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AUTHOR	Bull, Caroline Arden; Shank, Russell
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ABSTRACT

The purpose of this survey is to identify and describe existing and contemplated projects in the Smithsonian Institution which make use of non-conventional means to store and retrieve information. These techniques range from electronic machine processed to a simple visual, color-coded system or a key-sort device. The 49 projects investigated were those which pertained to activities other than routine administrative housekeeping functions. A particular effort was made to identify projects which were national or international in scope or went beyond the purely curatorial aspects of collection inventory and control. Emphasis was given to recent innovative or experimental projects. All information was gathered by personal interviews and on-site investigations. The projects investigated are listed and classified by museum or installation. A narrative description of each project is included in the Appendix. This is purely a survey; no hypotheses were formulated or tested. However, this report does attempt to pose some possible correlations and identify relationships which might be investigated and tested further. In assessing the requirements for making their systems viable, most felt the need for manpower with subject knowledge more than the need for electronic muscle. Other findings of the survey are summarized. (Author/NH)

NON-CONVENTIONAL FILE STRUCTURE DATA-COLLECTING PROJECTS IN THE SMITHSONIAN INSTITUTION: A SURVEY

WINTER 1968 - SPRING 1969

by

Caroline Arden Bull

and

Russell Shank

DEC 1970

OUTLINE

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Introduction

The purpose of this survey is to identify and describe existing and contemplated projects in the Smithsonian Institution which make use of non-conventional means to store and retrieve information. The adjective "non-conventional" is used to designate those methods which employ techniques other than simple alphabetical catalogs or lists to facilitate rapid sorting, filing and retrieving of data. These techniques range from electronic machine processes to a simple visual, color-coded system or a key-sort device.

Projects investigated were those which pertained to activities other than routine administrative housekeeping functions such as fiscal accounting, purchasing or personnel records. Each project considered is involved in some way with the research or educational function of the Institution. A particular effort was made to identify those projects which are national or international in scope or go beyond the purely curatorial aspects of collection inventory and control.

Emphasis in the survey was given to recent, innovative or experimental projects. Established programs such as the Science Information Exchange, International Exchange Service, and the Libraries were not considered for the purposes of this survey. Since all information for this project was gathered in personal interview and on-site investigations, the Astrophysical Observatory and STRI were not included due to their geographic distance from Washington, D. C.

A total of forty-nine projects were identified and described. A listing classified by museum or installation is given on the following pages. Included in the Appendix is a narrative description of each project. In some cases the description was prepared and issued by the division or unit involved, but for the most part the descriptions were written for this report by the investigator after the interview and visit to the installation.

This work was undertaken purely as a survey: no hypotheses were formulated or tested. As a result of this field study, this report will attempt to pose some possible correlations and identify relationships which might be investigated and tested further.

The investigator gratefully acknowledges the splendid spirit of cooperation and gracious hospitality offered by all those who were sought for interviews. All were generous in giving their time and interest to the support of this survey.

LIST OF PROJECTS OF DATA COLLECTING INVENTORY

Museum of Natural History

	Appendix Code
National Anthropological Archives Mrs. Margaret Blaker, Archivist	A.1
Feasibility Study to determine the usefulness of automatic data processing for Smithsonian-based activities connected with the Center for the Study of Man Dr. Priscilla Reining, Director	A.2
Catalog of Illustrations of Northeastern Indians done before 1860- International Survey Dr. William Sturtevant, Director	A.3
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Study of Lumbar Neural Arches of Aleut and Eskimo Skeletons Dr. Dale Stewart, Director	A.7
Study of Skeletal Age Changes in Young American Males Dr. Dale Stewart, Director	A.8
Analysis of Eskimo and Aleut Juvenile Skulls Dr. Lucile E. Saint-Hoyme, Director	A.9
Bibliography of Anthropometric Instruments Dr. Lucile E. Saint-Hoyme, Director	A.10
Index Nominum Genericorum Dr. R. S. Cowan, Director; Mrs. Ida Langman and Mrs. Mary F. Southwell, Bibliographers	A.11
Collection Management, Department of Botany Dr. Mason Hale, Director	A.12
Type Project, Department of Botany	A.13

	Appendix Code
Palearctic Migratory Bird Survey Dr. George Watson, Director	A.14
Pacific Ocean Ornithology Project Mrs. Jane P. Church, Director	A.15
Inventory of Specimens of Central Pacific Sea Birds - International Inventory Mrs. Jane P. Church, Director	A.16
MUDPIE and varied activities in herpetological research using automatic data processing Dr. James A. Peters, Director	A.17
Catalog of Primates Dr. John Napier, Director	A.18
Catalog of Butterflies Mr. William Field, Director	A.19
Bibliography of Stomiatoid Fishes Dr. Robert Gibbs and Mr. Richard Goodyear, Directors	A.20
Bibliography of the Marine Malacology of the Indo-Pacific Region Dr. Harald Rehder, Director	A.21
Bibliography of Oceanic Rocks Dr. Thomas Simkin, Director	A.22
General Petrology and Geology Reprint File Dr. Thomas Simkin, Director	A.23
Information Storage and Retrieval System for Biological and Geological Data Dr. D. F. Squires, Director	*
Flora of North America Project Dr. Stanwyn Shetler, Director	*

Museum of History and Technology

Survey of White House Furnishings Mrs. Margaret B. Klapthor, Director	B.1
National Inventory of Scientific Instruments Mr. Silvio Bedini, Director	B.2
Catalog of Political or Campaign Bandannas and Kerchiefs Mr. Herbert Collins, Director	B.3

* Information available at project office

	Appendix Code
National Inventory of Political Campaign Objects Mr. Herbert Collins, Director	B.4
Catalog of Political Campaign Objects in the Smithsonian Collection Mr. Philip Brooks, Director	B.5
Description of Museum Objects, Division of Cultural History Mrs. Betty Walters, Director	B.6
Catalog of U. S. Covers and Postal Stationery Mr. Carl Scheele, Director	B.7
Iconography File of Musical Subjects Mrs. Cynthia Hoover, Director	B.8
Architectural Records of American Buildings and Buildings by American Architects in other Countries Mrs. Moira Mathieson, Director	B.9
Industrial Archeology: New England Textile Mill Survey Mr. Robert M. Vogel, Director	B.10
International Survey of Industrial Buildings Mr. Robert M. Vogel, Director	B.11
Catalog of All Objects in MHT Collections which Incorporate Feedback Mechanisms Dr. Otto Mayr, Director	B.12
Bibliography of Printed Material on Feedback in Engineering Dr. Otto Mayr, Director	B.13
Catalog of Mathematical Devices in the Smithsonian Collection and Bibliography of Mathematical Machines and Instruments Dr. Uta Merzbach, Director	B.14
History of Computers Project Dr. Uta Merzbach, Director	B.15
Information Retrieval System for Engineering Drawings of Ships Dr. Melvin Jackson, Director	B.16
Other Museums and Installations	
System for Recording Action taken on objects sent to Conservation-Analytical Laboratory Mr. Maurice Salmon, Director	C.1
Catalog of American Portraits Mrs. Virginia Purdy, Director	D.1

	Appendix Code
National Air and Space Museum Historical Research Center Mr. Ernest Robischon, Director	E.1
Catalog of the Production of Curtis Aircraft 1900-1950 Mr. Louis Casey, Director	E.2
Catalog of All Aircraft and Aircraft Engines in Museums of the Free World Mr. Louis Casey, Director	E.3
Joseph Henry Documents and the Libraries of Joseph Henry and Alexander Graham Bell Dr. Nathan Reingold, Director	F.1-2
Animal Records, National Zoological Park Mr. Donald Bridgwater, Director	G.1
Oceanographic Sorting Center Mrs. Betty J. Landrum, Director	*

* Information available at project office

Summary of Findings

1. Forty-nine projects were examined.

2. Twenty-three are using or are anticipating using, some sort of machine assistance in storing and retrieving information.

3. Seventeen projects are either using or anticipating the use of some manual (mechanical) techniques for the rapid retrieval of data.

4. Nine projects are using conventional card files or lists as a means of data collection.

5. Twenty-two of the projects are involved with other institutions or agencies either by way of contract or informal cooperation.

6. Thirty-one represent work being done purely to further the research and educational functions of the Smithsonian through supportive research files, collection maintenance and publications.

7. More projects (nearly 45 percent) relate to artifact and object description (non-biological) than any other type. The second largest category (nearly 35 percent) is made up of those projects dealing with biological subjects.

8. More projects in biology are using automatic means to store and retrieve data than are projects in the physical sciences, history and technology.

9. Of the systems using key-sort or some other rapid manual methods for retrieval 47 percent are devoted to the descriptions of artifacts.

10. Nineteen of the systems have files of less than one thousand entries.

11. Eight of the ten projects with a file size of 10,000 or more entries are either using or contemplating using automatic data processing.

12. In every case, the highest level of satisfaction with new systems and methodology can be found wherein the researcher and curator was heavily involved in the design of the system and in controlling the input.

13. The most critical factor in all of the systems is the validity of the data entered and the positive relationship of the degree of expertise of the person making the entry with the reliability of the entry.

14. The highest level of user satisfaction is evident in those projects in which the coding and key punching (or hole punching in Termatrex systems) are done by professional staff.

15. In assessing the requirements for making their systems viable, most of those people who were conducting experiments and demonstrations felt the need for manpower with subject knowledge more than the need for electronic muscle.

Methodology

Identification of the projects was accomplished in various ways. Most of them were listed in a report of a similar survey done by Dr. Monroe Freeman in 1967-68.[1] A follow-up interview with directors of those projects was scheduled in all but two instances. Dr. William Crocker, who is gathering cultural data on Canela Indians, was on sabbatical leave. Included with the Freeman Report was a memorandum from Dr. D. F. Squires to Dr. Hersey at SIE dated December 14, 1967, which listed, along with other projects, one being conducted by Dr. Leonard Shultz involving documentation and analysis of shark attacks. It was not possible to talk with Dr. Shultz, so no information is included on that project in this report.

Further identification of projects was made by a careful reading of the Smithsonian Year for 1965, 1966 and 1967. Any mention of a file or data collecting activity was noted. Five of the projects were discovered in this manner.

Still another source of information was a questionnaire sent out by the Director of Libraries to all professional staff in December 1968. Although part of a separate research project to identify bibliographic activity in the Institution, responses to these questionnaires gave leads to bibliographic files which are being handled in a non-conventional manner. Two of the projects were identified in this way. Identification of the remaining seventeen projects was accomplished through serendipity, luck, and through the pursuit of tips provided by employees.

Appointments were made by telephone with the directors of the projects and interviews were scheduled. Although there were certain basic points covered in each discussion, for the most part the interviews were unstructured and extemporaneous. In some cases conclusions were drawn by the investigator as systems were examined and some of the descriptions reflect the investigator's opinions. For the most part, however, descriptions of the systems are given as offered by the project's director.

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[1]Monroe Freeman, "Information and Communication," unpublished report presented to Dr. Sidney Galler, January 26, 1968.

The principal questions covered in each interview were:

1. Describe the project and the information processing system. (In the case of those projects listed in the Freeman Report, a brief resume of the description given there was offered by the investigator and the subject was asked to comment on the correctness of the description and to add current facts.)

2. How large is the field of inquiry; how much information has been processed and what is the rate of growth of the file?

3. For those systems which are in operation, either totally or in part, how effective are they and is the user satisfied with the efficiency of the system?

4. If the system is in the planning stage or only partially in operation, what is needed to facilitate implementation?

By using these key questions and other subsidiary queries such as methods of approach to the file, nature of the objects or body of knowledge represented by the file and frequency of use, a description of the operation was ascertained. The appended resumes of each project are written in terms of description of the material and the system and in what is entered ("input") and what is retrieved ("output").

Types of Retrieval Systems Employed

The forty-nine projects may be classified as (1) those already using or contemplating using automatic data processing, (2) those using or contemplating using key-sort or other rapid retrieval manual systems and (3) those using conventional files with no plans for converting to another system. The projects are displayed by type in Table 1, p. 12.

Twenty-three of the projects fall into the category of those using or contemplating the use of ADP. Fifteen of these are actually using some form of automatic data processing. This use ranges from the highly developed Information Storage and Retrieval System for Biological and Ecological Data directed by Dr. Squires to the relatively simple system of punched cards employed by Dr. Jackson in the system for Engineering Drawings of Ships. The latter project could also fall into the manual access category, with its capability for searching the card deck by means of a needle drop.

The Architectural Records of American Buildings project also falls into the ADP and rapid manual categories in that the project was begun using McBee key-sort cards but at the present time the recorded information is being transferred to paper tape. Since the fate of this project is still very much in doubt, it is impossible to predict how much of the data will be converted to machine-readable form.

Of the eight systems which are seriously contemplating using automatic processing only two are employing rapid manual systems at this time. They are the previously mentioned Architectural Records Survey and the Animal Records project at the National Zoological Park. Both of these are on McBee key-sort cards.

Five of the projects looking toward automatic processing are presently using conventional card files. The most elaborate of these in the Index Nominum Genericorum (ING), with a file of over 29,000 entries, cross-indexed three ways and growing at a rate of 8,000 entries annually.

The file of the National Anthropological Archives is larger, but plans for converting to ADP are not so well defined as those of the ING. The Anthropological Archives will be examined in the feasibility study proposed by Dr. Reining. This study makes the eighth project anticipating the use of machine processing, but since it is only a proposal to study a possibility it has no data bank and cannot be classified by its type of file.

Seventeen projects are either using or anticipating the use of some manual system for the rapid retrieval of data. The McBee key-sort method is by far the most popular. Fourteen files are so coded. The remaining three, all in the National Museum of History and Technology, are using or planning to use the Termatrex light board system. The original use of the Termatrex system was made by Mrs. Walters with the description of ubjects in the Division of Cultural History. The Conservation-Analytical Laboratory has been using Termatrex with great satisfaction since early 1969. Members of the Political History staff are planning to test the adequacy of the light system on the political campaign objects collection.

