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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.

## TEXAS TECHNOLOGICAL COLLEGE

P.O. Box 4319

LUBBOCK, TEXAS 79409

COMPUTER SERVICES

July 31, 1969

Dr. D. J. Rogers  
 Taximetrics Laboratory  
 Armory 101  
 University of Colorado  
 Boulder, Colorado 80302

Dear Dr. Rogers:

Since I talked with you last December, the mite project has been at a near standstill primarily due to the ill health of Dr. Strandtmann. I think, however, that the project will be again underway in the fall, and we will submit a slightly altered proposal at that time. (The proposal has never gone through any formal processing.)

In the interim, I have been talking with individuals on the Tech campus about information needs and have found considerable interest but very little understanding of the possibilities in this area. I have therefore gone ahead with some discussions and demonstrations of the KWIC indexing programs which are now being used by several groups on the campus and I would like as the next step to be able to demonstrate your TAXIR programs to those people who might be interested, particularly the Museum staff and individuals in History, Chemistry, and Biology.

We are therefore still very interested in your system and I am wondering whether it has been translated for the 360 series (our computer is a 360/50). Would it be possible for us to obtain the program in the near future and what steps should we take in order to do so? I would certainly guarantee that we would make no changes to your program without consulting you. I'm looking forward to hearing from you.

Sincerely,



Lou Anne Roberts  
 Research Associate

LAR/clw

Aug. 12. Dear Lou: I'm sorry that TAXIR will not be available unless we ourselves are available, and at this moment, we are not assured that the team will survive the present money crisis. We are not supported by the University, and the grants have not been forthcoming that we need to keep the staff together. I hope the situation will change, but right now, I am not particularly optimistic that it will. Sorry to say this and I'll let you know when I have something positive to report.

COMPUTER CENTER  
TEXAS TECHNOLOGICAL COLLEGE  
LUBBOCK, TEXAS 79409  
October 10, 1968

Mr. G. N. Hersh  
Taximetrics Laboratory  
Department of Biology  
Armory 101  
University of Colorado  
Boulder, Colorado 80302

Dear Gil:

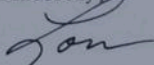
Attached is the proposal. It is indeed still rough; and I have a lot of work to do. Many of my ideas crystallized between the time I left Lubbock and returned. You will see blanks in the area covering personnel. I had been concerned as to whether I should try to do a \$5-job on a \$2-budget, or whether I should request the funds that are necessary. I see now that the project is only worth doing if it is done properly and will request funds for an adequate number of personnel.

(not large)

The comments in red are those of my husband and represent his final and only comments on the proposal. The remainder of the proposal, good and bad, is my own before any reviewers had an opportunity to see it. I am sending a copy to yourself in addition to Dr. Rogers in the hope that you might be one who would take the time to send me a few critical notes. Hence, the annotated copy -- so that you will not have to repeat what others have said. Clearly, I have not given sufficient information about our procedures for the taxonomic bank study; after attending your meeting, I can do so far more precisely.

My sincere thanks for the time spent with your group. I hope that I can be of as much value to your project at some time in the future.

Sincerely,



Lou Anne Roberts  
Research Associate

LAR:dc  
Encl

My regards to your wife - I  
enjoyed talking with her!

674

*id not to it is tight to the  
Mito review. To be clear more effort is  
at least offered to do so.*

APPLICATION FOR A RESEARCH GRANT FROM THE OFFICE OF SCIENCE INFORMATION  
SERVICE, NATIONAL SCIENCE FOUNDATION

INSTITUTION: TEXAS TECHNOLOGICAL COLLEGE

TITLE: A COMPUTER ASSISTED REVISION OF THE MESOSTIGMATED MITES. PART II  
PROGRAMMING AND FEASIBILITY STUDY OF A TAXONOMIC BANK

DESIRED STARTING DATE:

TIME PERIOD:

SUPPORT REQUESTED:

SIGNATURES:

*Prin Investigator  
phone*

*Funds are what you want, so is*

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Types of Information Included in the Revision

Taxonomic Bank--Gross View

Over-all Sequence of Project

I. RATIONALE

*There are many studies for  
few point given information  
but that worth and over.*

