Prim networks which are fitted to the OTU's by means of an iterative weighting procedure, characters being weighted on the basis of initial and successive prim connections. The efficacy of this algorithm was tested by successive artificially constructed trees determined by 30 binary characters to which 5-40 random characters were added. In the great majority of runs the iterative weighting procedure yielded solutions closer to the true (parameter) tree than the first unweighted Prim network. The group considered whether these results can be extended to other mixes of characters and to multi-state characters. The general question of the validity of the Prim network approach for cladistic work, first raised at last year's meeting, was left for future discussion.

Efforts at objectivizing decisions about biological species from phenetic data were discussed. It was suggested that stepped increases in a consistency index for taxonomic characters might lead to recognition of phenetic boundaries between populations considered to be different biological species. This led to a general discussion of the biological species concept. There was remarkable unanimity that the concept was non-operational, but less agreement on whether the concept was nevertheless of value for taxonomy or evolutionary theory.

The session on mathematical methods centered mostly on types of cluster and network analyses. One method defined neighborhoods of points in a phenetic hyperspace while a second developed clusters based on nonlinear generalized distances, thus permitting assumptions about constellations other than the hyperspheroids which have been customarily employed in numerical taxonomy. The Wagner network, much employed in plant phylogenies, was discussed again. It is to be hoped that this interesting method will soon be published to enable others to examine it critically.

The most surprising finding of the conference was the revelation that the cophenetic correlation coefficient with certain special similarity matrices was maximal against phenograms in which dissimilar rather than similar OTU's were placed together. So much discussion ensued about this apparently undesirable property of the cophenetic correlation coefficient, much used in evaluating clustering methods and phenograms in numerical taxonomy, that part of a subsequent session had to be allocated for further consideration of the matter. While this property of the cophenetic correlation coefficient does not seem undesirable if the purpose of a cluster analysis is to summarize the similarity matrix, the phenogram which results in a maximal correlation clearly could not be used to form a classification directly.

The discussion of these problems led to a general discussion of the purposes of classifications and criteria of goodness of classifications and it was decided that an attempt be made by the next meeting to develop generally acceptable criteria for optimality of a classification. The interesting question was raised whether phenetic similarity coefficients between taxa have any intrinsic meaning and value, or whether they are simply vehicles for arriving at classification. If the latter were true then those measures of phenetic similarity should be best which would consistently lead to the best classification (defined in terms of the original characters in some objective manner).

The information retrieval session discussed some rather sophisticated aspects of the TAXIR system of IR programs. A spirited discussion on the value of capturing old information in museum collections and herbaria ensued, but it is not clear to this reporter whether a firm consensus was reached by the group.

The session on future of numerical taxonomy was perhaps the most provocative to participants and also to those non-numerical taxonomists who joined this particular session. A clear exposition on the relations between mathematics and science during the generation of hypotheses served as an outline to illuminate the remarks of subsequent speakers. The pheneticists in the audience continued to feel that the future of general and applied taxonomy lies in the application of phenetic techniques. The phylogenetically oriented taxonomists wish to complement phenetic and phyletic taxonomy ^{into an} ~~when~~ integrated evolutionary theory of systematics. There was considerable discussion on whether the main function of taxonomy is practical, i.e. the ordering of nature and the identification of potentially beneficial or dangerous organisms, or whether the main function of taxonomic work should be the generation of evolutionary theory and hypotheses. It became rapidly clear that while all persons in the room taxonomized in one way or the other, they were certainly not agreed on the basic justification of taxonomic work ~~in~~ and the principles under which they should operate. Explanations ranged from the familiar pragmatic ones, over the phenetics-phyletics controversy and even into Freudian interpretations of the taxonomic psyche.