The Joseph Henry Documents project and the National Inventory of Scientific Instruments make some use of colored tabs for visual identification, but this is incidental and not a primary retrieval device.

The directors of the nine projects using conventional card files or lists have chosen these methods for various reasons. In most cases the scope or nature of the material indexed does not warrant the use of rapid sorting or filing. In both the Dictionary of Tzotzil project

and the Catalog of Butterflies the directors felt that the information to be coded is so highly specialized and technical that the cost of converting to machine-readable form would be more than continuing to use conventional methods. Both fear a loss of integrity of the file if the data were to be so translated. The director of the Catalog of Primates expressed a distrust of mechanized systems and a general antipathy toward automatic data processing of any kind.

Table 1

Projects and Type of File Systems

Using ADP	Contemplating Using ADP	Using Key-Sort or other Rapid Manual System	Contemplating Using Key-Sort or Other Rapid Manual System	Using Conventional File
1. Information storage and Retrieval System for Biological and Geological Data.	1. National Anthropological Archives	1. Annotated Bibliography of Korean Anthropology and Annotated Bibliography of Japanese Ainu Policy	1. Catalog of Illustrations of Northeastern Indians done before 1860	1. Dictionary of Tzotzil
2. Analysis of Eskimo and Aleut Juvenile Skulls	2. Feasibility study to determine usefulness of ADP for Center for Study of Man	2. Study of Lumbar Neural Arches of Aleut and Eskimo Skeletons	2. General Petrology and Geology Reprint File	2. Bibliography of Anthropological Bibliographies
3. Dept. of Botany Collection Management	3. Index Nominum Genericorum	3. Study of Skeletal Age Changes in Young American Males	3. Catalog of Political Campaign Objects in the Smithsonian Collection	3. Catalog of Primates
4. Dept. of Botany Type Project	4. Palearctic Migratory Bird Survey	4. Bibliography of Anthropometric Instruments		4. Catalog of Butterflies
5. Flora North America	5. Bibliography of Oceanic Rocks	5. Inventory of Specimens of Central Pacific Sea Birds		5. Survey of White House Furnishings
6. Pacific Ocean Ornithology	6. Iconography File of Musical Subjects	6. Bibliography of Stomiatoid Fishes		6. National Inventory of Scientific Instruments
7. MUDPIE and other herpetological research	7. Architectural Records of American Buildings	7. Bibliography of Marine Malacology of the Indo-Pacific Region		7. Catalog of Political or Campaign Bandannas
8. Catalog of U.S. Covers and Postal Stationery	8. Animal Records, National Zoological Park	8. Description of Museum Objects, Division of Cultural History		8. National Inventory of Political Campaign Objects
9. Catalog of Mathematical Devices and Bibliography of Mathematical Machines		9. Industrial Archeology: New England Textile Mills		9. National Air and Space Museum Historic Research Center
10. History of Computers		10. International Survey of Industrial Buildings		
11. Information System for Engineering Drawings of Ships		11. Catalog of Feedback Mechanisms		
12. Catalog of American Portraits		12. Bibliography on Feedback in Engineering		
13. Catalog of Aircraft and Aircraft Engines in Museums of the Free World		13. Information System for Conservation Analytical Laboratory		
14. Joseph Henry Documents		14. Catalog of Production of Curtis Aircraft 1900-1950		
15. Oceanographic Sorting Center				

Types and Scope of Projects

Some idea of the purposes and the scope of the projects may be had by examining them according to the following classifications:

International/National Inventories
Cooperative Ventures with other Institutions or Associations
In-House, Supportive Research Files
Collection Maintenance
Publications: Catalogs, Dictionaries, etc.
Contract Work for Other Government Agencies

A listing by this type is given in Table 2, page 14. In some cases a project does not fall into a single classification, but must be listed in two to give a proper representation of dual purposes. Although several could be placed in more than one category, this has been done only when the significance of the purposes appears to be equal.

Fifteen of the projects are involved with international or national inventories of some kind and five are cooperative ventures with other institutions or associations.

Of those which serve only the programs and functions of the Smithsonian, by far the largest number are involved with in-house, supportive research files. There are fourteen projects of this nature. Half of them relate to bibliographic files, resulting either from concentrated literature searches or incidental citations found in general reading and reprint collections.

Specimen or collection maintenance is the primary goal of the record keeping in thirteen of the projects. Although several of the directors of these projects have indefinite plans for publishing the catalogs primarily designed for collection inventory, only seven of the projects are designed with publication as the principal aim.

Three of the projects are a result of contract obligations to other government agencies.

Examination of the projects by scope and purpose shows that twenty-two are involved with other institutions or agencies either by way of contract, cooperation or inventory of holdings. Thirty-one[1] represent work being done purely to further the research and educational functions of the Smithsonian through supportive research files, collection maintenance and publications.

[1]Although the Index Nominum Genericorum and the Flora of North America are listed in Table 2 under "Publications", they are not counted in this number since they are not purely Smithsonian publications.

Table 2

Scope of Projects

International/National Inventories	Cooperative Ventures With Other Institutions or Associations	In-House, Supportive Research Files	Collection Maintenance	Publications: Catalogs, Dictionaries etc.	Contract Work For Other Government Agencies
1. National Anthropological Archives 2. Catalog of Illustrations of Northeastern Indians 3. Index Nominum Genericorum 4. Palearctic Migratory Bird Survey 5. Inventory of Specimens of Central Pacific Birds 6. Survey of White House Furnishings 7. National Inventory of Scientific Instruments 8. Catalog of Political or Campaign Bandannas 9. National Inventory of Political Campaign Objects 10. Architectural Records of American Buildings 11. Industrial Archeology: New England Textile Mills Survey 12. International Survey of Industrial Buildings 13. History of Computers 14. Catalog of American Portraits 15. Catalog of All Aircraft and Aircraft Engines in Museums of the Free World	1. Feasibility study for Center for the Study of Man 2. Pacific Ocean Ornithology 3. MUDPIE 4. Flora of North America 5. Oceanographic Sorting Center	1. Study of Lumbar Neural Arches, Aleut and Eskimo Skeletons 2. Analysis of Eskimo and Aleut Juvenile Skulls 3. Bibliography of Anthropometric Instruments 4. Catalog of Butterflies 5. Bibliography of Stomiatoid Fishes 6. Bibliography of the Marine Malacology of the Indo-Pacific Region 7. Bibliography of Oceanic Rocks 8. General Petrology and Geology Reprint File 9. Survey of White House Furnishings 10. Bibliography of Printed Material on Feedback in Engineering 11. Bibliography of Mathematical Machines and Instruments 12. System for Action Taken on Objects Sent to Conservation-Analytical Laboratory 13. National Air and Space Museum Historical Research Center 14. Catalog of the Production of Curtis Aircraft 1900-1950	1. Dept. of Botany Collection Management 2. Dept. of Botany Type Project 3. Catalog of Primates 4. Catalog of Political Campaign Objects 5. Description of Museum Objects, Div. of Cultural History. 6. U.S. Covers and Postal Stationery 7. Iconography File of Musical Subjects 8. Catalog of All Objects in MHT Collections Incorporating Feedback Mechanisms 9. Catalog of Mathematical Devices 10. Information Retrieval System for Engineering Drawings of Ships 11. Animal Records, National Zoo 12. Information System for Biological and Geological Data 13. Oceanographic Sorting Center	1. Dictionary of Tzotzil 2. Annotated Bibliography of Korean Anthropology and Bibliography of Japanese Ainu Policy 3. Bibliography of Anthropological Bibliographies 4. Index Nominum Genericorum 5. Flora of North America 6. Joseph Henry Documents 7. Libraries of Alexander Graham Bell and Joseph Henry	1. Study of Skeletal Age Changes in Young American Males 2. Pacific Ocean Ornithology 3. Oceanographic Sorting Center

Extent of Project Development and Size of Files

It follows logically that with so many diversified subjects and systems, the stages of development and size of files vary widely. Some projects are involved with data in a closed series, some are limited to selected data in a demonstration project, some are designed to go on collecting forever. File sizes range from no entries at all to over one and a half million entries.

Of the forty-nine projects, twenty-eight may be classified as continuing projects. Twenty-one of these are actively engaged in collecting and entering information into the files. Of the seven inactive, continuing projects, four are bibliographical, two are international inventories and one is involved with collection maintenance. All are inactive for the same reason: lack of time to devote to the project on the part of the director. It should come as no great revelation that the fastest growing files are those which have the largest number of people dedicated to their continuation and maintenance. Much of the success of the rapidly growing Catalog of American Portraits is attributable to the enthusiastic interest of volunteers from the historical societies throughout the states. Rate of file growth appears to be linked to consistency, continuity and dedication of staff time.

Eleven of the projects were involved with a closed series, such as the Skeletal Age Changes in American Males, the New England Textile Mill Survey and the Dictionary of Tzotzil. Although the files are of continuing usefulness for reference, there is no more input.

Six of the projects have barely begun to collect information and two are only in the planning stages and do not have a determined system design.

Two of the projects are being operated as pilot programs and therefore have a limited data base. The Information Retrieval System for Biological and Geological Data plans for about one million entries in the system as it is now operating, but the optimum is over five million if the project is continued to its conclusion. The plans for the Catalog of Political Campaign Objects project call for describing only 4,000 objects out of a collection of almost 9,000.

For the most part, the number of entries is small. Nineteen of the systems have files of less than one thousand entries. Fifteen have between one thousand and ten thousand entries. Four have between fifteen and eighty thousand, while only two have a million or more.

Nine of the project directors were unable to make an estimate as to the size of the file, either because the project was not sufficiently underway or the data had not been codified in such a manner that separate entries could be counted.

Eight of the ten projects with a file size of 10,000 or more entries are either using or contemplating using automatic data processing. The two exceptions here are the Inventory of Specimens of Central Pacific Seabirds which is on McBee key-sort cards and the Catalog of Butterflies which is contained in a conventional card file.

It is impossible to conclude from this if automatic processing is employed because of the magnitude of the file, or if the file is of such a magnitude because automatic processing is being employed. Five of the nineteen projects with files of one thousand or less entries are using automatic processing. None of the other fourteen directors of the projects having small files is contemplating using automatic retrieval means.

Correlation of Type of System with Type of Data Handled

In an attempt to ascertain if there is something intrinsic in the nature of subject of the data collected which makes it more adaptable to a particular type of retrieval system, certain calculations have been made.

The projects were grouped according to type of subject emphasis in the following categories:

Biological
Artifact
Biographical
Geographical
Artifact/biographical
Artifact/geographical
Biological/biographical
Linguistic
Academic subject disciplines
Established classification scheme
Not classifiable

Table 3 on page 17 indicates these relationships.

Here it can be seen that more projects relate to artifact or object description than any other type, with a total of twenty-two, or forty-five percent. The second largest category is made up of those projects dealing with biological subjects which number eighteen, or almost thirty-seven percent.

However, of those projects which make use of automatic data processing, the ones dealing with biological data far outnumber any others with a total of over forty-seven percent.

Table 3

Correlation of Type of System
With Subject of Data Handled

Type of System	Biological	Artifact	Biographical	Geographical	Artifact/ Biographical	Artifact/ Geographical	Biological/ Biographical	Linguistic	Academic Discipline	Established Classification Scheme	Not Classifiable
All Systems (49)	17	12	3	2	9	1	1	1	1	1	1
Using or Contemplating ADP (23)	10	4	2	1	4		1				1
Using or Contemplating Rapid Manual System (17)	5	8	1			1			1	1	
Using Conventional System (9)	2			1	5			1			

It is here suggested that a possible reason for this is the established system of biological nomenclature, internationally accepted and understood which makes any subject employing these universal descriptors more adaptable to machine coding and retrieval.

On the other hand, an object, unless associated with a unique person, time or place, is, in the eye of the beholder, a what-you-may-call-it. One man's antimacassar is another man's doily.

It is here offered for speculation that if there is an inherent difference in data generated about organic subjects, as opposed to inorganic, it is this: an organic subject may be described specifically, as an individual, and not in terms of its components, whereas, the inorganic subject must be described in terms of its component parts, in relation to some dimension of time or space, or in relation to its purpose or a personality. Although an object may be unique it is never identifiable as such except in terms of some other thing, place, period, purpose or person.

It is also possible that psychological factors enter into the selection of a machine retrievable system by biological scientists and the rejection of such a system by those scholars engaged in humanistic research. Although it is not the purpose of this study to pursue these questions, they are posed here as possibly being worthy of further investigation.

For whatever reasons, more biological projects in the Smithsonian Institution are using automatic means to store and retrieve data than are projects which are in the realms of the physical sciences, history or technology.

Artifact description accounts for forty-seven percent of those systems using key-sort or other rapid manual methods for retrieval, with biological subjects making up thirty percent of the systems handled in this manner.

A possible explanation for the use of the manual systems for artifact description is the flexibility of such systems for adding and coordinating descriptors without restriction. Many descriptors are necessary to express the relationships mentioned earlier as being intrinsic to artifact identification. Another reason could be found in the use of many of the systems for inventory or collection control. A readily accessible file is necessary for both adding data and recalling it at frequent intervals. As studies in information seeking have shown, ease of access is a primary criterion in the selection of a source.[1]

[1]Herbert Menzel, "Information Needs and Uses in Science and Technology," in Carlos A. Cuadra, ed. Annual Review of Information Science and Technology, vol. I, New York, Interscience Publishers, 1966, p. 65.