Introduction: Computers have been used in taxonomy for storing information on museum specimens<sup>1</sup>, on fossil collections<sup>2</sup>, for attempts at computer-classification<sup>3</sup>, as well as for studying the relationships of a group of organisms by cluster, correlation, or discriminant analysis of certain types of information<sup>4,5</sup>. Although numerous taxonomists have, in addition, considered the need for a bank organization in taxonomy<sup>6,7</sup>, they have until recently been anticipating the organization of a single, central taxonomic bank for storing all information related to taxonomy. While a central taxonomic bank eventually will and should be established, the sheer mass of information to be stored precludes any extensive study or re-organization of material within the central bank. The organization of information, or the rationale for such, must come from the individual scientist. The President's Advisory Committee<sup>8</sup> recognized this problem when they stated:

"All those concerned with research and development...must accept responsibility for the transfer of information in the same degree and spirit that they accept responsibility for research and development itself."

The report goes on to state that:

"The later steps in the information transfer process, such as retrieval, are strongly affected by the attitudes and practices of the originators of scientific information. The working scientist must, therefore, share many of the burdens that have traditionally been carried by the professional documentalist."

Clearly, the taxonomist must himself be intimately involved in the organization of information in taxonomy. Taxonomic scientists, however, are scattered among numerous educational and research institutions, as are the other biologists, chemists and mathematicians with whom they must consult for evaluation of past experiments and guidance as to future investigations. Thus we foresee the establishment of numerous local taxonomic banks, organized by one or a group of scientists and encouraging the participation of numerous others.

*at the point to say something? you propose to do other than*

Background of Local Taxonomic Bank: A paper describing the gross organization of a local taxonomic bank was presented at the "Symposium on Information Problems in the Natural Sciences" in December, 1967. A diagram from the paper indicating types of information which might be stored in the bank is presented in the appendix to this proposal.

*with  
further  
in the  
1967*

2. (Considerable literature has been published in this  
mean in the last few years.)  
The number of papers in these areas has  
expanded rapidly ~~since 1940~~ in the last few years.)

There are only a few  
~~the literature is~~

a large body of literature  
there has

While in <sup>many</sup> certain instances a taxonomic bank  
might be a storehouse for information relating  
to ~~individual specimens~~ <sup>as for instance at</sup>  
a museum) ~~that~~ the majority of such  
banks <sup>might be located at universities where they would</sup>  
be concerned with organization  
of the detailed <sup>taxonomic</sup> information ~~relating to~~  
particular ~~groups~~ of plants ~~and~~ animals.

The paper presented the view that a local taxonomic bank might serve two principal functions; the first would be the continual organization of information relative to a particular taxon, and the second, its use as a tool by students and scientists studying the particular group. In this respect it was held that the bank should provide the following services:

1. Students, possibly during summer workshops, would use the bank as a means of gaining background on literature, as well as on general organization, available information, and previous work within the group.
2. Researchers, in turn, would be able to use the bank for storage and organization of information or data relevant to current studies. Programs for distribution mapping, evaluation of data, and organization of results for incorporation in the main file unit could be tested and made readily available.
3. The main bank unit which would be continuously updated should contain the main body of information on the group, as well as locations (as on microfilm storage) of information at the finest level of detail. The unit should be such that it can be searched for information (keys, diagnostic characters where available, type locations, hosts, collection locations, previous studies, etc.).
4. Information from the main files would be periodically selected and printed or taped for dissemination -- constituting the current revision or status report on the group.
5. Interested scientists and students should be able to gather periodically at a console unit for group discussion and evaluation of available data. Such sessions should lead to greater understanding of critical areas for research and, hence, to better coordination of research efforts by the scientists.

*Exford. Not sufficient  
Detailed in the second M.P.  
in my book*

The taxonomic bank paper was the result of numerous discussions with taxonomists as to what the computer might do for them, and of a survey of pertinent literature in taxonomy and in information retrieval. While this activity provided us with some insight into what is today possible, there was not sufficient time for a critical evaluation of the views put forth. Specifically, we did not have time to consider the problems involved in a university-based information retrieval service, the problems involved in collaboration on a continuous taxonomic revision, or the cost and practicality of the various bank services. The current plans of Dr. R. W. Strandmann to bring up to date his manual on the parasitic mesostigmatid mites and our collaboration in this project with the view to facilitating the production of indexes and a machine-readable file on the mesostigmatid mites, provide an excellent opportunity for critically viewing the taxonomic bank idea and evaluating its usefulness to taxonomic scientists as well as for considering the feasibility of such an information retrieval service based at a university computing center.