As the conference drew to a close, it became obvious that the amount of work generated in numerically oriented taxonomy is so great and ranges over so wide a field that some topics on which much progress had recently been made were barely mentioned, if at all. Such topics include the phenetics versus phyletics, ^{Phyletics} the partitioning of ~~phenetics~~ ^{homoplasy} into patristics and cladistics, the theories of character coding, the developments in numerical homology, the nonspecificity and ^{controversy}

asymptote hypotheses, and investigations into the psychology of similarity perception. It was hoped that several of these as well as the discussion of optimality in classifications will be included for the third annual meeting to be held at the State University of New York at Stony Brook. Many of the topics of the conference, however, should equally concern non-numerical taxonomists and should be the subjects of more formal, and possibly less technical, open symposia to be sponsored by national societies. The participants felt that the two days of intensive discussion had benefitted them greatly; an interesting point was that the marked ideological differences of the first annual meeting ^{had become} ~~was~~ less crass and that the group as a whole had focused on what were generally agreed to be the problems that needed further research and elaboration.

Robert R. Sokal

PARTICIPANTS IN NUMERICAL TAXONOMY CONFERENCE

University of Colorado

November 6-7, 1968

- Dr. John Andrews, INSTAAR, University of Colorado
Dr. John Chronic, Dept. of Geology, University of Colorado
Dr. Theodore Crevello, Dept. of Biology, University of Notre Dame
Dr. D. W. Crumpacker, Dept. of Biology, University of Colorado
Dr. D. C. Eades, School of Life Sciences, University of Illinois, Urbana
Mr. George Estabrook, Taximetrics Lab., University of Colorado
Dr. J. S. Farris, Department of Biology, State University of New York,
Stony Brook
Mr. Henry S. Fleming, Taximetrics Lab., University of Colorado
Dr. John R. L. Kishpaugh, Dept. of Entomology, Univ. of Kansas
Dr. Arnold Kluge, Museum of Zoology, University of Michigan
Dr. Peter M. Neely, University of Kansas
Dr. David J. Rogers, Taximetrics Lab., University of Colorado
Dr. F. James Rohlf, Department of Entomology, University of Kansas
Dr. A. J. Rowell, Dept. of Geology, University of Kansas
Dr. R. R. Sokal, Dept. of Entomology, University of Kansas
Dr. Kent H. Wilson, Dept. of Biology, Central (Okla.) State College

Gary^D Schnell - ornithology
Mus. of Nat. History
U.K.

Smith, Gerald R. - Fish Tax & Evol.
Mus. of Nat. History
U.K.

Etc 5
eslo 6 +

PARTICIPANTS IN NUMERICAL TAXONOMY CONFERENCE

- University of Colorado 22*
November 6-7, 1968 12
- Dr. John Andrews, INSTAAR
- Dr. John Chronic, Dept. of Geology, University of Colorado
- Dr. Theodore Crovello, Dept. of Biology, University of Notre Dame
- Dr. D. W. Crumacker, Dept. of Biology, University of Colorado
- Dr. D. C. Eades, School of Life Sciences, University of Illinois, Urbana
- Mr. George Estabrook, Taximetrics Lab., University of Colorado
- Dr. J. F. Farris, Dept. of Biology, State University of New York,
Stony Brook
- Mr. Henry S. Fleming, Taximetrics Lab., University of Colorado
- Dr. John R. L. Kishbaugh, Dept. of Entomology, Univ. of Kansas
- Dr. Arnold Kluge, Museum of Zoology, University of Michigan
- Dr. Peter M. Neely, University of Kansas
- Dr. David J. Rogers, Taximetrics Lab., University of Colorado
- Dr. F. James Rohlf, Department of Entomology, University of Kansas
- Dr. A. J. Rowell, Dept. of Geology, University of Kansas
- Gary D. Schnell, Museum of Natural History (ornithology), Univ. Kansas
- Dr. R. E. Sokal, Dept. of Entomology, University of Kansas
- De. Gerald R. Smith, Mus. of Natural History (Fish Tax. & Evol.), U. of Kansas
- Dr. Kent H. Wilson, Dept. of Biology, (Okla.) Central State College

NT

J Andrews

Chrona

Crovello

Crum packer

Eades

Estabrook

Farr's

Hemmy
Neeley

Kluge

Rogers

Rohlf

Rowell

Sokal

KH Wilson

Invites 1968

List of Participants in the Numerical Taxonomy Conference
The University of Kansas, Lawrence
November 1967