Of those systems using conventional means, fifty-six percent are concerned with collecting data on artifacts in conjunction with biographical material. All but one of these projects are carried on in the Museum of History and Technology and represent small files where the relevance of the personality involved with the object is of primary significance. The exceptional case here is the National Air and Space Museum Historical Research Center. This installation involves archival material, photographs, films, microfilms, monographs and journals. It is classified here as using conventional means, in that there is no "non-conventional" device used, as earlier defined. However, the Research Center is certainly not arranged or controlled in the usual manner of a library. It might be said to use conventional methods in an unconventional manner.

Correlation of System Design and User Satisfaction

In every case except one, the users of the systems expressed a degree of reasonable satisfaction with systems which were fully or partially in operation. Obviously, there could be no evaluation of those systems which are only in planning or beginning stages. The single instance of dissatisfaction occurs in the Pacific Ocean Ornithology Project. Reasons for this disquietude are given at length in the description of the project included in the Appendix.

All of the users of manual or conventional systems who are anticipating converting to machine methods might be said to be dissatisfied with their present systems, or otherwise, they would not be planning a change. However, this is not relevant to the correlation sought here.

Although no definitive measuring device could be employed to calibrate the exact level of satisfaction, the investigator attempted to make assessments based on the verbal statements of the subjects. It is concluded that the highest level of satisfaction occurs in every case in which the user designed the system and directly controls the input into the file. Examples are Dr. Merzbach's Computer History Project, Mrs. Mathieson's Architectural Records Survey and the Information System for Biological and Geological Data, all of which employ machine methods. The point here is that the greater the control the project head has over the input, the greater will be his satisfaction with the output. This fact was also evidenced in those manual systems which were not destined for conversion.

Inversely, those directors of projects most opposed to machine retrieval gave as their reason loss of control and possible loss of integrity of date and information at the point of entering the data into the file.

In every case, when the question of use of automatic processing was raised, the director pointed to the need for highly qualified personnel to do the coding and key punching of data. However, it is known that in those projects in which the coding and key punching (or hole punching in the case of Termatrex) are done by professional staff, in office, there is the highest level of user satisfaction.

Whether in expressing satisfaction with the system, or in assessing staff needs, the directors consistently pointed to the crucial moment of entering data into the files. It appears that the most critical factor in all systems is the validity of the data entered and the positive relationship of the degree of expertise of the person making the entry with the reliability of the entry. In other words, the brighter the human input, the more valuable the machine output.

Assistance Needed to Implement Projects

Directors of twenty-two projects expressed a need for assistance of some kind to further the effectiveness of the information systems. Some idea of the major needs may be had by categorizing the kinds of assistance requested as shown in the following table.

TABLE 4

TYPE OF ASSISTANCE	NUMBER OF REQUESTS
Staff:	
Professional	13
Clerical	2
Student or intern	3
Total	18
Additional time for existing staff	8
Funds for publishing, equipment, etc.	9
Technological advice	3

By far the most frequent request was for professional staff. Thirteen directors pointed to the lack of qualified researchers, catalogers and bibliographers as their greatest handicap. As was mentioned earlier, there was great concern over the capability of the individual doing the actual coding and punching of data. Two directors asked for clerical assistants, particularly typists. Three need graduate student help, or at least summer interns with subject knowledge of the field of study being coded.

Deep sighs accompanied the expression of a need for more time on the part of the director and his existing staff to devote to the project at hand. Eight projects could be assisted if other staff duties could be eased. Nine projects need funds for equipment, computer time or for publishing ventures.

Although the Information Systems Division has participated in some way in the design or functioning of eighteen of the forty-nine projects, only three directors expressed a desire for more technological advice before proceeding. Two of these projects are under the same director and he is quite candid in expressing his feeling of inadequacy in designing an efficient system.

Whether the project directors have assessed their needs correctly can not be determined by this survey, but the fact remains that most think they need brain power more than electronic muscle to make their project succeed.

DATA COLLECTING PROJECTS
INVENTORY

April 3, 1969

PROJECT

National Anthropological Archives

DIRECTOR

Mrs. Margaret Blaker, Archivist, Department of Anthropology

DESCRIPTION

This project is to be included in the feasibility study being prepared by Dr. Priscilla Reining and the Center for the Study of Man. It is treated here as an example of a well-established, independent system which has potential for machine retrieval even if the other more recently instituted programs do not receive funds to allow them to continue and expand.

The name "National Anthropological Archives" was given officially to the operation on November 1, 1968. Before that time it was known as the Office of Anthropology Archives, being an outgrowth of the Archives of the Bureau of American Ethnology, established in 1879. The collection of manuscript materials is retrospective to 1848.

The scope of the collection is broad, including all of North American anthropology, and in the past, that of native peoples of lands under United States jurisdiction. The manuscripts and other archival materials relate principally to North American Indians. This is the largest single collection of its kind in the world. There are approximately 40,000 manuscript items and 50,000 black and white photographs in the collections.

INPUT

There are two major collections of material in the Archives: the manuscript and the photographic files. Each of these has been cataloged descriptively. These catalogs are maintained in card files. There are some gaps in the manuscript card catalog, which was begun in the late 19th century, but steps are being taken to revise this catalog and to supply and verify descriptive information. There is subject access to both the archival and photographic files by personal and place names. The photographic file has additional subject access by such headings as "habitation," "weapons," etc.

OUTPUT

According to Mrs. Blaker, a proposed project she calls "Landmark" could complete for publication a full catalog of manuscripts by 1973. She has presented this project in the form of a proposal to the Department of Anthropology. She estimates that approximately one-fifth of the card catalog has been revised, and that it will take 10 analyst-years to complete the job. At the present time the section of the catalog relating to the Sioux is ready for publication. It is Mrs. Blaker's hope that the entire catalog can be published serially, as work on each section is completed.

Lists of the photographic files are published on an "opportunistic" basis. Although it would be highly desirable to publish a full catalog, lack of staff allows only a "compromise" step. As requests for photographs on a special subject come in, and the files are searched, a list is prepared for the inquirer. A copy of that list is kept in a looseleaf binder in the Archives office. These lists are arranged in the binder by subject for quick referral. There are approximately 180 of these special subject lists now on file.

Mrs. Blaker stated that it would be difficult to estimate the amount of "in-house" use which is made of the files by Smithsonian scientists. She estimates that her office handles over 30 inquiries per week from researchers and teachers. The number of requests from school children varies seasonally, but there are many during the school year. Most of these can be answered with one of 28 prepared lists, which have been compiled on popular subjects. The greatest handicap to client satisfaction here is the length of time required to furnish photographic prints. Frequently as long as eight weeks may elapse before a print is received by a requester.

Mrs. Blaker recognizes the potential in her office for giving expanded service and she is taking steps to acquire the technological and research assistance which is needed. It appears, once more, to be a question of staff and money.

DATA COLLECTING PROJECTS
INVENTORY

March 20, 1969

PROJECT

Feasibility study to determine the usefulness of automatic data processing for Smithsonian based activities connected with the Center for the Study of Man

DIRECTOR

Dr. Priscilla Reining

DESCRIPTION

The Center for the Study of Man plans to present a proposal for a feasibility study to the National Science Foundation for approval and subsequent funding. The study is to include all activities concerned with the Center for the Study of Man. Among these are: film archives, international bibliography of current anthropology, and the National Anthropological Archives.

Besides these programs, which are in varying degrees of development, the proposal is seeking funds to study the feasibility of establishing an international clearinghouse for research in process. This clearinghouse will attempt to identify and publicize (1) urgent research which needs attention; (2) current on-going research; (3) completed research including all data generated by it, such as field notes, manuscripts, films and tapes.

Another area to be investigated is the possibility of identifying and circulating information to the scholarly community on the objects of research, such as languages, tribes, physical types, populations, sites of archeological digs, etc.

A third goal of the proposed study is to determine if certain directory information can be collected and disseminated by automatic process. The directories would be the fifth edition of the International Directory of Anthropologists and the fifth edition of the Directory of Anthropological Institutions.

The journal, Current Anthropology, will be used as the publication vehicle for both the bibliography and for research in progress.

DATA COLLECTING PROJECTS
INVENTORY

May 7, 1969

PROJECT

Catalog of Illustrations of Northeastern Indians done before 1860 - International Survey

DIRECTOR

Dr. William Sturtevant

DESCRIPTION

This project, now about ten years old, is being done principally to support Dr. Sturtevant's own research. Through a search of picture and print collections in libraries and museums both in the United States and Western Europe, Dr. Sturtevant has so far discovered over 2,000 graphic representations of Northeastern Indians. By assigning a cut-off date of 1860, he excludes photographs.

Although the files are now maintained on typewritten cards, arranged by tribe, repository and artist (if known), Dr. Sturtevant is seriously considering transferring the data to key-sort cards to allow for more rapid searching.

INPUT

Each entry includes tribe, repository and known artist. A description of the artifacts or other items shown in the illustration is written on the card in narrative form. There is no thesaurus or set list of descriptors, but Dr. Sturtevant estimates that there are about 50 terms which occur consistently.

The most pressing need at this time is for assistance in searching old periodicals and serials in library collections in the United States. Dr. Sturtevant estimates that several volunteers or summer interns could complete the search in three or four months. He also pointed to the fact of his own limitations in time to devote to the project and funds for travel abroad to examine European collections.

OUTPUT

It is hoped that an index or catalog of illustrations might someday be published, but for the present, the file serves only as support to Dr. Sturtevant's research and teaching.

DATA COLLECTING PROJECTS
INVENTORY

April 2, 1969

PROJECT

Dictionary of Tzotzil

DIRECTOR

Dr. Robert Laughlin, Associate Curator, Latin American Anthropology

DESCRIPTION

After seven years of research, work on the dictionary is nearing completion and a publication date early in 1970 is anticipated. Although some portions of the dictionary were coded and put into machine-readable form in 1968, Dr. Laughlin sees little value in following the same procedure for the entire work.

A group of students at Harvard University produced a basic dictionary, from Dr. Laughlin's research, during the summer of 1968. This publication, in machine print-out format, is used as a basic vocabulary handbook for work in the field.

Dr. Laughlin worked with the Smithsonian Information Systems Division to prepare a program for machine production of a handbook for identification of plant names. The idea of using automatic data processing in the production of the Tzotzil dictionary, or in any portions of it which might be published as handbooks, has, however, been abandoned.

DATA COLLECTING PROJECTS
INVENTORY

March 13, 1969

PROJECT

Annotated Bibliography of Korean Anthropology and Annotated Bibliography of Japanese Ainu Policy

DIRECTOR

Mrs. Chang-Su Houchins, Museum Specialist, Human Relations Area Files, Department of Anthropology.

DESCRIPTION

The files of these bibliographies are made up of more than 500 entries, representing journal articles and monographs in the Korean or Japanese language which are housed in the Library of Congress collections. Entries are on key sort cards. Mrs. Houchins assigned subject descriptions to each of the articles or books examined and entered. She chose five major categories: (1) General References (2) Ethnology and Social Anthropology (3) Material Culture (which has two subheadings: (a) Archeology (b) Fine Arts, Handicrafts and other ethnographic objects), (4) Linguistics (5) Physical Anthropology. The cards are designed to accommodate categories from the classification scheme used by the Human Relations Area Files which may be assigned to a given article. Since Mrs. Houchins is also the keeper of the Area Files, she has a thorough knowledge of the Scheme and ready access to the classification tables.

INPUT

For these and subsequent bibliographies, Mrs. Houchins examines all titles listed and evaluates and annotates the work. The file card bears full bibliographic data, in the standard form accepted for anthropological literature citations, annotation and the subject categories are punched.

OUTPUT

The Korean bibliography was published in December 1968 by the National Assembly Library, Republic of Korea. This publication gives full annotation in English, with citations given in both English and Korean. It is arranged in sections according to the five major subject areas, and alphabetically by author within each area.

DATA COLLECTING PROJECTS
INVENTORY

April 10, 1969

PROJECT

Bibliography of Anthropological Bibliographies

DIRECTOR

Dr. Gordon Gibson, Curator of Old World Anthropology

DESCRIPTION

This work, on Africa, is a companion piece to a bibliography of bibliographies on the Americas which was published in Current Anthropology in 1960. Dr. Gibson says that this is the last such compilation he will undertake himself, but he hopes that the work will be carried on.

The African bibliography covers material written from about 1875 to 1968. There are 872 entries. The work will be published in Current Anthropology about August 1969.

Every item listed in the bibliography has been examined by Dr. Gibson and he has cited items held in 31 different libraries.

Each entry is annotated and by a coding scheme which Dr. Gibson developed, each is numerically classified as to subject. He has prepared an index to the bibliographies and has allowed for pointing out significant parts of longer, more general bibliographies.

Citations are entered on 3 x 5 cards. Subject classifications are assigned and added to the cards after each reference is examined.

Dr. Gibson stated that at no step in the collecting would key-sorting or machine sorting methods have been to any advantage. He feels that the published work and its accompanying index fulfill the needs of the work's potential users.

DATA COLLECTING PROJECTS
INVENTORY

April 15, 1969

PROJECT

Study of Lumbar Neural Arches of Aleut and Eskimo Skeletons

DIRECTOR

Dr. Dale Stewart, Senior Physical Anthropologist

DESCRIPTION

This study, done in 1955-56, involved over 600 skeletons in the Smithsonian collection. The purpose of the research was to examine the possibility that certain skeletal characteristics predispose to defects in the lumbar neural arches. Results of the findings were published in Clinical Orthopedics, no. 8, 1956.

INPUT

Data on the 600 specimens was entered on McBee keysort cards. There were 12 major categories by which information was recorded and may be retrieved. These include sex, age, locality of origin, presence of arthritis, condition of arch, sacrum of arch, separation of arch, and spina bifida.