*Again in the reader to ensure that you wish to take  
advantage of this excellent opportunity or are you just  
having the time of day, your P. is often fair to end in  
a comment.*



Revisions in Taxonomy: Traditionally, the organization of information in taxonomy has taken place during the process of revision of a classification scheme for a particular taxonomic group. Such revisions occur sporadically in scientific literature, dependent upon the bulk of accumulated information and the interest of an individual scientist. At best, the revision process has been extremely tedious; at worst, exceedingly repetitious and time consuming. The view presented in the previously discussed taxonomic bank paper was that future taxonomic revisions would not be isolated efforts in time and discrete units of publication as they are today. Rather, that the information on the particular taxon (whether a suborder of mites or a class of algae) would be in a state of continuous revision at some particular computer center. ~~This too requires further consideration.~~

*This Wood?*

The concept of a continuously updated file of this sort itself poses some interesting problems. For example, what would be the requirements for a time sense to the revision, for documentation of rationale for changes, for indication of responsibility for reorganization? What provision would be made for differences of opinion? Only after careful consideration of questions such as these could one hope for an extensive collaboration of individuals in a revision project. The question in this respect then becomes: (1) is it possible for a group to collaborate on this type of project and (2) if so, what are the necessary provisions?

Mites as an Ideal Taxon for Testing Bank Idea: While a taxonomic bank might serve as a storehouse of information, where one classification scheme has become essentially stable, it is in the study of very large and poorly understood taxonomic groups that the bank might serve as the most effective tool. A suitable group (or taxon) for the initial organization of a taxonomic bank should, therefore, be of economic or medical importance, large enough to require computer organization of the data, yet small enough to be tractable. For economy, implementation of the bank should take place during a period of intense study or revision of the group. The mesostigmatid mites closely approximate the ideal group. They ~~are~~ (often as many as 100 species within a genus), of economic importance (approximately 25% of the group are parasitic and some are known to transmit disease in vertebrates other than man), on which considerable taxonomic study is yet needed. Moreover, there are only a small number of taxonomists working with this group in the United States. The current revision process might afford an excellent opportunity for communication leading to a critical evaluation of the taxonomic bank idea.

Related Proposals: A proposal entitled "A computer assisted revision of the parasitic mesostigmatid mites" ~~was~~ submitted to the National Science Foundation by Dr. R. W. Strandmann of the Bishop Museum and this institution. The proposal, submitted in July, 1968, requests funds for production of a manual on the parasitic mesostigmatid mites. The

following two paragraphs ~~are~~ taken from that proposal, and indicate the need for production of a new manual and the advisability of organizing the information by computer.

"A manual of mesostigmatic mites parasitic on vertebrates, authored by R. W. Strandtmann and G. W. Wharton, was mimeo-published in 1958. It listed 83 genera and 590 species of parasitic mites, plus host lists, geographic ranges, and chapters on biologies, life cycles, and medical significance. Since 1958, the number of species has doubled and the number of genera has increased by roughly 50%. New geographic records and new host records have more than doubled and much new information has appeared on biology, life cycles, cytology, medical significance, and taxonomy, plus a great many changes in geographic names, particularly in Africa and Asia. It would seem that a revision is overdue.

"For the original manual, the information was stored on keysort cards. This method was unsuited for storing multiple bits of information (i.e., several hosts listed in one publication for a species of mite), grossly subject to errors, and very slow and cumbersome for withdrawing stored information. For these and other reasons it was decided to go to a completely mechanical method of information storage and retrieval, which has the advantage of much greater flexibility for information storage, much more rapid and efficient withdrawal possibilities of information, and, especially with magnetic tapes, indefinite storage. New information can always be easily added and old information can be quickly and easily recorded, corrected, and deleted."

*Part better funded for the smaller one would rather than a former generation.*

Philosophy Behind the Taxonomic Bank Project: The large IR systems in use today for biology (Biological Abstracts, BASIC, Citation Index, Current Contents, MEDLARS) are quite remote from the general user. Since they attempt to cater to the field in general and have, therefore, a large mass of information to handle, they can allow slight time for consideration of the information requirements of a particular type of biological scientist or to encourage him to think in new ways about his information needs for the future. Similarly, while a graduate or even upper division student may get considerable information from Biological Abstracts, he is seldom aware of how the volume was produced and it has little impact on his thoughts about information problems of the future.