246-5270 x 6161
SUNY Farris

no ✓ Dr. G. H. Ball
Radio Systems Laboratory
Stanford Research Institute
Menlo Park, California 94025

yes ✓ Mr. J. F. Farris
Museum of Zoology
University of Michigan
Ann Arbor, Michigan ~~48106~~
Dart Bid SV NY Brod NY 11790

✓ Dr. A. S. Boughey
Department of Population and
Environmental Biology
University of California, Irvine
Irvine, California 92664

✓ Mr. D. R. Fisher
Department of Entomology
The University of Kansas
Lawrence, Kansas 66044

✓ Dr. J. H. Camin
Department of Entomology
The University of Kansas
Lawrence, Kansas 66044

✓ Mr. H. P. Friedman
IBM
590 Madison Avenue
New York, New York 10022

yes ✓ Dr. T. J. Crovello
Department of Biology
University of Notre Dame
Notre Dame, Indiana 46556

no ✓ Dr. D. D. W. Goodall
Department of Population and
Environmental Biology
University of California, Irvine
Irvine, California 92664

no M. B. Dale,
CSIRO Div. of Plant Industry
P.O. Box 109
CANBERRA CITY, A.C.T. 2601
AUSTRALIA.

✓ Dr. M. P. Johnson
Department of Biological Sciences
Kent State University
Kent, Ohio 44240
Florida Glenn Tallahassee 32306

Geological Survey
The University of Kansas
Lawrence, Kansas 66044

* Dr. R. F. Johnston
Department of Zoology
The University of Kansas
Lawrence, Kansas 66044
SF

yes ✓ Dr. D. C. Eades
School of Life Sciences
Morrill Hall
University of Illinois
Urbana, Illinois 61801

no ✓ Dr. R. L. Kaesler
Department of Geology
The University of Kansas
Lawrence, Kansas 66044

no ✓ Dr. P. R. Ehrlich
Department of Biological Sciences
Stanford University
Stanford, California 94305

yes ✓ Mr. J. R. L. Kishpaugh
Department of Entomology
The University of Kansas
Lawrence, Kansas 66044
Kluger Yes

✓ Dr. G. F. Estabrook
Department of Biology
University of Colorado
Boulder, Colorado 80302

no ✓ Dr. W. R. Lockhart
Department of Bacteriology
Iowa State University
Ames, Iowa 50010

* no ✓ Dr. Richard F. Johnston
Div. Biology and Medical Science
National Science Foundation
Washington, D. C. 20550

✓ Dr. D. F. Merriam
Geological Survey
The University of Kansas
Lawrence, Kansas 66044

✓ Dr. C. D. Michener
Department of Entomology
The University of Kansas
Lawrence, Kansas 66044

Dr. H. Morishima
? National Institute of Genetics
Yata 1-1-1, Sizuoka-ken
Japan

✓ Dr. W. W. Moss
Department of Entomology
Academy of Sciences
19th and the Parkway
Philadelphia, Pennsylvania 19103

✓ Dr. P. M. Neely *u Kansas*
Section of Biostatistics
Presbyterian St. Luke's Hospital
yes 1755 West Congress Parkway
Chicago, Illinois 60612

✓ Dr. L. Orloci
Department of Botany
no University of Western Ontario
London, Ontario, Canada

yes Dr. D. J. Rogers
Taxometrics Laboratory
Department of Biology
University of Colorado
Boulder, Colorado 80302

yes ✓ Dr. F. J. Rohlf
Department of Entomology
The University of Kansas
Lawrence, Kansas 66044

yes ✓ Dr. A. J. Rowell
Department of Geology
The University of Kansas
Lawrence, Kansas 66044

✓ Dr. J. W. Rowen
General Research Corporation
6300 Hollister Avenue
P. O. Box 3587
Santa Barbara, California 93105

✓ Mr. J. Rubin
IBM
W 590 Madison Avenue
New York, New York 10022

~~Mr. M. Sackin
MRC - Microbial Systematics Research Unit
University of Leicester
University Road, Leicester
England
(at Geological Survey, University of Kansas,
until June 1968)~~