OUTPUT

This descriptive file is used frequently by Dr. Stewart in the course of his own research and is in demand by outside scholars and medical men. It has been consulted for information by physicians performing bone and joint surgery. A by-product of organizing the file was the revision of the catalog cards pertaining to the specimens under study. According to Dr. Stewart, in many cases when a specimen was added to the collection diagnoses rather than descriptions were entered on the catalog card. In the light of more recent research many of these diagnoses were found to be faulty.

Although this work was done over 14 years ago, the descriptive record, with easy keysort access, is still valid and useful. There is no plan to put the data into machine-readable form.

DATA COLLECTING PROJECTS
INVENTORY

April 15, 1969

PROJECT

A Study of Skeletal Age Changes in Young American Males

DIRECTOR

Dr. Dale Stewart, Senior Physical Anthropologist

DESCRIPTION

This study was done in 1957 at the request of the Army's Quartermaster Research and Development Office. Results of the research were published in Technical Report EP 45 in May 1957. The work involved the examination of 450 skeletons of American soldiers killed in North Korea. Dr. Stewart pointed out that this was an opportunity to study comparatively a homogeneous sample of young, physically fit males who died traumatically rather than from pathological causes.

INPUT

All data was recorded on keysort cards. Approximately eight skeletons were examined and measured each day. With the assistance of military clerical workers and laboratory technicians, Dr. Stewart recorded by means of a pencil mark on the keysort cards all pertinent data. A clerk then punched the appropriate slots. Two cards were prepared for each specimen. The first indicated age, race, country of national origin, state of preservation, tooth eruption and suture closure. The second card included information on epiphyses, vertebrae, sternum, fusion of sacral vertebra, and presence of arthritis.

The keysort cards were designed by Dr. Stewart and printed by the military. Photographs of individual specimens are attached to the file cards.

OUTPUT

Since the published report was the principle goal of the study, it represents the most outstanding production. However, the files remain in the Physical Anthropology Division and are used frequently in training technicians in anthropometric techniques. There is no plan to convert the data to machine-readable form.

DATA COLLECTING PROJECTS
INVENTORY

March 12, 1969

PROJECT

Analysis of Eskimo and Aleut Juvenile Skulls

DIRECTORS

Dr. Lucile E. Saint-Hoyme, Associate Curator, Div. Physical Anthropology and Donald J. Ortner, Museum Technician.

DESCRIPTION

This research, done in 1966, was principally the work of Mr. Ortner, who, at that time, was a dentistry student. Each specimen of a collection of 291 skulls was examined for stages of tooth eruption, tooth wear, caries and suture closure.

INPUT

After examination of an individual skull, certain data was entered onto worksheets. This information was transferred to punched cards but not put into computer memory. The categories examined and entered on the sheets were five categories of sex: (1) (2) definite male/female (3) (4) probable male/female (5) unknown. Since these were juvenile skulls, deciduous teeth had to be considered, so there was a possibility that a combination of any number of 52 different teeth would appear in a given skull. A total of 12 classifications of teeth were designated: Unobservable, missing, congenitally absent; four stages of eruption and four stages of wear.

Suture closure was recorded on a second card. There are approximately 29 sutures, and 11 categories of stages and condition of closure were assigned to each suture examined.

Each worksheet entry bears the specimen catalog number and the shelf location (which also would indicate geographical origin, since specimens of the same locale are stored together). By using these key designating numbers, additional information could be added to the card deck. Dr. Saint-Hoyme suggested that it would be valuable to add some observations, such as status of certain joints and pathology to the data on the measurements already taken.

OUTPUT

Although this particular project embraced a rather narrow sample, and did involve a closed series, Dr. Saint-Hoyme sees implications for a more broadly-based study, which would use the techniques developed with the juvenile skulls while expanding and improving upon them. Presently she is preparing a proposal for a study in dental pathology, using all the skulls in the collection. By putting the data on dental pathology into machine-readable form, Dr. Saint-Hoyme sees a vast potential for comparative studies, thereby expanding the knowledge of the field. She has identified her staff needs and anticipates having the proposal ready for presentation by late April 1969.

DATA COLLECTING PROJECTS
INVENTORY

March 11, 1969

PROJECT

Bibliography of Anthropometric Instruments

DIRECTOR

Dr. Lucile E. Saint-Hoyme, Associate Curator, Division of Physical Anthropology

DESCRIPTION

This is a continuing project began by Dr. Saint-Hoyme some 15 years ago at the time she published an article on anthropological measuring and drawing devices. She now has about 700 entries on key sort cards.

INPUT

Each entry, bearing full bibliographic data, is coded for decade of publication; country of author; journal (from a list of major publications in the field); type of instrument, such as drawing, measure for length or depth, angle holding etc.; appearance of illustrations; and availability of a copy. This data is collected as a part of Dr. Saint-Hoyme's professional reading, but she does not have time to devote regular periods of time to literature searches.

OUTPUT

To date the file has been used only by Dr. Saint-Hoyme in her own research. She plans to publish a monograph on the subject and also to publish the bibliography.

DATA COLLECTING PROJECTS
INVENTORY

December 20, 1968

PROJECT

Index Nominum Genericorum

DIRECTORS

Dr. F. A. Stafleu, Utrecht, Netherlands and Dr. R. S. Cowan, Smithsonian Institution. Mrs. Ida K. Langman and Mrs. Mary Frances Southwell, Bibliographers.

DESCRIPTION

This project was begun in 1954, under the auspices of the International Association of Plant Taxonomy. The plan is to prepare a comprehensive card catalog of all plant genera which have been validly published according to the "International Code of Botanical Nomenclature." Director of the project is Dr. F. A. Stafleu whose headquarters is in Utrecht, Netherlands. He is assisted there by Dr. J. J. Swart who serves as technical editor. Washington headquarters for the project is based at the Smithsonian Institution. The Washington operation is under the direction of Dr. R. S. Cowan and is supported by a grant from the National Science Foundation.

This program is international in scope and there are over two hundred institutions which subscribe to the published card service. As identification and verification are completed in this country, the data is sent to Utrecht where final editing is done. When a thousand entries have been completed multiple sets of cards are printed and distributed to subscribers. By December, 1969, 27,000 entries had been verified and printed. There were an additional two batches of one thousand each in press. This is a continuing project and approximately 8,000 entries are completed annually.

INPUT

The existing file in the Smithsonian Headquarters is arranged alphabetically by genus, by family name and by basionym. Access is purely manual at this time, although plans are to put the data onto paper tape. This will be done at the Smithsonian and the data will be stored in the computer belonging to the Institution.

OUTPUT

At such time as automatic processing of the data is possible, the scope of the distribution and refinement of the information, as a result of user feedback, will positively increase. (In other words, when they can do more, they will).

DATA COLLECTING PROJECTS
INVENTORY

December 20, 1968

PROJECT

Data Processing in the Department of Botany--Collection Management

DIRECTOR

Dr. Mason Hale, Chairman, Department of Botany

DESCRIPTION

Major revision and simplification of record keeping was accomplished in the department in August 1967. Basically, the Department uses blocks of Registrar's numbers which are assigned to divisional secretaries for use in preparing outgoing invoices, accession memoranda, etc., and to the package receipt room for use on all incoming shipments. The data sheets, on which museum numbers are pre-stamped, are filled in simultaneously by these respective units and, when completed, assembled into a booklet. No other records are kept.

INPUT

Data on loans (about 250 transactions a year) are entered on IBM sheets in a standard format, recording Registrar number, date, institutional acronym, division or plant group, number of specimens, number of types, description of materials, date of return.

OUTPUT

ISD keypunches from these sheets and provides an updated print-out of loans arranged by division, institution, and plant group. Hopefully, the system will be extended to all accessions and could be integrated with a completely automated invoice preparation program. It is hoped to expand this program on an international basis to more than 100 institutions which should bring the annual number of exchanges to 25,000 per year.

DATA COLLECTING PROJECTS
INVENTORY

December 20, 1968

PROJECT

Data Processing in the Department of Botany--The Type Project

DIRECTOR

Dr. Mason Hale, Chairman, Department of Botany

DESCRIPTION

One of the major resources in the collections is the type herbarium (60,000 sheets) and associated card index arranged alphabetically by taxon. The botanists use this index as the input for a data bank on botanical specimens not only because of the intrinsic value of types but also because of the need to construct updatable lists of holdings that can be made available to other institutions. With a relative minimum of verification the Department uses the CDC Typetronic to record the following information about each specimen: family; genus; species; infraspecific name (if any); author(s); place of publication; collector(s); date collected; collector's number; locality (country, province or state, county or equivalent, town; remarks (display information only); our accession number, status of type (holotype, etc.); and number of type card.

INPUT

At this time, over 2,000 entries have been made on magnetic tape. The program will soon be integrated with cataloging of newly accessioned types, while continuing input from older specimens as resources permit.

An important feature of this system is the provision of input by other institutions, which may have isotype collections or which may have types that the Smithsonian lacks. These institutions will be able to enter such data into the Smithsonian system.

OUTPUT

The Department envisages a long-term project that could develop into an international register of plant types of very great importance to all taxonomists, if sufficient interest and support are found.

DATA COLLECTING PROJECTS
INVENTORY

December 19, 1968

PROJECT

Palearctic Migratory Bird Survey

DIRECTOR

Dr. George Watson, Department of Vertebrate Zoology

DESCRIPTION

This project, which has been underway since 1966 and is continuing, is concerned with the banding and collecting of specimens in two Middle-East Mediterranean countries. At this time there are records on more than 20,000 birds. The records, in the form of original data worksheet, are kept in loose leaf binders. The sheets are arranged numerically by number of band. The notebook entry includes what, where, when, sex, age, weight, amount of fat and parasite information. Any return information from individuals finding banded birds is entered on the original data sheet. This system is meant to be compatible with one used in Europe by an ornithological organization identified as EURING.

INPUT

The only data files are those which are made up of the worksheets as they come from the field. Copies of those records are kept in the host countries at the respective field stations.

OUTPUT

At this point retrieval of information by subject, geographical area or species is impossible. However, the data from the sheets could be transferred to either punched cards or paper tape. Dr. Watson assesses his major handicap as lack of staff. He is aware of the potential of automatic data processing in the study of birds as is evidenced by the report he co-authored with Warren B. King and Patrick J. Gould, entitled An Application of Automatic Data Processing to the Study of Seabirds, I; Numerical Codings, published as a part of the series Proceedings of the United States National Museum, V. CXIII, No. 3609, Washington, D. C., Smithsonian Institution, 1967.

DATA COLLECTING PROJECTS
INVENTORY

April 24, 1969

PROJECT

Pacific Ocean Ornithology

DIRECTOR

Mrs. Jane P. Church

DESCRIPTION

This comprehensive survey of oceanic birds was begun in 1963 and will probably continue through June of 1970. Based at the Smithsonian and financed by a contract from the Army, the Pacific Ocean Biological Survey involves data gathering on plants, animals, birds, climatic conditions and oceanography. This report will deal only with that portion of the Program which is concerned with bird life.

There are now records of over one and a half million sightings of birds at sea in the area from south of the Equator at 10^{o} to north at 30^{o} latitude. It includes the islands and island groups located between longitudes 150^{o} to 180^{o} west. These records have been gathered through the cooperative efforts of Project Staff, U. S. Department of the Interior, State Fish and Game Departments of California and Hawaii, University of Washington, Scripps Institution, and the University of Oregon. Recently an arrangement has been made with the University of Moncton in Canada to continue field work during the summer of 1969. Under the direction of Dr. Germain of Moncton, eight or nine scientific cruise trips will be made in the course of the summer. The Moncton staff will use the same field record format and the information they gather will be added to the data bank which is housed in the Smithsonian Information Systems Division. It is thought that ultimately this data will be deposited with the Woods Hole Oceanographic Institution.

INPUT

Worksheets are completed in the field. Besides the records of bird sightings certain environmental and oceanographic data are also entered on separate sheets. The information is then punched on to cards. This punching is usually done outside the Smithsonian. Data from the punched cards is transferred to magnetic tape at the Information Systems Division. It is there that the tapes are run for determination of errors and revisions are made.

OUTPUT

Most inquiries presented to the system involve search through geographical or species descriptors. Mrs. Church states that so far, in her experience, the system has proven to be extremely awkward for retrieval. She does remain optimistic that things will improve.

For the present all data generated are for the use of the project and the contractor. Reports are published periodically as numbers of the Proceedings of the United States National Museum, but the bulk of the data is not for public use at this time.

DATA COLLECTING PROJECTS
INVENTORY

April 16, 1969

PROJECT

Inventory of Specimens of Central Pacific Sea Birds

DIRECTOR

Mrs. Jane P. Church

DESCRIPTION

This is an international inventory of collections of sea bird specimens in 17 museums, universities and other research institutions. There are now over 15,000 entries in this growing file.

INPUT

Double entries are made on McBee key-sort cards and are filed by species and by location where the bird was picked up. The cards have been punched to retrieve by species, museum, and by island group. It is hoped to make more use of the key-sort when staff and time allow. This file is currently being revised. At one time the staff attempted to place citations to literature references on the species card, but this was abandoned as being too time-consuming.

OUTPUT

The file is used principally to support current research, but is open to the scientific community. There are no plans for publication at this time.

DATA COLLECTING PROJECTS
INVENTORY

April 25, 1969

PROJECT

Varied activities in herpetological research using automatic data processing

DIRECTOR

Dr. James A. Peters, Curator, Division of Reptiles.

DESCRIPTION

Dr. Peters is involved in several projects which employ the use of a computer for both calculation and for information retrieval and exchange. All of these projects have been described in articles written by Dr. Peters, so this report will present only a summary of the various programs rather than a descriptive analysis. Copies of Dr. Peters' writings are attached to this report. The most recent article is one describing the construction and use of keys in identification of specimens. This article was written in Spanish for a Venezuelan journal and has not been translated. However, much of the same material is included in the article "The Role of Time-share Computing in Museum Research", which appeared in Curator, v. XI, No. 1, 1968, pp. 65-75. A copy of this is also attached.