The university-based information project has a unique chance for contribution in these two areas. First, it can work very closely with a group of researchers and their students examining the method by which their information handling problems can best be solved; and second, it can take an active part in the education of students in various disciplines to acquaint them early in their education with the information problem and the possibilities which exist today for its solution.

While the emphasis of the present project is on the taxonomic scientist and his IR requirements, the possibilities for use of such a project in various aspects of the education process is also receiving strong consideration. Indeed, this capability for collaboration in providing demonstrations or dialogues for students is one of the most compelling reasons for the encouragement of IR projects on ~~the~~ university campus. New and creative methods for handling the information problem will ~~only~~ *most often* be developed by individuals who are stimulated very early in their careers to think creatively about the information needs of their chosen field. Certainly, projects related to the use of the computer in the sciences and information retrieval are costly; however, their expense appears very small indeed when compared to amounts which may be expended now and in the near future on educating students for the world of at least ten years past.

Indirect Benefits of the Project: As has already been indicated, the taxonomic bank project relates closely to certain other endeavors on the Texas Tech campus. First, a computer science curriculum has been submitted for approval to the coordinating board for Texas universities. Certain courses to be included in this curriculum have already received approval. The program will be reviewed in November, and if approved at that time, the first courses will be taught in January of 1969. The taxonomic bank project would be used as a tool for demonstrating the principles and problems of bank design and development in courses relating to information science. ~~Secondly~~, the bank project would work closely with other biologists at Texas Tech to determine their views on proposed bank services and on the means whereby the project can be of service in elucidating the information question ~~of~~ biology students in general. ~~Thirdly~~, the Computer Center is one of several groups on the Texas Tech campus interested in information retrieval. Knowledge and experience gained from the taxonomic bank project would be freely available to these groups (particularly the library and the International Center for Arid and Semi-arid Land Studies) in their initial steps toward providing information services.

Relation of the Project to Current Projects: A number of projects for storing information in biology has been initiated during the past two years, most of which are related to this project in that the orientation is taxonomic; i.e. the material is organized by taxonomic categories. The majority of these projects, however, are primarily concerned with storing information on the herbarium or museum specimens and, to a lesser extent, disseminating this information, rather than with serving as a tool for the taxonomist and his student in organizing the information available in the published literature and in evaluating the directions for further research. Similarly, the other projects do not ~~have the emphasis on considering~~ new ways to introduce the information problems and the current state of the art to students of biology and information science.

*at other Institutions*

Possibilities for Establishment of a Permanent Bank: A commitment for continued bank operation has not at present been sought from either Texas Technological College or the Bishop Museum. Not only is some degree of cost analysis necessary before a commitment may be sought, but in addition, numerous factors mentioned elsewhere in this proposal must be considered (eg. the precise requirements for such a bank, its possible interaction in a university setting, and the degree and type of collaboration between museum and university or between individual scientists necessary for optimal bank utility.) Although the ultimate establishment of a taxonomic bank on the mesostigmatid mites is more than a mere possibility, we feel that the principal emphasis of the project at this stage should not be on bank establishment, but rather on critical consideration and precise documentation of bank requirements and design, preliminary to the development of a limited bank facility (bank prototype) for testing and evaluation.

Most readers are going to say, how or well  
before, this is all very interesting, but what  
the hell does she want or propose to do?  
It could be <sup>pro</sup>properly evaluated or read more  
carefully, if the reader ~~has~~ learned on P.I. what  
your plan was.

This should be a fog 1 or 2  
not 6 or 7

## II. OBJECTIVES

The objectives of this proposal are:

1. To provide programming assistance for a computer-organized taxonomic revision of the parasitic mesostigmatid mites.
2. To develop and evaluate procedures for continued addition and re-organization of information on this taxon (and applicable to other groups of plants or animals).
3. To demonstrate the efficient and economical use of computers in this application -- particularly with regard to a continuous rather than a periodical revision of the group.
4. To further study and design a "taxonomic bank" to be organized around the revision file but to include additional files and services -- particularly those of value to taxonomists and their students using the bank as a working tool in studying the group.
5. To consider the means by which such a bank may be used as a tool in the education of students. Firstly, to acquaint students in biology with the information problem, the attempts at alleviating the problem to date, and an overview of the current state of the art in information retrieval as it relates to their discipline. Secondly, to demonstrate practical aspects of information science to students in a computer science program.
6. To provide some measure of cost analysis preliminary to the actual establishment at Texas Technological College or at the Bishop Museum of a bank prototype for testing and evaluation.