✓ Dr. G. R. Smith
Department of Zoology
The University of Kansas
Lawrence, Kansas 66044

✓ Dr. P. H. A. Sneath
MRC - Microbial Systematics Research Unit
University of Leicester
University Road, Leicester
England
(at Department of Entomology, University
of Kansas, until 15 March 1968)

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

✓ Dr. P. V. Wells
Department of Botany
The University of Kansas
Lawrence, Kansas 66044

✓ Mr. W. J. Wrenn
Department of Entomology
The University of Kansas
Lawrence, Kansas 66044

Invitees for NT Conf Nov 1968

NJ Jardine

CJ Jardine

Whipple Science Mus. ←

King's College ←

Cambridge UK

50411

50329

Gordon Shealy

Dept Zoology

British Museum (Nat Hist)

Cranwell Rd

London SW7

John Cuthrell

Dept Zoology

Sedgwick Hds.

Downing St, Cambridge

Franklin Perrine

Nature Conservancy

Monks Wood (Pop Sta)

Abbot's Ripton

Huntingdon, Eng.

no

Arnold Kluge

Zo Mus, U-Mich

yes

Kent H Wilson

Biology

Central State Coll

Edmond Okla 73034

yes

John Chromic

RF Johnston

NSP

no

The "Second Annual" meeting on Numerical Taxonomy has been set for November 5, 6, and 7, at the University of Colorado. The meeting will be opened by a mixer Tuesday night at 8:00 P.M. at the Mountain Shadows Club House (instructions for getting there enclosed). We would expect most participants to arrive by Tuesday night. The sessions will be in the University Memorial Center (student union) in Room 156 from 9:00 A.M. to noon, and from 1:30 to 5:00 P.M. on Wednesday and Thursday. A dinner will be held Wednesday night in the U.M.C.

Travel and accommodation information ~~is enclosed~~. Please return a completed registration form ~~if~~ you plan to attend.

A registration fee will cover costs of banquet, coffee, etc.

You will have to make your own housing and travel reservations.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (will not) attend the conference on Numerical Taxonomy and Taximetrics on November 5-7, 1968.

Name

JOHN CHROMIC

Address

Geol. 227

I would like to have ^{Mr.}
~~Dr.~~ _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

10/28/68

I (will) ~~attend~~ attend the conference on Numerical Taxonomy and
Taxometrics on November 5-7, 1968. + STAY-OVER UNTIL NOON, 8 Nov.
to become acquainted with TAXIR.

Name Dr. Theodore J. Covelto

Address Dept of Biology, Univ Notre Dame,
Notre Dame, Ind.

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

✓

46556

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I will (will not) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name Dr. David C. Eades
School of Life Sciences

Address 455 Merrill Hall
University of Illinois
Urbana , Illinois 61820

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. W. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (~~will~~) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name John R. Kishpaugh
Dep. of Ent. Univ of Ks.
Address 1933 Ohio Lawrence Kansas

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (will not) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name Arnold G. Kluge
Address Museum of Zoology
University of Michigan
Ann Arbor, Michigan 48104

I would like to have Mr. _____
Dr. _____
_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

✓

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) ~~will not~~ attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name Peter M. Neely
Address Univ. of Kansas, Lawrence, Kansas

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to:

try to
I (will) ~~(will not)~~ attend the conference on Numerical Taxonomy and Taximetrics on November 5-7, 1968.

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

I would like to have Mr. _____
Dr. _____
_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Difficult to make arrangements on such short notice!

The "Second Annual" meeting on Numerical Taxonomy has been set for November 5, 6, and 7, at the University of Colorado. The meeting will be opened by a mixer Tuesday night at 8:00 P.M. at the Mountain Shadows Club House (instructions for getting there enclosed). We would expect most participants to arrive by Tuesday night. The sessions will be in the University Memorial Center (student union) in Room 156 from 9:00 A.M. to noon, and from 1:30 to 5:00 p.m. on Wednesday and Thursday. A dinner will be held Wednesday night in the U.M.C.

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A registration fee will cover costs of banquet, coffee, etc.