All of the computer work done for Dr. Peters and his colleagues from other museums, who contribute to the same projects, is handled by C.E.I.R., a local commercial organization. None of the actual storage or computation is done at the Smithsonian, although the Information Systems Division has assisted by giving technical advice in the formulation of the key construction for identification of snakes.

The principal computerized projects in which Dr. Peters is involved are:

(1) Museum and University Data, Program and Information Exchange, known by its acronym MUDPIE. There are six institutions which participate actively in the exchange. Each has computer access and cooperation ranges from the exchange of tapes to actual direct access to storage units. The direct access capability occurs only between the Smithsonian Museum of Natural History and the American Museum of Natural History in New York. Since these two share the same central computer at C.E.I.R. in Silver Spring, Maryland, each may tap into the others' data bank and exchange messages and data directly. These two form the nucleus for a major network which could involve other institutions on the Northern Atlantic Seaboard.

In addition to its computerized information exchange, MUDPIE circulates a monthly newsletter to some 100 individuals and institutions.

(2) Use of key construction for the description and identification of 96 genera of colubrid snakes. This project has been over two years in the planning and programming, and is now functional. The principle of key construction is described in the accompanying articles.

Rather than presenting an "either-or" alternative to the problem, this program is based on an "if-then" situation whereby, through a process of elimination, the identification is determined. Some 14 characteristics have been programmed to provide a matrix for identification. Characteristics of any one snake in question must be run through at least two sets to determine identification. As new information is gathered it may be entered or old material deleted, since this system allows for random entry.

Dr. Peters hopes that more and more matrices will be set up for other biological specimens. This same type of key construction is being used in portions of the Flora of North America Project, under the direction of Mr. Stanwyn Shetler.

(3) The Catalog of Neotropical Squamata is another major project under the guidance of Dr. Peters. Detailed information on this program is not available at this time, but it will involve many of the programming techniques which have been employed in the other projects.

DATA COLLECTING PROJECTS
INVENTORY

April 14, 1969

PROJECT

Catalog of Primates

DIRECTOR

Dr. John Napier, Director of Primate Biology Program

DESCRIPTION

The Catalog of Primates is a record of over 10,000 specimens in the Smithsonian collection. The descriptive inventory was undertaken and nearly completed during the summer of 1968, with the aid of students serving as summer interns. One phase of the inventory remains to be done, that being whole animals or parts of animals preserved in alcohol. Dr. Napier says that this represents a small portion of the collection and that the need for gathering this data is not pressing.

INPUT

The data on each major group of specimens has been recorded onto work sheets. Each entry gives genus, species and subspecies. There is further identification by type of specimen such as skin, skull, skeleton or alcoholically preserved part. Each type is classified as to sex and age. No coding has been done beyond the work sheet stage and Dr. Napier doubts that he will transfer the data to any other format. He does not think that a key sort system would provide any easier access and he was definite in his decision not to convert to a machine system.

OUTPUT

Dr. Napier feels that the Catalog should be published, but he has no positive plans for doing so. He is aware that such an undertaking would require technical and scientific assistance, but has not identified exactly who and how many would be needed.

As the retrieval system stands now, Dr. Napier judges it adequate to his needs and to the needs of other scholars who query it.

DATA COLLECTING PROJECTS
INVENTORY

April 10, 1969

PROJECT

Catalog of Butterflies

DIRECTOR

Mr. William Field, Associate Curator, Division Lepidoptera

DESCRIPTION

The Catalog of Butterflies is so far limited to entries concerning one family, the Lycaenidae. It is the goal of the project to collect citations to all literature on New World Lycaenidae. So far, as of March 1969, over 17,500 references have been collected. It is hoped to catalog two other families in a similar manner. Mr. Field estimates that the entire project will take 10 years and that it is about one-fifth completed.

INPUT

The files consist of Xerox copies of bibliographic citations drawn from Bibliography of Agriculture, Zoological Record and Biological Abstracts. Two copies of the citation are made and then pasted on to 3 x 5 catalog cards. One is filed under author and one is placed in another file by species. In the species file, a Xerox copy of the entire text of the reference is included if at all possible. Mr. Field examines as many of the original articles as possible, and by visiting libraries and through inter-library loan he is able to make photographic copies of the text. He assesses that additional staff assistance would be welcome in this area. He also pointed to a need for "unsophisticated" clerical help to cut and paste the citations. Mr. Field himself assigns all species headings and determines authority for a citation. He feels that this phase of the work is too specialized and critical to trust to some other, less qualified person.

Although Mr. Field admits that his method of collecting and storing the data may be slow and somewhat cumbersone, he feels that it lends the greatest accuracy and control. He sees no application here for machine processing.

OUTPUT

When the catalog is completed for each family it will be published. At the present time the files are used by Mr. Field and his staff, but are not open to the public.

DATA COLLECTING PROJECTS
INVENTORY

April 18, 1969

PROJECT

Bibliography on Stomiatoid Fishes

DIRECTOR

Dr. Robert Gibbs and Mr. Richard Goodyear

DESCRIPTION

This bibliographic project, which has been underway about three years, involves a comprehensive survey of the literature dealing with stomiatoid fishes. Mr. Goodyear stated that the field is rather limited and that most of the pertinent literature comes to his or Dr. Gibbs' attention in the course of their regular professional reading or through reprints which are sent directly to them. There are presently some 400 citations in the file, and about 25 to 30 are added yearly.

INPUT

A full bibliographic citation is typed onto a key-sort card. Each entry is descriptively annotated and includes such data as species, geographic locality and color descriptions. So far, the cards have not been punched, but when descriptors are selected for retrieval they will be found in the type of information given in the annotation.

OUTPUT

At the present time, the file is approached by author only. Mr. Goodyear pointed out that since it is so small, a linear search is not too time-consuming. However, he states that coding the information and punching the cards will make the system more efficient. The file is used once or twice per week and is utilized purely for in-house, supportive research.

Mr. Goodyear does not foresee a time when automatic retrieval would ever be necessary for such a limited field.

DATA COLLECTING PROJECTS
INVENTORY

April 25, 1969

PROJECT

Bibliography of the Marine Malacology of the Indo-Pacific Region

DIRECTOR

Dr. Harald A. Rehder, Senior Zoologist, Division of Mollusks

DESCRIPTION

This bibliography is concerned with all monographs and journal articles "dealing with marine mollusks of the Indo-Pacific Region, as well as certain titles of general taxonomic importance." There are now approximately 1,800 entries in the file, which will continue to grow. These citations are typed on McBee key-sort cards, but as yet no subjects have been punched in the cards. The arrangement of the file now is alphabetical by author.

INPUT

When time and staff allow, Dr. Rehder will supervise punching of the appropriate subject classifications. The McBee cards have been especially designed and printed to facilitate coding.

Retrievable categories include geographic area, family, taxonomy, year of publication, joint author, and eight broad subject divisions which include such items as anatomy, shell morphology, physiology, ecology and life history.

Collecting of the citations is done principally through a systematic search of Zoological Record and through general professional reading. Most of the references have been examined in the original by Dr. Rehder. The citations are annotated in most cases. These annotations and clues to subjects indicated in the title will be used to determine the classifications to be punched on the cards. Dr. Rehder does not think that he will have to refer to the original article in many cases to assign subjects. He hopes to begin punching the cards within the year.

OUTPUT

The file was set up primarily to support on-going research, but Dr. Rehder is considering possible publication of the bibliography. He feels that the manual sort system is sufficient to his needs and sees little value in transforming the file into a machine-retrievable format.

DATA COLLECTING PROJECTS
INVENTORY

April 16, 1969

PROJECT

Bibliography of Oceanic Rocks

DIRECTOR

Dr. Thomas Simkin, Supervisor for Geology, Oceanographic Sorting Center.

DESCRIPTION

This listing represents over two hundred monographs, journal articles and technical reports. It has been compiled by a systematic search of subject indexes and by a careful watch on the part of Dr. Simkin and his research staff for other citations in the literature on oceanic rocks. Dr. Simkin pointed out that concerted interest in the field is relatively recent. This current emphasis makes an easier task of literature coverage, and, at the same time, makes the need for a comprehensive bibliography more pressing.

Dr. Simkin has organized the citations with an eye toward future machine retrieval of the material. The manuscript has been typewritten, proofread and is ready for publication. It will be offered to the Geological Society of America Bulletin for publication in the summer of 1969. Since this journal has the means to print by photographic off-set, the bibliography will not have to be reset in type and may be reproduced as it is. Other copies of the list may be reproduced for distribution to individual scientists.

Dr. Simkin began the bibliography on background material of what is known about oceanic rocks to support his own research. He has elected to share this information with other geologists and oceanographers.

INPUT

The organization of the list was designed with both the computer and user in mind. The major groupings are by ocean. Within each ocean subject section entries are arranged chronologically and by author. Each author or group of authors is given a code number, and each entry by that author has its own number. Geographical location is given in terms of latitudinal and longitudinal positions. Special features such as islands, ridges etc., which give an environmental orientation, are represented by initials. Sequence, use of capital letters and underlining all have significance for determining subject emphasis.

Lithologic information and rock names (which are capitalized) are offered in a brief annotation. Dr. Simkin sees the potential for a key-word index being produced from the capitalized names.

Certain other mineralogical information and analytic techniques are coded and set up in columns opposite the entry.

DATA COLLECTING PROJECTS
INVENTORY

April 16, 1969

PROJECT

General Petrology and Geology Reprint File

DIRECTOR

Dr. Thomas Simkin, Supervisor for Geology, Oceanographic Sorting Center

DESCRIPTION

This project is now in the planning stage and no actual organization or arrangement has been started. Dr. Simkin would like to collect the citations of his reprint file on to key-sort cards which can be punched for subject access. There are now between 1,500 and 2,000 reprints in a file which continues to grow. At the present time the reprints are filed in pamphlet boxes by author and there is no subject approach except by the scientist's memory of authors and their special interests.

Dr. Simkin has devised a subject classification scheme with 16 major categories, such as mineralogy, petrology, paleontology and geomorphology. When asked how he arrived at these subject descriptors, Dr. Simkin admitted that he was probably influenced by the organization of an academic curriculum. He stated that there are no standard areas of specialty accepted by the entire profession, but that most geologists seem to think in terms of these categories.

Besides the major subject divisions, Dr. Simkin envisions particular sub-headings such as location, sphere, rock type, age etc.

He also has devised a set of more specialized subject headings which would be coded in an alphabetical scheme. He has only tentatively settled on these headings, and wishes to keep them alphabetic to allow for change and flexibility.

INPUT

So far nothing has been put on to cards, but Dr. Simkin would go ahead with his plans immediately if staff were available to assist him with the project.

OUTPUT

This work is primarily to support the research of Dr. Simkin and his staff, and is devised purely as a means of bibliographic control within his office.

DATA COLLECTING PROJECTS
INVENTORY

April 1, 1969

PROJECT

Survey of White House Furnishings

DIRECTOR

Mrs. Margaret B. Klapthor, Associate Curator, Division Political History, Department of Civil History

DESCRIPTION

Research on this project and collection of information began in 1956 when the exhibit of the First Ladies' Hall was prepared. With the aid of a summer intern, Mrs. Klapthor surveyed records in the National Archives for information on how the White House was furnished, inventories of possessions, bills of sale etc. A data file was compiled as a result of this search, which encompassed the years from the administration of George Washington through 1866 and the Lincoln Administration. This cut-off date for the search of archival material was set because after 1866 the public record of newspapers, documents in the White House files and reliable secondary sources provide the needed information. The advent of photography in that period helped to furnish pictorial records which were superior to inferences which might be drawn from lists or correspondence in the Archives. The file of Archival data is arranged under administration and subdivided by year. This file is still used for reference in Mrs. Klapthor's office.

In 1966 a survey of collections of presidential possessions and furnishings of the White House held by museums, historical societies and private collectors was initiated. Large museum collections and house museums such as Mount Vernon were not included in this survey, as it was intended to send Smithsonian staff to inventory these holdings. It was thought that it would be too much of a task to impose upon a museum which holds a large number of items. Most of the national inventory was done during the years 1966-67 and the survey has been dormant since early 1968. As a result of 392 questionnaires sent out (copy and cover letter attached) 99 responses indicated holdings of presidential objects. There is presently continuing correspondence with 14 museums or individuals who indicated holdings, but who have not responded with detailed information.

INPUT

Data collected from the questionnaires has been put into a file which is arranged by name of the White House public room to which the item or items belonged.

There is a general file of varied sorts of material, including newspaper clippings, reprints of journal articles, pamphlets and diary notes. This file is arranged by subject. These subjects are assigned ad hoc as the need arises.

The photographic file, comprised of about 100 prints, is arranged by name of room, and subdivided by historical period. Photos for this file were gleaned principally from White House and Library of Congress print collections.

Presently there is no determined effort to add to the files, but material may be included as it comes to the attention of Mrs. Klapthor and her assistants in the course of their daily work. It was decided that active work on the survey was no longer necessary as the White House curatorial office has taken over much of the work. There is good cooperation between the White House curator's office and Mrs. Klapthor's office, so that information may be readily exchanged.

OUTPUT

Approximately 20 inquiries per month are answered for scholars from the White House Furnishings files. Many questions come from school children and the general public which are answered by a special bibliography prepared for the purpose.

Mrs. Klapthor anticipates issuing serial publications on various types of furnishings. The study of White House china has been completed and is ready for publication. Mrs. Klapthor feels that the file arrangement is adequate to the staff and public's needs. She sees little value in converting to either a key sort retrieval system or to machine retrieval. The inventory was made and the files are kept to support research on rooms which the Smithsonian is likely to reproduce in exhibit. They appear to be serving that function effectively.