To continue the study & design of a tax bank  
or at other institutions. Why not the  
info be applicable to any institution?

### III. PROCEDURES RELATED TO THE REVISION

The methods by which information might be organized for the revision and for the new manual were studied during the spring and summer, 1968, with support from Texas Technological College and the Bishop Museum. At that time we considered:

1. The aspects of the revision process which would be simplified by use of a computer.
2. The method by which the manual per se might be organized, edited and possibly offset printed from the computer printouts.
3. The types of information which should be included in the revision file and which types should actually be included in the manual.
4. The type of code which might prove most satisfactory for organizing and selecting information (as for indexes versus main file) and which might be of value later in selective retrieval (the code under consideration is presented in Appendix ).

The following procedures emerged from that study:

1. Organization of indexes by computer was considered a near necessity. In addition, merging of new with old information by computer would considerably simplify the revision process. Editing and re-wording of text for the manual could be accomplished either on-line or from a computer printout. Clearly the first method would be preferable if mechanically and financially feasible.
2. Codes should be alphameric where possible providing some immediate information on family and genus to which information applies. The code settled upon is indicated in Appendix . In entering material from recent literature, codes for taxonomic category need be indicated only at the beginning of a group of records.
3. Types of information found in the previous manual and to be included in the master file of information are indicated in Appendix . Problems of synonymy, correct combinations, etc., will be decided by Dr. R. W. Strandtmann with the assistance of the Bishop Museum staff. Drs. Deane P. Furman, University of California at Berkeley, and Vernon J. Tipton, Brigham Young University at Provo, will collaborate on the taxonomic problems involved. Other procedures related to the revision proper will be handled by Dr. Strandtmann.

#### IV. PROCEDURAL CONSIDERATIONS FOR THE TAXONOMIC BANK STUDY

While it is impossible to outline precisely at this time the steps that will be taken to obtain precise statements of requirements leading to bank design, nevertheless some general comments <sup>should</sup> ~~should~~ be <sup>made</sup> ~~made~~. Extensive correspondence will be necessary to ~~obtain~~ <sup>obtain</sup> the ideas and the criticisms of those taxonomists who might most extensively use the bank. We will if possible avoid the use of questionnaires. <sup>why?</sup> Instead, a complete discussion of the idea in question will be sent with ample space provided for critical comments. For maximum efficiency criticism should be sought at several intervals in the study, particularly near the end of the present study phase and before development of a prototype. A meeting of concerned individuals to discuss the final design would be helpful. In our view the sequence of bank study might be as follows:

1. Consideration of method by which a revision file might be maintained including:

- method of obtaining literature
- entering information (who can do so and how)
- changing information (corrections)
- adding new interpretations
- conflicting views
- indicating time sequence
- indicating source (literature)
- taxonomist responsible for entry

2. Description of accessory files which would be needed to support the revision file.

- microforms of data?
- literature?
- accessory file with conflicting views?
- with additional comments?

3. Comments of consultants on the above.
4. Description of services which should be available on-line at the Computer Center to taxonomists working with this file and to their students.
5. Description of services which might be made available to taxonomists working with the mesostigmatid mites but at other locations.
6. Description of services which might be available to scientists in other disciplines or others needing information on this group of parasitic mites.

*I'd greatly expand the section*

7. Programs which should be available at the Computer Center for on-line or batch processing use of taxonomists in general including programs for mapping, numerical studies, optimization of taxonomic keys, etc. (These would be obtained and tested during the present study.)
8. Comments of taxonomists on four through seven.
9. Precise listing of bank requirements and preliminary design, including program descriptions, flow charts indicating steps in information transfer, task analysis at an appropriate level of detail, cost analysis (based partly on results of revision cost accounting ), etc.