You will have to make your own housing and travel reservations.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (~~will not~~) attend the conference on Numerical Taxonomy and Taximetrics on November 5-7, 1968.

Name BERT ROWELL

Address DEPT. OF GEOLOGY,
UNIVERSITY OF KANSAS,
LAWRENCE, KANSAS 66044

I would like to have Mr.
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~(will)~~ (will not) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name JERROLD RUBIN

Address 187 N.E. SCIENTIFIC CENTER
410 E. 62nd ST.
NEW YORK, N.Y.

I would like to have Mr.
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

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Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~will~~ (will not) attend the conference on Numerical Taxonomy and Taximetrics on November 5-7, 1968.

Name Dr. M. Dale
Address CSIRO PO Box 109 Canberra
ACT Australia

I would like to have Mr. _____
Dr. _____
_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (will not) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name Michael Paul Johnson
Department of Biological Science
Address Florida State University
Tallahassee, Florida 32306

I would like to have Mr. _____
Dr. _____
_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~will~~ (will not) attend the conference on Numerical Taxonomy and
Taxometrics on November 5-7, 1968 but would appreciate receiving all
communications and materials concerning the conference.

Name

Lanfro Orlaci

Address

Department of Botany
University of Western Ontario
London, Ontario, Canada

I would like to have Mr.
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~will~~ (will not) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Would like to but can't.

*Would like a copy of
any proceedings.*

Name

G. H. Ball

Address

*Stanford Res. Inst.
Menlo Park, Calif*

I would like to have Mr.
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

The "Second Annual" meeting on Numerical Taxonomy has been set for November 5, 6, and 7, at the University of Colorado. The meeting will be opened by a mixer Tuesday night at 8:00 P.M. at the Mountain Shadows Club House (instructions for getting there enclosed). We would expect most participants to arrive by Tuesday night. The sessions will be in the University Memorial Center (student union) in Room 156 from 9:00 A.M. to noon, and from 1:30 to 5:00 p.m. on Wednesday and Thursday. A dinner will be held Wednesday night in the U.M.C.

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Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (will not) attend the conference on Numerical Taxonomy and Taxinetrics on November 5-7, 1968.

Name R.F. Johnston
Address NSF, Wash DC

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification _____

Dr. Rogers - I regret not being able to make the meeting on NT. I hope all goes well (but I am sure it will). Please give my regards to George Estabrook.

R.F. Johnston

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~will~~ (will not) attend the conference on Numerical Taxonomy and
Taxinetrics on November 5-7, 1968.

Name W. R. LOCKHART
Address DEPT. OF BACTERIOLOGY
IOWA STATE U., AMES

I would like to have Mr. _____
Dr. _____
_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

David -
Sorry. I was looking forward to viewing your empire, but the dates are
impossible for me. Will you send me copies of the "proceedings",
handouts, etc., that may be generated during the meeting?

Bill

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~(will)~~ (will not) attend the conference on Numerical Taxonomy and
Taximetrics on November 5-7, 1968.

Name

Franklyn Lewis

Address

Marks Wood, Huntington, England.

I would like to have Mr.
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

I expect to arrive in Denver via _____ on November ____ at _____ M.
airline

29 October 1968

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

Dear Dr. Rohlf:

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

I look forward to meeting with you soon.

Very truly yours,

George F. Estabrook

GFE:gm

RESEARCH CENTRE
(Use of computers in classification and diagnosis)
KING'S COLLEGE CAMBRIDGE ENGLAND
Cambridge 50411

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

24th October, 1968.

Ref: GFE"m

Dear Prof. Rogers,

Many thanks for your letter of 15th October, 1968. I have assumed that your kind invitation was addressed to me, though in fact the letter was sent to my brother, C.J. Jardine, who is an undergraduate mathematician but who has from time to time collaborated in my project here.

I am greatly honoured by your invitation to attend the annual meeting of Numerical Taxonomists and to moderate at the session on Mathematical methods in systematic biology. I deeply regret that I shall not be able to participate. The bodies which sponsor my project, the Science Research Council and the Royal Society, are unlikely to be prepared to make funds available at very short notice. If funds should become available I shall write to let you know promptly, but I fear that this is unlikely.