DATA COLLECTING PROJECTS
INVENTORY

March 19, 1969

PROJECT

National Inventory of Scientific Instruments

DIRECTOR

Silvio A. Bedini, Assistant Director, Museum of History and Technology

DESCRIPTION

This is a continuing project to determine major holdings of collections of scientific instruments in museums, historical societies and belonging to individuals in the United States. The survey was begun in 1964, and since 1967 has been collaborating with the UNESCO International Inventories of Historic Scientific Instruments. At the beginning of the survey letters and questionnaires were sent to museums, historical societies and private collectors. It is from the return of some 1,000 questionnaires that the data files have been organized. Attached to this report are a description of the project, written by Mr. Bedini; a copy of the questionnaire; the covering letter; sample responses and a sample file card.

INPUT

Presently there are four files. The completed questionnaire form is filed by type of instrument. Condensed information, taken from the questionnaire, is transferred to file cards in triplicate. These are then filed by scientific discipline in which the instrument was used; the second file is arranged geographically by location of collection; and the third file is classified by maker of the instrument. A photographic file of many of the more significant instruments is arranged by either type of instrument or maker, whichever is more important in the judgment of the director. The size of the card file is relatively small, consuming less than two and a half drawers of a portable four-drawer file. There is no backlog at the present time, but Mr. Bedini feels that with additional staff to follow up on questionnaires that much information could be added.

OUTPUT

Approximately a dozen queries per week are answered from the files. Mr. Bedini sees little advantage to converting to automatic retrieval or to a manual key sort system. He bases this judgment on the small volume of data in the file and the efficiency of the present system. If, at such time the size of the file and demands upon it warranted, the information could easily be converted to punched cards or tape from the existing descriptors and categories.

DATA COLLECTING PROJECTS
INVENTORY

March 11, 1969

PROJECT

Catalogue of Political or Campaign Bandannas and Kerchiefs

DIRECTOR

Herbert R. Collins, Assistant Curator, Division of Political History

DESCRIPTION

An attempt is being made to survey and describe all private and public collections of campaign bandannas.

INPUT

Through advertising in journals and sending letters on a nationwide scale, locations and descriptions of the bandannas are being acquired.

OUTPUT

An annotated catalog will be published by the Smithsonian. This catalog will be arranged by historical period with an index of manufacturers and museums and private collectors. None of this material will be put into machine-readable form, and no attempt will be made to convert to machine retrieval.

DATA COLLECTING PROJECTS
INVENTORY

March 11, 1969

PROJECT

National Inventory of Political Campaign Objects

DIRECTOR

Herbert R. Collins, Assistant Curator, Division of Political History

DESCRIPTION

This inventory, conducted by letter, announcements at professional meetings and journal advertising, is attempting to cover all collections and single distinguished objects made and used from the time of George Washington to the present. A picture file, arranged by period of campaign, is maintained on all objects located which are not in the Smithsonian collection.

INPUT

At present, the only access to the file is by historic period. Mr. Collins states that it would be desirable to have cross-indexing by type of object and by party affiliation, but lack of staff time has prevented this indexing. He also sees a potential for at least some manual key sort retrieval system, designating location, ownership, and historic relevance, etc., but has no immediate plans for converting to this type of file.

OUTPUT

Presently requests are answered from the picture file at the rate of about six per month. The greatest handicap in giving service to non-resident scholars is in the delay in acquiring prints of the pictures from the photographic laboratory in the Museum of History and Technology. Mr. Collins identifies this as a serious detriment to the service he is able to offer. To continue the inventory and make its findings available to the scholarly community Mr. Collins assesses that he needs more staff, money and cooperation from the photographic lab.

DATA COLLECTING PROJECTS
INVENTORY

May 7, 1969

PROJECT

Catalog of Political Campaign Objects in the Smithsonian Collection

DIRECTOR

Philip C. Brooks

DESCRIPTION

The political campaign objects collection housed at the Smithsonian consists of about 84,000 items. However, only about 4,000 of these are owned by the Smithsonian. The major portion of the collection is on loan from Ralph E. Becker, a Washington attorney. It is hoped to catalog the non-Becker or Smithsonian-owned collection by use of the Termatrex reference system.

In cataloging his personal collection, Mr. Becker devised a scheme of 26 classifications by type of object, such as newspapers, sheet music, jewelry, buttons etc. It is hoped to modify this listing and attach other descriptors to each object such as dates, personalities, parties, issues and manufacturers.

Although the Becker collection is fairly static, the Smithsonian collection is growing at a rate of about 2,000 items per year. Election years provide an opportunity for collecting and the accessions increase during those years.

INPUT

At this writing nothing has been done toward implementing this project, but it is hoped to begin it during the summer of 1969. This project will be designed to serve as a pilot investigation to ascertain the feasibility of using the Termatrex system for cataloging the entire collection of political and inaugural items.

Mr. Brooks assesses the greatest need is for qualified catalogers.

DATA COLLECTING PROJECTS
INVENTORY

December 19, 1968

PROJECT

Description of Museum objects, using Termatrex system

DIRECTOR

Mrs. Betty Walters, Division of Cultural History

DESCRIPTION

Description in Freeman report is accurate. Having completed silver and pewter, the staff is continuing to describe other metal objects. There is data now on approximately 7,000 objects. Some 75 to 100 objects are entered weekly on a regular basis by Mrs. Walters. This is a continuing project and there is a backlog of about 15,000 objects to be described. New acquisitions of metal only are entered.

Mrs. Walters has devised a thesaurus of over 300 terms and continually revises this work to make it more useful.

The system is queried about once a week, with questions coming from staff, scholars and the general public.

At this point none of the data is in machine-readable form, but the information on the Termatrex cards could readily be transferred to paper tape.

There is an additional name index file which must be consulted annually, but this data could be tied into the specimen description by catalog number.

Mrs. Walters identifies her greatest handicap to completion of the project as lack of staff and time to increase the amount of data input.

DATA COLLECTING PROJECTS
INVENTORY

December 20, 1968

PROJECTS

U. S. Covers and Postal Stationery
Civil History, Philately Division

DIRECTOR

Carl Scheele

DESCRIPTION

This project is designed to give geographical, chronological and wide subject access to the museum collection of approximately 10,000 pieces including U. S. covers and postal stationery. Data on 300 specimens has been entered to date. Since this project is in the pilot stage, no set rate of input has been determined. This is a descriptive project and relates to the Smithsonian collection only. No attempt is made to attach bibliographical references to the specimen data, although in a separate program an effort is being made to catalog and annotate all publications held in the departmental library. There are twelve descriptors which may be attached to each specimen. Geographical and chronological descriptors are the most frequently used and are the most elaborately delineated. There are a number of what the director identifies as "variable terms" which refer to the historical period of a particular specimen. This could be period of effective rates, date of issue etc. Other descriptors refer to the properties of the piece itself, such as handling in post office, design characteristics, origin markings, auxiliary markings relating to efficiency of service and special services such as those related to political campaigns. There is a "personality" subject area referring to such categories as presidential mail, widow's franks etc., but Mr. Scheele labels this a "crude" index in that it has to be used in conjunction with a list of more explicit terms.

There is a hierarchical arrangement of "families" of covers which, though informal, is widely accepted by philatelists. Mr. Scheele, who is the designer of the system, has used this taxonomic scheme in describing all possible properties of the individual pieces. Each cover has a serial number which indicates physical location in a drawer or file.

INPUT

Presently all data is entered on worksheets by Mr. Scheele or his assistant. Besides the demand for expertise in descriptive cataloging there is an added factor of security precautions which necessitates handling only by authorized personnel. At this time no data from the worksheets has been transferred to machine-readable form, although Mr. Scheele finds use of the worksheets superior to the old method of manual search of the collection. As has been previously stated, this is a pilot project and it is hoped to expand it to include the entire present holdings and to continue with all new acquisitions. Mr. Scheele identifies his greatest handicap as lack of time to work for continuous periods on the project. Here again, the fact that the specimens are in a security area makes work for intermittent short periods impossible.

OUTPUT

Presently the system may be approached only through the worksheets. However, the Division of Philately serves, the the extent of its capabilities, all areas of the community's information needs, and will respond as readily to a hobby collector as to a scholar. Mr. Scheele expects to publish a description of the information system when the data collecting has been completed.

DATA COLLECTING PROJECTS
INVENTORY

December 20, 1968

PROJECT

Iconography File of Musical Subjects

DIRECTOR

Mrs. Cynthia Hoover, Civil History, Musical Instruments Division

DESCRIPTION

The file is made up of photographs and other graphic representations of musical subjects in art. The picture file is arranged by name of artist, or in the case of anonymous works, by geographical origin and historical period. There is an index to the file which provides subject access by type of instrument, historic period, and geographic location of original painting or art work. Although this file is completely manual at this time and refers only to the holdings in the Smithsonian, it is hoped to expand this picture file into a national inventory. Also a part of the plan is to use automatic information processing equipment for storage of the index. At such time the Smithsonian would serve as a switching center to direct inquiries to appropriate sources of information. The grander plan is in an embryonic stage at this time. Mrs. Hoover is to present a paper on this subject to the American Musicological Society at its meeting in New Haven, Connecticut in Decemb r 1968.

DATA COLLECTING PROJECTS
INVENTORY

December 20, 1968

PROJECT

Architectural Records of American Buildings and Buildings by American architects in other countries

DIRECTOR

Mrs. Moira B. Mathieson
Department of Civil History

DESCRIPTION

The description in the Freeman Report of 1967 is accurate to that date. This survey is international in scope and is the result of cooperation of information exchange of museums, universities and historical societies. Presently the data file consists of records on some 10,000 buildings and there is no backlog. All of the data is on key sort cards with manual access. However, the data could readily be transferred directly from the specially designed card to paper tape.

INPUT

Presently there is no input whatsoever, and according to Mrs. Mathieson the entire project is in jeopardy. Funded originally by a grant from the Kress Foundation, the Architectural Records Project has been conducted under the auspices of the Smithsonian Institution for the past year. According to Mrs. Mathieson, monies for the continuation of the project was not provided for in the S.I. budget, and there is a strong threat that the project will fold at the end of the calendar year 1968.

OUTPUT

The data on the punched cards is available to all serious scholars. The only discernible limitation in the system, according to Mrs. Mathieson, is the lag in converting the manual system to machine retrieval. The file has now reached a bulk which is cumbersome to manipulate. Mrs. Mathieson identifies her greatest handicap to completion as lack of funds and the staff and time which that money will buy.

DATA COLLECTING PROJECTS
INVENTORY

March 19, 1969

PROJECT

Industrial Archeology: New England Textile Mill Survey

DIRECTOR

Robert M. Vogel, Supervisor and Curator, Division of Mechanical and Civil Engineering, Department of Science and Technology

DESCRIPTION

This survey was started in the spring of 1967 and has been completed. There are now descriptions of over 500 buildings in the file, and although there may be some additional information entered, it is, for the most part, a closed series.

INPUT

The information is entered on McBee key sort cards. There are 12 general categories of data which may be retrieved. These include such items as type of power, water or steam; whether the building is located on a canal; general engineering data; and construction data. The existence of biographical information on individuals of historical significance is also coded on the cards. Other information is typed onto the card which also bears the name, location and dates of the building. Some bibliographic citations are included as well as citations to primary source material. Although Mr. Vogel's survey is principally concerned with the industrial rather than the architectural aspects of a building, he stated that he had found it helpful to confer with Mrs. Mathieson, who is director of the Architectural Records of American Buildings Inventory. Their two inventories and systems are compatible and could be used together for a broader coverage of the subject.

OUTPUT

The file is used principally by Mr. Vogel and other members of his department.

DATA COLLECTING PROJECTS
INVENTORY

March 19, 1969

PROJECT

International Survey of Industrial Buildings

DIRECTOR

Robert M. Vogel, Supervisor and Curator, Division of Mechanical and Civil Engineering, Department of Science and Technology

DESCRIPTION

This survey differs in methodology from the survey of New England Textile Mills done by Mr. Vogel. Whereas the New England study was done principally on site, the information for the international survey is gathered mainly from secondary sources. This is continuing work and is done in an informal manner, without concentrated searching. There are approximately 25 entries now in the file.

INPUT

The data is put onto McBee key sort cards. There are seven major retrievable catagories: (1) historical period (in ten-year extensions) (2) geographical location by country; (3) type of industry for which the building was used; (4) type of structure, such as bridge; watertower, etc.; (5) in whose custody it remains, and if it is a historic landmark; (6) condition and threat of demolition; (7) any pertinent bibliographical information. Bibliographic citations are typed on the card along with brief descriptive information.

OUTPUT

The small volume of material and the present limited use of the file rules out automatic retrieval, according to Mr. Vogel. He would like to expand the data file and feels that extra staff in the form of a summer intern would greatly extend the scope and value of the file. Even with the expanded file, he feels that a manual key sort system is adequate for his needs.

DATA COLLECTING PROJECTS
INVENTORY

March 19, 1969

PROJECT

Catalog of All Objects in the Museum of History and Technology Collections which Incorporate Feedback Mechanisms.

DIRECTOR

Dr. Otto Mayr, Consultant, Department of Science and Technology.

DESCRIPTION

The file which Dr. Mayr is generating is a working tool toward the production of an annotated, descriptive catalog of all objects in MHT which incorporate any type of feedback mechanism. Dr. Mayr examines each object and describes it in field notes. These are then transcribed onto key sort cards and ultimately the data is put into manuscript form for ultimate publication. This work is being done on a contract basis, to be completed in a year, having begun in August 1968. When this work is done, Dr. Mayr will remain at the Smithsonian as a curator.

INPUT

Dr. Mayr describes his key sort file as "flexible". Presently he is working with a manual file arranged behind subject heading guide cards, similar to a library's card catalog. He is able to change subject headings and groupings at will. He says that when he has finally made the complete inventory of objects he will settle on subject descriptors, and punch the cards accordingly.