Software Systems Under Consideration: While special programs will be necessary for certain aspects of the present revisions or of the future bank activities, the major emphasis of this project is not on the development of unique software systems. To whatever extent possible, we would like to adapt existing programs to our needs, and in that respect, we are currently examining other projects such as the Advanced Development Prototype at SDC and the TAXIR SYSTEM at the University of Colorado. One important constraint is that our activity must not interrupt normal university computing functions and must be compatible with the number of other information retrieval requirements at the university. This does not seem a serious problem since the facilities which we require will be available in any case. A number of departments and groups on campus are already requesting on-line capabilities. A data cell drive and two experimental terminals will be available in early 1969.

*Publication plan?*

## VI. PERSONNEL AND FACILITIES

Hardware Facilities: The Texas Technological College Computer Center operates three computer systems, an IBM System 360 Model 50, an IBM 1401, and a Control Data 1604. The 1604 and 1401 processing units are owned by the Computer Center and the 360 Model 50 is leased from IBM. Components of these systems are listed in Appendix <sup>Time</sup> ~~Time~~ will be available on the IBM System 360/50 (and where necessary the IBM 1401) for production of the manual and its indexes as well as for preliminary study related to the taxonomic bank.

A recent grant from NSF for long-range planning is allowing objective study and evaluation of the computing requirements on this campus and of the systems now in operation. The results of this study will undoubtedly lead to some changes in the system configuration. However, it is highly probable that there will always be available at the Texas Tech Computer Center a system equalling or excelling the IBM System 360/50 in information handling capabilities.

### Personnel:

Principal investigator: Dr. Lou Anne Roberts, Research Associate, Computer Center, Texas Technological College, Lubbock, Texas.  
Co-principal investigator: Dr. Russell W. Strandtmann, Acarologist, Bishop Museum; Professor, Biology, Texas Technological College.

#### Technical Collaborators (Consultants):

Research Assistant: Miss Diana Cudd, B.S. degree in Mathematics, minor in Biology.

*expanded they will want complete visit*

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TAXONOMIC BANK  
IDEAL SYSTEM