With many thanks,

Yours sincerely,

Nicholas Jardine

N. JARDINE



DIVISION OF BIOLOGICAL SCIENCES
DEPARTMENT OF POPULATION AND
ENVIRONMENTAL BIOLOGY
IRVINE, CALIFORNIA 92664

22 October 1968

Dr. D. J. Rogers
Department of Biology, Armory 101
University of Colorado
Boulder, Colorado

Dear David:

I have just received the notice of the numerical taxonomy meeting at Boulder in two weeks.

I should dearly like to be present, and to resume the contacts made at Lawrence last year. But this is a very bad time for me. Apart from various teaching commitments this quarter, it is also a time of heavy work in preparing the Research Design for the IBF Desert Biome (I expect you heard that I had been appointed as Director of this part of the program) and, to top it all, I am in the process of moving. At the end of the quarter, I shall be shifting to Utah State University at Logan, where I am joining the staff of the Ecology Center. Anyway, the net effect is that I don't see how I can well come to the Boulder meetings, much as I should like to do so.

Please give my best wishes to all friends there.

Yours sincerely,

A handwritten signature in blue ink, which appears to read "David W. Goodall". The signature is fluid and cursive, with a long horizontal stroke at the end.

David W. Goodall
Professor of Biological Sciences

DWG:kc

UNIVERSITY OF COLORADO

BUREAU OF *continuation* EDUCATION

EXTENSION DIVISION • 328 UNIVERSITY MEMORIAL CENTER • BOULDER, COLORADO

October 18, 1968

Professor David Rogers
Biology
Armory 101
CAMPUS

Dear Professor Rogers:

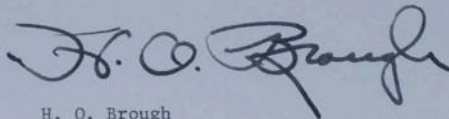
Because the dates for your forthcoming Conference on Taximetrics and Numerical Taxometry are rapidly drawing near, we are writing you so that you may be informed of the services that the Bureau of Continuation Education is currently planning to offer.

We have listed this Conference as a minimum assistance Conference, thereby limiting our services and charges. The minimum fee that will be assessed per registrant will be \$1.15. This is based upon the University Memorial Center charge of 40¢ and the Bureau of Continuation Education charge of 75¢. For this fee we will assist in the registration of your attendees, arranging for the banquet at the University Memorial Center on November 6 for 100 persons, arranging the room set-ups and ordering audio-visual equipment as it is needed. We will also assist in the final evaluation if you so desire.

If you are desirous of assistance beyond this, or will require the establishment of a budget for this Conference, the charges will be greater and a business office fee will also be assessed.

We would appreciate receiving any pertinent information pertaining to the registration, room set-ups, banquet, evaluation, or audio-visual equipment needed, as soon as possible.

Cordially,



H. O. Brough
Assistant Director

HOB/dq

TO _____

FROM _____

SUBJECT _____

DATE _____

UNIVERSITY OF COLORADO

*Interdepartmental
Memorandum*

Registration 8-9 AM. Nov. 6 Alumni Hall
Coffees 10:30 AM + 3: PM Nov. 6+7 Alumni Hall
Dinner ~~6:30~~^{7:00} P.M. Nov. 6 Open Rooms
Meeting 8-5 Nov 6+7 Room 156

Send list of names & a/c.
to Mr. Brough
(badges)

Regist \$5-
(incl dinner
& coffee) 50

N.T.