Each object is entered on the card with catalog number and accession number. Any bibliographic citations available are also listed, as well as any accessible illustrations of a given type mechanism.

Dr. Mayr expects that the major subject groupings in the completed file will be (1) historical period; (2) steam engines or "prime movers"; (3) governors and (4) transport mechanisms such as steering engines and torpedoes.

OUTPUT

Since the printed catalog is the objective in this project, at its completion, Dr. Mayr sees little use for his key sort file except for his own reference. When asked if he would use it to index his published work, he said it would be of little value since conventional indexing methods would have to be used to ensure correct pagination.

DATA COLLECTING PROJECTS
INVENTORY

March 19, 1969

PROJECT

Bibliography of Printed Material on Feedback in Engineering

DIRECTOR

Dr. Otto Mayr, Consultant, Department of Science and Technology

DESCRIPTION

This bibliography, which is a continuing project, now has approximately 200 entries in the file. It covers original material published from 1820 to date and any historical surveys which have been published. Dr. Mayr devotes at least 15 minutes per day to regular literature searching, and adds any citations he may find in the course of his professional reading.

INPUT

McBee key sort cards are arranged in a file by author, or title entry, if only that exists. Full bibliographic data is given in the citation. The card is then punched for (1) date of publication (in broad period groupings for years of infrequent publication); (2) language of publication; (3) major German, English and American journals; (4) whether the item is a monograph; (5) subject; (6) and evaluation of the work, such as scholarly, didactic, ephemeral.

OUTPUT

Dr. Mayr has no publishing plans for the bibliography, but uses it in his daily work. His files are open to serious scholars. He does not see any value in automatic retrieval of this material at this time. He is satisfied with the system and sees his only deficiency in lack of time to devote to literature searching. He suggested that a summer intern would be most helpful to him in extending the project.

DATA COLLECTING PROJECTS
INVENTORY

April 14, 1969

PROJECT

Catalog of Mathematical Devices in the Smithsonian Collection and Bibliography of Mathematical Machines and Instruments

DIRECTOR

Dr. Uta Merzbach, Curator, Division of Physical Sciences

DESCRIPTION

The inventory of all mathematical machines or instruments in the Museum collection has been completed and there are now over 15,000 descriptive worksheets filled in, regarding these objects.

The Bibliographic Project is a continuing endeavor and at this time there are in the file between 7,500 and 10,000 citations referring to articles and monographs treating mathematical machines and instruments.

INPUT

The inventory of devices has allowed for a standardization of descriptive catalog entries. Dr. Merzbach has devised a set of descriptors which she believes would be applicable to all objects in the Museum of History and Technology. She and several other staff members have been meeting informally to discuss the feasibility of using the method of description used in the Mathematics Division for a museum-wide inventory of all objects. This committee is composed of Mrs. Walters and Mrs. Mathieson of the Civil History Department, Miss Beets, Office of the Director of MHT, and Dr. Merzbach. A proposal has been presented to Dr. Multauf that the mathematics inventory could serve as a pilot project to determine the validity of the information system and its applicability to other areas in the museum.

The same paper punch machine which is being used for the Computer History Project is used for transferring data from the worksheets. The Bibliographic phase of the project is progressing more slowly for lack of researchers and abstractors,

according to Dr. Merzbach. Much of the material is on 3 x 5" cards which are arranged by subject if they involve material written before 1900. Twentieth century material is arranged chronologically, citations are entered on the card according to the bibliographic form designated by the University of Chicago Style Manual. There are almost 10,000 entries in this file now.

New citations to be added to the bibliography are being entered on coded worksheets. There are letter and numerical codes for (1) author; (2) historical period dealt with in the article; (3) type of publication; (4) reading level according to general, advanced and technical; (5) presence of illustration, whether color or black and white; and (6) if an abstract is included. There is a designation on the worksheet to indicate other citations or reviews of the article, but Dr. Merzbach is not sure how valuable this record is, since no effort will be made to search out reviews, and the data will be entered only if the information is easily discovered. Each entry will be initialed so that the identity of the researcher and/or abstractor will be known.

OUTPUT

When all new material and the old files are recorded onto paper tape the research facility of the Mathematics Division will be greatly increased. Dr. Merzbach would like to publish what she calls "Mathematics Reports," annotated subject bibliographies which would be published as interest in a specific subject demanded. The annotations and abstracts which now go onto tape are prepared by Dr. Merzbach's staff in draft form, and Dr. Merzbach is responsible for revision. She attests that she needs additional assistance in the area of literature searching and abstracting.

DATA COLLECTING PROJECTS
INVENTORY

April 10, 1969

PROJECT

History of Computers

DIRECTOR

Dr. Uta Merzbach, Curator, Division of Physical Sciences

DESCRIPTION

The Computer History Project, financed by the American Federation of Information Processing Societies, has been underway for about one year and it is estimated that it will take a total of five years to complete the research design. From that time on Dr. Merzbach sees the maintenance of the files and collection of data as an on-going responsibility of the curator's office. The project is broad and involves at least six specific areas of investigation and information gathering. It is international in scope, with major emphasis on historical technological developments in the United States and Germany, where a large portion of invention and research was done. The time period covered is from the early 1930's to 1955, although there is some documentation dating back to the 1920's. The emphasis remains on the critical years in computer development.

Work underway now includes (1) acquiring and classifying documentary and archival material on computers, (2) descriptive cataloging of the photographic files, (3) collecting and coding biographical material, (4) organization of tape recordings of oral interviews, and a (5) bibliography of material relating to individuals and developments in the computer field. Shortly, work is to begin on an international inventory to locate computers built and used between the years 1930 and 1955.

INPUT

The methodology for gathering and technique for handling data in this project is at once pragmatic and sophisticated. The project has a paper tape punching machine in the research office for the sole use of Dr. Merzbach and her staff. They do their own punching and are thus able to put material, as it is located, directly onto tape, without intermediary work-sheet and revision steps.

Work sheets are used in the case of the biographical and bibliographical files. These have been designed by Dr. Merzbach. The biographical file has been developed as an internal tool to support research, although Dr. Merzbach sees the possibility of publishing this material in a modified version as an annotated catalog of instrument makers. There are over 20 major categories by which biographical material is coded. There is an indication on the tape record if there is further relevant printed material extant in a vertical file. This additional material is usually in the form of a Xerox copy of an article or a bibliography. The biographical files are supportive in that they refer to individuals who have been selected to be interviewed orally. To date, some 15 interviews have been completed. These vary in length according to the importance of the subject. All subjects of interviews have been identified and the number to be recorded is well over 100. Dr. Merzbach estimates that about a dozen of these subjects will require over 10 hours of interview time. Another group of 100 or so will need about five hours. There is another large group of individuals who will be covered with shorter interview sessions. This group is largely made up of persons who have made specific single contributions to computer development and those civilian scientists who were involved in military development during World War II.

Dr. Merzbach identifies her greatest need in continuing the Computer Project as qualified interviewers to complete the oral history portion. This is demanding and time-consuming work and it comprises a large part of the research design.

Photographic files are classified by subject, catalog number and date and place where the photograph was taken. There are over 750 photographs in the Mathematics Division files. The negatives are maintained in the Museum of History and Technology Photolab. Subjects are assigned to the photographs by the curator.

There is a large vertical file of documentary material consisting of manufacterers' brochures, compary histories etc. This file is arranged alphabetically bu subject and there is no machine access to the material.

OUTPUT

At the present time there is no published output from the system. At such time as the international inventory of computers is completed there will be a catalog published. This catalog will include both digital and analog computers. In this inventory a computer is defined as "a device which will perform a sequence of mathematical operations automatically".

As has already been mentioned, Dr. Merzbach hopes to publish the catalog of instrument makers.

Since much of the material is put into machine-readable form as it is gathered, the system may be queried at any time for information, either to support in-house research or to answer public inquiries. Dr. Merzbach was unable to estimate the amount of daily use the existing system receives. She pointed, logically, that as the data bank increases so will the system's usefulness.

DATA COLLECTING PROJECTS
INVENTORY

April 14, 1969

PROJECT

Information Retrieval System for Engineering Drawings of Ships

DIRECTOR

Dr. Melvin Jackson, Associate Curator, Marine Transportation

DESCRIPTION

A collection of some 3,000 architectural and engineering drawings of ships dating from antiquity to the present day has been assembled in the Maritime Transportation Division. This collection is extensive and has been augmented by a search of European archives made by Mr. Howard Chapelle several years ago. As a result of this search, rare drawings of U.S. vessels of the Colonial Period and the War of 1812 were acquired. Ships seized by the British during those periods were put in dry dock, measured and drawings were reproduced. It is this vast pile of drawings which is being described in the project now underway.

There is a gift collection of scrapbooks in the Division from the Seaman's Church in New York. These books, put together by seamen who served on the various ships, contain clippings, photographs, drawings and memorabilia such as menus, invitations etc. There is an abundance of primary source material in these scrapbooks, but the only subject access is by searching an entire volume on a given ship. Dr. Jackson hopes to have this collection microfilmed, but does not see any realistic hope of having the material indexed. He does desire to put the information contained in the volumes of Lloyds Register, 1764-1860 onto punched cards, but views this as a fond hope with dubious realization.

INPUT

The Information Systems Division has devised a specialized retrieval system for the engineering drawing collection. By the use of punched cards a search method has been created which may be accomplished by both machine sorting and by a manual needle drop action. At the present time information is beind coded onto work sheets for subsequent key punching. There are 62 major categories by which information may be described and sought. Some of these include data on type of vessel, where used, rigging, means of propulsion, tonnage, historical period, presence of a model in the Smithsonian or other museum collections and bibliographic citations.

The descriptive cataloging of the drawing file is progressing slowly, with only three hours per day of professional staff time available for analysis. Dr. Jackson identifies lack of qualified staff for coding as his greatest handicap to the completion of the project. The next most critical need is for research assistants to locate bibliographic citations and references.

OUTPUT

Since the project is in the beginning stages there is little output from the system at this time. The current rate of inquiries handled by the division is about 150 per month, and the files are open to visiting scholars who come to study them in person. A part of the plan for the system is to microfilm the entire drawing file and acquire a microreader-printer so that records may be copied and kept by visiting scholars.

The added facility of manual retrieval will extend the use of the files for on-the-spot inquiries and staff research. This system, using the same punched cards which may be machine-sorted, is founded on the principle of coordinate indexing. The needle drop system works in the opposite manner of the key-sort system. as the needle is passed through the deck, an absence of a hole indicates a hit. By a process of elimination the critical records may be extracted from the deck. This is the first use of this system, designed by Mr. Reginald Creighton of the Information Systems Division. Mr. Creighton sees its potential adaptability to other information problems which may arise in the Smithsonian.

DATA COLLECTING PROJECTS
INVENTORY

May 7, 1969

PROJECT

System for Recording Action Taken on Objects Sent to Conservation-Analytical Laboratory

DIRECTOR

Mr. Maurice Salmon

DESCRIPTION

The Analytical Laboratory serves the entire National Museum in analyzing, repairing and making recommendations regarding items and objects in the Museum collections.

Requests for services are submitted on a standard form which supplies descriptive as well as diagnostic information.

When work is completed on an object, a report is sent to the requesting curator. A duplicate of the report and other pertinent laboratory data is filed in an individual folder. There are now in the files over 800 case histories of analyses and other work performed by the Laboratory.

Although each case is unique, there are techniques and chemical analyses which might be applicable in other instances. The technical staff and Mr. Salmon selected the Termatrex system for coding and retrieving this data.

In what was described as a crash program, early in 1969, all data in the existing files was coded and punched into the system and data is entered regularly for continuing work.

In designing the system, Mr. Salmon worked with the Information Systems Division and the SIMIC indexing method was used to develop the thesaurus of some 400 descriptors. These descriptors refer to "noun" or name of object, material, decoration and culture. There are also descriptors for steps in a routine examination and for treatment such as bioproofing, coating, cleaning, fumigating etc.

INPUT

Since the crash program, input is done on a regular basis as work is completed, using the appropriate descriptors. The file grows at about the rate of 10 entries per month.

OUTPUT

This system is designed for the exclusive reference use of the staff and Mr. Salmon is quite satisfied with its efficiency.

DATA COLLECTING PROJECTS
INVENTORY

December 23, 1968

PROJECT

Catalog of American Portraits

DIRECTOR

Mr. Wilfred Cole, Keeper of the Catalog of American Portraits

DESCRIPTION

The description in the Freeman report is accurate. However, the project has been expanded and there are now some 25,000 entries in the file. Currently the file has only manual access by name of sitter with a cross-reference by artist. Early in 1969 the data will be punched onto paper tape to be transferred to computer memory. This is a continuing project with an estimate of seven to ten thousand entries to be added yearly. The survey is being conducted on a nation-wide basis with the cooperation of museums, historical societies and genealogical organizations. Local surveys are being made in nine states by volunteer groups.

INPUT

There are 52 descriptors in the print-out sheet which is now in the design stage (copy attached), but only 32 categories are utilized for retrieval purposes. The descriptive cataloging is done by subject specialist at the rate of about ten per day. The manual file contains a photograph of the portrait when available and bibliographic citations to indicate source of verification of biographical information. It is not possible to include this footnote material in the computer file, but it is hoped that it may be added later.

OUTPUT

Presently, with only the manual file, inquiries are handled as they come in. These requests amount to about 8-10 per week. Mr. Cole feels that when the project is better known and the data is computer-based, that the number of requests will greatly increase. The information service is open to the general public as well as to the scholarly community. The greatest deficiency, as Mr. Cole sees it, is lack of staff, especially typists and keypunch operators.