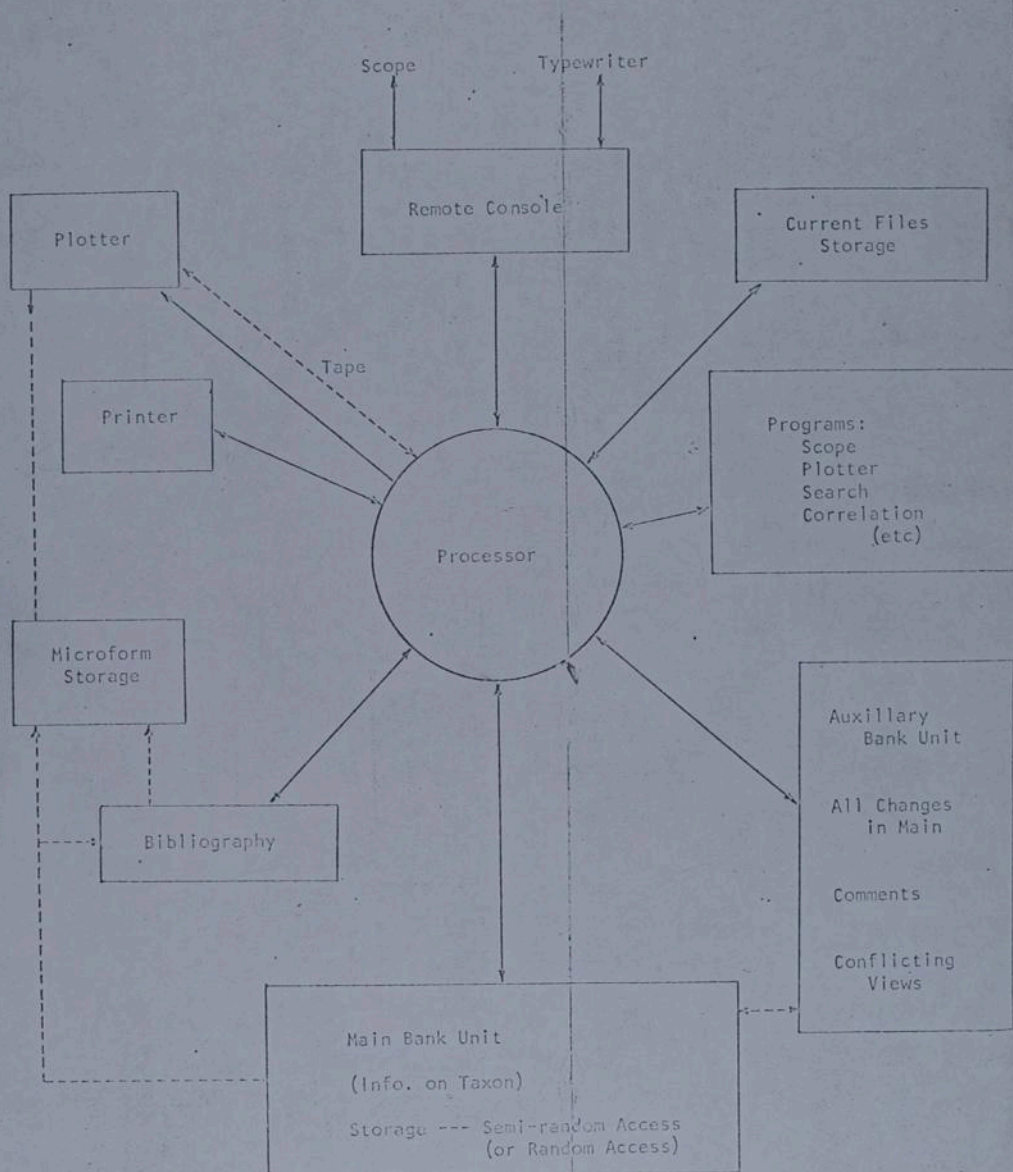


Figure 1

~~TIME~~ SEQUENCE OF THE PROJECT

|  | YEAR |   |   |
|--|------|---|---|
|  | 1    | 2 | 3 |
| Revision of the Parasitic Mesostigmafids Mites                               |      |   |   |
| Necessary Programs   |      | X |   |
| Production of Manual<br>(incorporation of material from literature, indexes) | X    | X | X |
| Editing of Manual  |      |   | X |
| Consideration of Continuous Revision   |      |   |   |
| Problems and Processes   |      | X |   |
| Consideration of supplemental services of Bank                               |      | X |   |
| Consideration of method by which bank could assist education                 |      | X |   |
| Comments of Consultants  |      | X |   |
| Bank design  |      |   | X |
| Consideration of Software  |      | X | X |
| Special Hardware   |      | X | X |
| Group Meeting--Demonstration   |      |   | X |
| Experimentation and Partial Implementation*                                  |      |   | X |

*↑  
most effective  
contributions*

\* Supplementary proposal to be submitted pending results of first year's study.

Kinds of Information

|  |        | Application |       |         |     | CATEGORY |
|--|--------|-------------|-------|---------|-----|----------|
|  | Family | Sub-Family  | Genus | Species | All |          |
| 1. Accepted name, describer, year                        |        |             |       |         | X   |          |
| 2. Name of type, describer, year                         |        |             | X     |         |     |          |
| 3. Location of type                                      |        |             |       | X       |     |          |
| 4. Species name (as in article)<br>(author, year, pages) |        |             | X     | X       |     |          |
| 5. Literature Citation                                   |        |             |       |         |     |          |
| a. Author, year  |        |             |       |         |     | X        |
| b. Title   |        |             |       |         |     | X        |
| c. Source  |        |             |       |         |     | X        |
| 6. Diagnosis   | X      | X           | X     |         |     |          |
| 7. Key   | X      | X           | X     |         |     |          |
| 8. Type locality   |        |             |       | X       |     |          |
| 9. Locality  |        |             |       | X       |     |          |
| 10. Type host  |        |             |       | X       |     |          |
| 11. Host   |        |             |       | X       |     |          |
| 12. Remarks  |        |             |       |         |     |          |
| a. Medical significance                                  |        |             |       |         |     | X        |
| b. Economic significance                                 |        |             |       |         |     | X        |
| c. Biological significance                               |        |             |       |         |     | X        |

had to follow without repeat of number

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

October 1968

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

DRP

Dear Dr. Roberts:

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

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

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

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

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

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

Sincerely,

David J. Rogers  
Professor of Biology  
Computer Center  
Texas Technical College  
Lubbock, Texas

DJR:gm

Dear Dr. Roberts:

Bill Hersh and I (and others in the lab.) have read your thoughtful proposal to NSF for funds for the micro-taxonomy, and I am especially study work. Since we have been through many proposals for our own work, some with success, some not so successful, we have developed some ideas which you may wish to consider.

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

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