- Session 1 → Classif - genit. Jardin
" 2 → Phylogeny - Farris
" 3 IR - Geo.
" 4 Where are we going - Solal -
Summary

SECOND ANNUAL CONFERENCE ON NUMERICAL TAXONOMY, UNIV. COLO. NOV. 6,7, 1968

| TIME | PLACE | EVENT | |
|--------|-----------------|-------------------------------------|--|
| Nov. 5 | 8:00 PM | Mt. Shadows Club House (see map) | Informal social gathering, get-acquainted |
| Nov. 6 | 8 - 9 AM | Alumni Hall, UMC | Registration |
| | 9 - 10:30 AM | Room 156, UMC | Phylogenetic Considerations, J.S. Farris, moderator |
| | 10:30 | Alumni Hall | Coffee |
| | 10:45 - 12 | Room 156 | Discussion of morning panel |
| | 12:00 - 1:30 PM | UMC Cafeteria | LUNCH |
| | 1:30 - 3: PM | Room 156, UMC | Mathematical Methods, C. J. Jardin, Chrmn. |
| | 3:00 | Alumni Hall | Coffee |
| | 3:30 - 5 PM | Room 156 | Discussion on Mathematical Methods |
| | 7:00 PM | Aspen Room, UMC | DINNER |
| Nov. 7 | 8:30 - 10:30 AM | Room 156 | Information Retrieval, G. F. Estabrook, moderator |
| | 10:30 | Alumni Hall | Coffee |
| | 10:45 - 12 | Room 156 | Discussion on panel |
| | 12: - 1:30 PM | UMC Cafeteria | LUNCH |
| | 1:30 - 3:00 | Room 156 | Where are we Going? R. R. Sokal, Chrmn. |
| | 3 | Alumni Hall | Coffee |
| | 3:30 - 4:30 | Room 156 | Discussion |
| | 4:30 PM | Room 156 | Summary, R. R. Sokal |

UNIVERSITY OF COLORADO

Boulder Campus

Request and Approval for Credit and Non-Credit Conferences and Institutes

Date May 1, 1968

Name of Conference TAXIMETRICS AND NUMERICAL TAXIMETRY

Inclusive Dates of Conference NOVEMBER 6-7, 1968

University Departmental Sponsorship BIOLOGY

Non-University Cooperating Agency SAME

Number of Participants 73 +

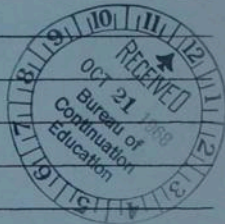
Housing Space Requested NONE

Conference Space Requested 156 UMC

Purpose of Conference or Institute TO BROADEN KNOWLEDGE OF PARTICIPANTS

Credit Requested:* Course Number _____ Credit Hours _____

Course Title _____



Approvals

1. Bureau of Continuation Education Clearance Shirley Landolt Date 10/14/68
2. Academic Approval Daryl Rosen Date _____
(Department Chairman) (Dean of the College)*
3. Housing Available (Campus Housing Only) _____ Date _____
(Director of Student Residences)
4. Registrar* _____ Date _____
(Registrar)
5. Approved and Scheduled [Signature] Date 10/19/68
(Associate Dean of the Faculties)

NOTE: Distribution to be made by Bureau of Continuation Education after appropriate approval.

*Applies to Credit Institutes only.

The "Second Annual" meeting on Numerical Taxonomy has been set for November 5, 6, and 7, at the University of Colorado. The meeting will be opened by a mixer Tuesday night at 8:00 P.M. at the Mountain Shadows Club House (instructions for getting there enclosed). We would expect most participants to arrive by Tuesday night. The sessions will be in the University Memorial Center (student union) in Room 156 from 9:00 A.M. to noon, and from 1:30 to 5:00 P.M. on Wednesday and Thursday. A dinner will be held Wednesday night in the U.M.C.

Travel and accommodation information is enclosed. Please return a completed registration form if you plan to attend.

A registration fee will cover costs of banquet, coffee, etc.

You will have to make your own housing and travel reservations.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I ~~will~~ (will not) attend the conference on Numerical Taxonomy and Taximetrics on November 5-7, 1968.

Name Paul R. Ehrlich

Address Biological Sciences
Stanford Univ.

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate)(enclosed) notification form.

FILE COPY

The "Second Annual" meeting on Numerical Taxonomy has been set for November 5, 6, and 7, at the University of Colorado. The meeting will be opened by a mixer Tuesday night at 8:00 P.M. at the Mountain Shadows Club House (instructions for getting there enclosed). We would expect most participants to arrive by Tuesday night. The sessions will be in the University Memorial Center (student union) in Room 156 from 9:00 A.M. to noon, and from 1:30 to 5:00 P.M. on Wednesday and Thursday. A dinner will be held Wednesday night in the U.M.C.