DATA COLLECTING PROJECTS
INVENTORY

March 20, 1969

PROJECT

National Air and Space Museum Historical Research Center

DIRECTOR

Ernest W. Robischon, Assistant Director, (Education and Information) NASM

DESCRIPTION

Based on recommendations made in a report of a study undertaken by Rho-Bee consultants in 1965, steps are being taken to organize the files and materials in the Historical Research Center. Mr. Robischon, who was the principle consultant for the study, now has the responsibility of implementing his own recommendations. The attached inventory of holdings shows the material which had been unpacked and organized as of December 1968. Shelf or file arrangement varies with type of material. Much of the material is tied to biographical entities and all phases of an individual designer flier or manufacturer are housed together regardless of format. Card catalogs provide indexes to construction drawings and to bound volumes. However, bound volumes, except biographies, are shelved alphabetically by author without regard to subject matter. Bound periodicals are recorded in the card catalog as well as the S.I. Libraries' serial record. Any free journal publications which come to the Research Center and are not bound are recorded in the Center's periodical check-in record, but are not entered in the S.I. Libraries' serial record. Heavy reliance is placed on published bibliographies and indexes, so that little in-house indexing is done.

The photographic files are stored either mounted on cardboard in pamphlet boxes, or, in the case of more recent acquisitions, unmounted in looseleaf binders. These photographs of aircraft are arranged by manufacturer and model number. The file may be approached when only the popular name of an aircraft is given by using volumes of Jane's All the World's Aircraft to ascertain the manufacturer and model number.

There is a dictionary catalog for the microfilm collection, as well as one for Air Force material. The classification system used by the Air Force is somewhat inconsistent and there are documents missing from the file which are listed in the catalog.

The Wright Brothers have received special treatment by a young volunteer air historian. There is a separate vertical file and index for all material on the famous air pioneers.

The entire Center is arranged and staffed with the user in mind. Although some of the techniques and methods deny standard library practice, and many have been devised on an Ad Hoc basis, the pragmatism of the system makes for relevance and efficiency.

INPUT

At the present time, no plans are being made to put any of the indexes or catalogs into machine-readable form. Mr. Robischon admits that further indexing of the photographic files in a manual key sort system would increase effectiveness. However, he does not foresee a time when it will be done, considering other more pressing demands on staff time.

OUTPUT

According to the Center's records some 350-400 inquiries come in each month from such varied sources as publishing scholars to school children. It is estimated that 80 to 90% of these requests are completely satisfied. The Center furnishes photocopies of printed material and photographs on request. Fees are arranged on a sliding scale of cost of materials.

DATA COLLECTING PROJECTS
INVENTORY

May 7, 1969

PROJECT

Catalog of the Production of Curtis Aircraft 1900-1950

DIRECTOR

Mr. Louis Casey

DESCRIPTION

This project was started in 1964 and now has descriptive material on approximately 450 aircraft designed and built by Curtis during the years 1900-1950. As Mr. Casey points out, Curtis "bridged the whole period" from the inception of powered flight to the beginning of the jet era. A record of the work done at Curtis will give a picture of the evolutionary period of aircraft design. Unfortunately, company archives no longer exist, and much of the historical material was lost or destroyed when the company was dissolved. Mr. Casey is attempting to seek out documents and descriptive material. As printed specifications appear in aircraft journals for some of the older craft, scale engineering drawings are made to supplement the card file.

Mr. Casey has devised a punch card retrieval system based on one developed by Commander Tuck in London for the description of engines. This system is known as the "WEFT" method in that it is based on data pertaining to wings, engines, fuselage and tail.

INPUT

The data relating to each aircraft built is typed on to key sort cards. So far, only information regarding the date of production has been punched for needle retrieval. Ultimately retrieval may be by four major descriptors: date, military affiliation, engine, and type. Additional information will be typed on the card regarding function: such as attack, bomber, cargo or pursuit; and information on wing span, weight, length, horsepower and speed will be included.

OUTPUT

Since the file is still growing and little data may be retrieved by key sort at this time, the files serve only for in-house research and are not open to the public. Mr. Casey describes the project as being "in limbo" for want of staff time and funds to reproduce scale drawings from specifications. He does see the application of this manual system for the designs and models produced by other manufacturers. He feels that the manual system is adequate and does not see a need for a more sophisticated system.

DATA COLLECTING PROJECTS
INVENTORY

May 8, 1969

PROJECT

Catalog of All Aircraft and Aircraft Engines in Museums of the Free World

DIRECTOR

Mr. Louis Casey

DESCRIPTION

This catalog now lists descriptive information on 1,500 aircraft, and 1,000 engines housed in 125 museums throughout the Free World. Inquiries have been made through the Russian Embassy in Washington for conducting an inventory of holdings of Soviet museums, but to date no action has been taken on this request.

When the catalog was begun in 1964 the information was incorporated in a conventional file on 3" x 5" cards. With the assistance of the IBM Corporation, all data has now been transferred to punched cards and all subsequent entries will be treated in the same manner.

To collect the data, forms were sent to all known museums having any aircraft specimens and to commercial companies which maintain museum-type displays. All cards are punched at the Smithsonian's Information Systems Division, and are then sent to IBM for sorting. The resulting print-outs are sent to the staff at the National Air and Space Museum for correction and revision.

It is hoped to publish the catalog for world-wide distribution during the summer of 1969 if an underwriter for the publishing venture can be found.

INPUT

Data is entered by means of a numerical code by country and each museum or manufacturer within that country. Information is included on engines by type as to piston or turbo-jet as well as museum or manufacturer location. The principal retrievable categories are geographic location, type of craft or engine and name of museum.

OUTPUT

Mr. Casey assesses that the use of the punched cards and the sorter-produced print-out has been extremely valuable not only in the Smithsonian's research program but also in answering inquiries of the research community, the Patent Office and other governmental agencies.

Mr. Casey sees the published catalog as a major contribution to research and is hopeful that funds may be found to finance printing costs and distribution.

DATA COLLECTING PROJECTS
INVENTORY

December 13, 1968

PROJECT

Henry Documents: International inventory of the papers of Joseph Henry, first Secretary of the Smithsonian Institution

DIRECTOR

Dr. Nathan Reingold, Editor Joseph Henry Papers

DESCRIPTION

This system is t ally computer-based. There is the possibility of some manual access, but this is rarely used. However, computer print-outs are frequently consulted for varied information. Microfilm, photo-reproduced, and typed copies of the documents are housed in the Editor's office, Room 417 Smithsonian Institution Building. There are approximately 6,000 documents presently in the file, with an expected annual increment of 8,000 pieces. Ultimately the collection will include some 45,000 documents. Each document bears an accession number and is filed according to that number. All documents or facsimiles, except microfilm, are shelved manually with the visual assistance of tape tabs, which represent a color and position code.

SUBJECT ACCESS TO SYSTEM

A biographical approach is the principal and most frequently used access to the document file. By means of a three-letter scheme of personal initials, proper names referring to author, recipient, or a person as a subject of a document may be entered into the data bank. The key to the initial scheme is kept on a small cardex file in the document room. A flexible numerical code for subject access of approximately 100 descriptors has been devised. It resembles the third summary of the Dewey Classification scheme, but Dr. Reingold says that the numbers and subjects are purely arbitrary and there is no philosophical or hierarchical arrangement. This numerical index, with subject headings, is also kept on a small cardex file.

By using the three-letter biographical code and the numerical subject code, data is entered on to worksheets by the editor or his assistant, who is a subject specialist. These coded worksheets are transferred to punched cards in the Information Systems Division. This data is then put into the computer memory. There is the facility for using prime numbers for retrieval in the numerically coded subject areas.

OUTPUT

Print-outs by author, the recipient as subject and additional names as subject are used frequently in the editing project. The end products of the project will be a published microfilm edition of all holdings and a letter press edition of selected papers. The selection of those papers to be included in the letter press edition is the responsibility of the editor. The first volume of the expected 20-volume set is due for publication in late 1969. The estimated frequency of publication is one volume a year. Other lists and indexes relating to the documents will be published from time to time.

ACCESSIBILITY

The records and documents are primarily for use by Smithsonian staff, but will be made available to those whom the Editor identifies as "reputable" scholars.

DATA COLLECTING PROJECT
INVENTORY

PROJECT

Libraries of Alexander Graham Bell and Joseph Henry

DIRECTOR

Dr. Nathan Reingold, Editor Joseph Henry Papers

DESCRIPTION

The collection of books and monographs from the libraries of Joseph Henry, Alexander Graham Bell and from some number of Bell's friends and relatives totals approximately 5,500 volumes. This collection has been lent by the Bell heirs to the Smithsonian Institution for an indefinite period. It is in the custody of Dr. Reingold and is housed in his office. The collection is arranged on the shelf alphabetically by author. At the time the books were unpacked after their arrival at the Smithsonian, data concerning each one was entered on worksheets. This data included author, title, (title only if no author could be determined) and provenance. For that portion of the collection which belonged to Mr. Henry (approximately 1,300 volumes) additional data has been entered. This includes date and place of publication, number of pieces in the case of multivolume sets, identification of presentation copies, annotations and occasionally size in the case of folio editions. Data from the worksheets has been put into machine-readable form and into the computer memory. Ultimately the entire collection will be so analyzed, but presently the Henry portion of the collection serves as the working library of the Henry Project.

OUTPUT

Print-outs in all designated categories are available for the Henry portion as well as a permuted title index which serves as a subject index. Provenance and author print-out is possible for the entire collection. The ultimate product of this project will be a printed catalog of the combined libraries of Bell and Henry.

DATA COLLECTING PROJECTS
INVENTORY

March 20, 1969

PROJECT

Animal Records, National Zoological Park

DIRECTORS

Mr. Donald Bridgwater, Manager, Animal Department and
Mrs. Sybil Hamlett, Information Assistant, Information and Education Office

INTRODUCTION

At the present time some of the administrative officers at the National Zoological Park are investigating several information retrieval systems. They plan to coordinate records kept in various departments and offices as well as to expand their data-keeping facilities.

This report will describe the present system used for keeping animal records and then outline some of the future needs as identified by Mr. Bridgwater in an interview held March 17, 1969.

DESCRIPTION

Early in 1964 a key sort file record for all animals extant in the collection was begun. Since then data on all new acquisitions have been added to the file. It is hoped that the same file can be made for all retrospective records, but since this will entail a backlog of approximately 32,000 entries, staff time for such a project has not been available. There are presently over 5,000 entries in the file which is kept on McBee key sort cards.

INPUT

With the acquisition of each new animal, a descriptive card is prepared in triplicate in the Animal Department Office. One copy is maintained there, one is sent to the Education and Information Office and one is kept at the hospital for veterinary records.

The main entry includes (1) the scientific name of the animal; (2) how it was acquired, by gift, purchase, captive born; (3) date acquired; (4) sex. This information appears typed on the face of the card and is also punch-coded. Additional information for a specific animal is typed on the card. This information will vary with the individual animal, but all carry the individual's identification number. In the case of primates the identification number is tattooed on the animal; hoof stock wear metal ear clips; snakes are notched on the anal keel; birds are banded. The large mammals such as the elephants and large cats have no identification other than their zoo names. When the animals are given names these too are added to the typed information on the card. The different divisions also add typed and punched data. The Veterinary Department adds much information on illnesses, treatment, immunizations etc.

Currently, Mrs. Hamlett maintains a subject file of journal reprint material which is arranged in broad groupings of (1) mammals, (2) birds, (3) amphibians, (4) invertebrates, (5) fish, (6) general. Although these files do employ the use of color keys to subject, the access to them is strictly manual and visual.

The photographic files in the Information Office have been arranged under broad subject groupings such as mammals, birds, reptiles, buildings and personnel. There are approximately 75,000 uncataloged color slides which are the result of field trips by zoo personnel. It has been arranged to have these slides indexed by a summer intern during the summer of 1969.

OUTPUT

It is difficult to measure the use of the punch card system since it is used for different purposes in each locale. Heaviest use comes in the Veterinary Division and it is here that expanded records are the most critically needed. Mrs. Hamlett estimates that her office uses the files to answer public inquiries about once a day. The use in the Animal Department as a control of inventory is constant.

FUTURE PLANS

Mr. Bridgwater and his colleagues are identifying their present and future needs in information handling. Mr. Bridgwater would like to expand the animal records to include behavioral information, sexual development, mating, gestation periods and parturient behavior. He would also include data on the development of the young to maturity, old age and death. Also to be considered will be pathology, cranial measurements, antlers, skeletal measurements etc., as well as final disposition of the carcass.

It is desirable to keep other data on zoo operation and maintenance, such as types of enclosures, efficacy of social grouping by species, sex and age. This type of information must be gathered yearly as background material for the annual report appearing in the International Zoo Yearbook.

A classified outline of subjects on which records should be kept has been devised by Lady Caroline Jarvis-Medway of the London Zoo. Mr. Bridgwater feels that this scheme, with some modification, would be adaptable to a mechanized or key sort retrieval system. Mr. Bridgwater is also eager to organize the entire journal reprint collection at the zoo. Although Mrs. Hamlett has organized her file, there are other collections in offices and divisions about the Park. Mr. Bridgwater would like to bring together a union subject index to these collections. He has devised a subject classification scheme which is hierarchical and would lend itself to a rapid retrieval system.

As of this writing in March 1969, the National Zoological Park is ready for an expanded information system and has done much of the preliminary work toward that end. It is now for the administration to decide on the type of system which will best fit their needs and their budget. They have gone quite far in articulating their information needs and in describing the information they would like to store and retrieve. They now are assessing their budget allotment and availability of qualified staff before proceeding. At this point their most pressing need is for technological guidance in selecting the most effective system.

The staff of the National Zoological Park appears to be a very cohesive unit with a high staff morale and cooperative spirit. Since the data generated will pertain to individual, living creatures, and all those who are involved with NZP are working on various aspects of those creatures' well-being, the integrated information system will be of vital use and interest to all.