Travel and accomodation information is enclosed. Please return a completed registration form **if** you plan to attend.

A registration fee will cover costs of banquet, coffee, etc.

You will have to make your own housing and travel reservations.

Return to: Dr. D. J. Rogers
Dept. of Biology, Armory 101
University of Colorado
Boulder, Colo. 80302

I (will) (will not) attend the conference on Numerical Taxonomy and Taximetrics on November 5-7, 1968.

Name _____

Address _____

I would like to have Mr. _____
Dr. _____

_____ address

attend as well. He is submitting a (separate) (enclosed) notification form.

INFORMATION ON TRAVEL AND ACCOMMODATIONS

Travel

Boulder is 35 miles from Denver. Denver can be reached very conveniently by plane (Stapleton International Airport, direct flights from most cities on either coast), train or bus. Boulder can be reached from Denver by a bus that runs approximately every two hours (some departures from the airport, otherwise take limousine to bus station in downtown Denver), by taxi or by rental car.

Accommodations in Boulder

Downtown are old hotels, mostly without private bath, rates \$5-6, single. Bus service to campus.

James Hotel, 1918 13th St. Phone: 303-443-0550

Boulderade Hotel, 2115 13th St. 442-4344
(some private baths, \$7)

On 28th Street By-pass are new motels. No bus. Rates are from \$12-14, plus tax, for rooms for two.

Highlander, 970 28th St Phone: 303- 443-7800

Holiday Inn, 800 28th Street 443-3322

Lazy J 1000 28th Street 442-7525

Harvest Motor Hotel, 1345 28th Street 443-3850
(\$14, or with view \$15.50)

Travel Lodge, Broadway at Arapahoe 442-3830
(three blocks from edge of campus)

upon mailing list for
Taxinetics - Numerical Taxonomy

Dr. Richard F. Johnston

Div. Biol. + Med. Sci.

N.S.F.

Washington, D.C. 20550

meeting in November -

Also send another questionnaire
for the IR demonstration.

DEC 16 1967

Keep in file
with Symposium
arrangements-

Professor John Chronic
Geology 227
Campus

I was unable to reach you by phone while I was in Boulder between trips, but after vacation I will get in touch with you.

It is interesting to learn how widespread the interest in numerical taxonomy has become.

David J. Rogers
Professor of Biology

DJR:gm

Geology Meetings

Nov. 11-15

614 868 7600
~~52334~~

APR 26 1968



CENTRAL STATE COLLEGE

Edmond, Oklahoma 73034

April 26, 1968

DIVISION OF SCIENCE
Biology

University of Colorado
Department of Zoology
Boulder, Colorado

Gentlemen:

When will the next meeting of the International Conference on Numerical Taxonomy be held? I have heard that it will be around November or December, but so far have been unable to get an exact date.

Yours sincerely,

A handwritten signature in cursive script, appearing to read 'Kent H. Wilson'.

Kent H. Wilson
Department of Biology

KHW/jc/CSC

Ans Nov 3-5

Taximetrics Laboratory

Armory 101

15 October 1968

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

Dear Dr. Jardine:

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

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

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

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

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

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

Others of your countrymen which we shall invite to this meeting are
Gordon Sheals, Dept. of Zoology, British Museum (Natural History)
Cromwell Road, London, S.W.7
John Cutbill, Dept. of Geology, Sedgwick Museum, Downing St.,
Cambridge
P. H. A. Sneath, MRC - Microbial Systematics Research Unit,
~~University of Leicester. University~~ Road
Leicester.

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

Very truly yours,,

George F. Estabrook
Research Mathematician

David J. Rogers
Professor of Biology

GFE:m

16 October 1968

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

Dear Steve:

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

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

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

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

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

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

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

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

Please bring my source list with you when you come.

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

All the best,

George F. Estabrook

P.S. Expect registration forms later.