AN ABSTRACT OF THE THESIS OF

Helen Jane Armstrong for the degree of Doctor of Philosophy

in Geography presented on May 24, 1977

Title: CRITERIA FOR THE SELECTION OF MAPS FOR A BASIC COLLEGE MAP COLLECTION INCLUDING AN ANNOTATED CARTO-BIBLIOGRAPHY

Abstract approved: J. Granville Jensen

A long standing problem has been the question of what maps to select for acquisition in a college map library. This thesis addresses the problem and provides a carto-bibliography of basic maps for a map library. Following a brief review of pertinent literature, criteria for evaluation and selection of maps are identified and analyzed. Using a questionnaire persons responsible for selections of maps for all United States college map libraries were surveyed to determine the degree to which the criteria were considered to be important in the selection process for map acquisition. Of 249 mailed 133 questionnaires were returned. The results show that presumed reliability of the map source was considered most important, followed by scale and date. The criteria of size and map projection were noted as seldom considered. The survey shows that the typical American college map library contains 50,000 to 100,000 maps with no special

emphasis other than United States maps, and is in charge of a map librarian on a part time basis.

As an application of the selection criteria a carto-bibliography was compiled suggested as a core for building a college map library. The carto-bibliography included as a major part of the thesis was compiled by examination of thousands of maps in three major map libraries, The Library of Congress, University of Wisconsin - Madison and University of Florida. The carto-bibliography does not presume to include all maps but rather to suggest a sound base for building. A special section is on Florida as an example of types of maps generally available for each state and local area.

Criteria for the Selection of Maps for a Basic College Map Collection including an Annotated Carto-bibliography

by

Helen Jane Armstrong

A THESIS

submitted to

Oregon State University

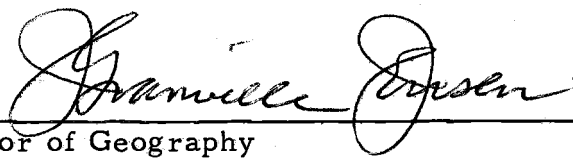
in partial fulfillment of
the requirements for the
degree of

Doctor of Philosophy

Completed May 23, 1977

Commencement June 1978

APPROVED:



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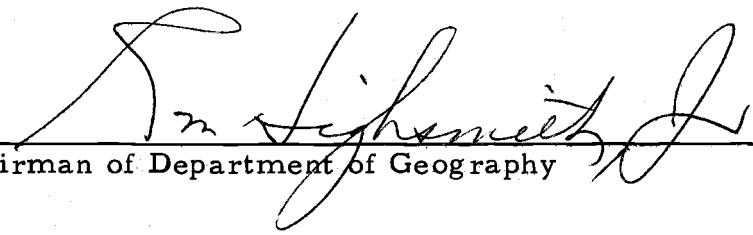

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ACKNOWLEDGEMENTS

A doctoral dissertation can not be researched and written without the direct and indirect assistance of many people. To all those individuals and institutions who helped in this endeavor, I wish to express my appreciation.

Worthy of special mention are the members of the Geography and Map Division of the Library of Congress and Mary Galneder, Map Librarian, University of Wisconsin - Madison. These map librarians made their map files readily accessible to me and provided me with immeasurable assistance and encouragement. Additional thanks to all those map curators who cooperated in the questionnaire survey and responded so promptly and thoroughly. The University of Florida and the University of Florida Libraries administration have aided significantly in the completion of this dissertation by their moral and financial support.

Personal thanks must be given to several individuals; Dr. Virginia Hetrick for sharing her knowledge of computers and statistics, and Mrs. Dolores Henderson for her editorial assistance. Additionally, I wish to express my gratitude to my graduate committee and particularly to my committee chairman, Dr. J. Granville Jensen. These gentlemen provided the advice, direction and imagination necessary to complete this dissertation.

Finally a personal thanks to my mother for her patience and support during these sometimes difficult years.

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CHAPTER I

INTRODUCTION

Purpose

> I am told there are people who do not care for maps, and find it hard to believe. The name, the shapes of the woodlands, the courses of roads and rivers. . . are an inexhaustible fund of interest for any man with eyes to see or two-pence-worth of imagination to understand with!
>
> --Robert Louis Stevenson--
> Treasure Island

This dissertation will endeavor to eliminate several of the problems encountered by geographers and librarians in locating, selecting and obtaining maps for research and reference collections. The task of developing a map collection can be a frustrating experience given the enormous variety of maps available for every country with a complexity of scales, projections, and languages, and the problem is compounded by the lack of map selection standards and comprehensive acquisition tools. Moreover there are no guidelines available for a college wishing to systematically develop a basic map collection around which a research map library could be built.

To accomplish the objective this dissertation concerns itself with identifying the criteria for use in evaluating and selecting maps for inclusions in American academic libraries. All known map curators in the United States colleges and universities were polled by questionnaire to determine to what extent they used the criteria and how significant they considered each criterion. As a practical demonstration of using the evaluation criteria, an annotated carto-bibliography[1] has been compiled, to provide an acquisition tool indicating maps and types of maps that should be contained in a basic academic map collection.

Conceptual Background

Maps have traditionally been considered by geographers to be a fundamental tool in representing the spatial interrelationships of man and his environment.

> It is quite reasonable to suppose that the map, as a communicative device, has been around as long as written language has: like writing, a map is a way of graphically expressing, mental concepts and images.
>
> (Robinson and Petchenik, 1976, p. 1).

Maps have been one of the most important methods of communication throughout man's history. The oldest extant map is a clay tablet circa 2800 B. C. which shows a rudimentary cadastral survey

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[1]The term carto-bibliography is a coined word with several meanings. In this dissertation the definition referred to is: a compiled list of maps.

in Mesopotamia. Undoubtedly, the technique of mapping predates this artifact considerably. The word "map" itself comes from the term Romans used for napkin. They in turn, assumed this word mappa, from Carthage (present-day Tunis), where it meant "signal cloth." The word "chart," like the word card hearkens back to the Greek word chartos, which signifies "leaf of paper" [more likely papyrus]. Probably because of the technical applications and connotations associated with the term "chart," the science of map making as derived from the practices of surveying to drawing - has come to be called "cartography" (Greenhood, 1964, p. xi).

Over the centuries cartography developed as both an art and a science, combining the aesthetics of color and design with mathematics and geodesy. During the Twentieth Century the variety and sheer quantity of maps have expanded significantly, aided by the development of new printing equipment, computer techniques and remote sensing capabilities, especially satellite imagery.

The academic community has increasingly recognized the importance of an organized collection of maps for research and instructional activities. The intelligence demands by all combatants in World War II greatly expanded the production of maps and spurred the education of the general public in the dissemination and use of maps. After the war there was an increase in demand for well-drawn maps by those geographers who had received or developed their map

interpretation skills in the military services.

In the academic institutions the problem of satisfying the map needs of faculty and students was not easily resolved, given the staggering, as it were, overnight, explosion of recently published maps on a world-wide basis. In some college[2] libraries a partial solution to this problem was begun shortly after the end of World War II with the development of the Army Map Service (now Defense Mapping Agency) map depository program. A basic collection, plus yearly updates of medium and small scale world topographic maps, were distributed to a select group of colleges to be held in perpetuity. Today several hundred libraries are members of the Defense Mapping Agency map depository program. However, admission into this program is now restricted, and academic institutions wishing to participate must add their names to what is a long waiting list.

Since there are fewer than 250 professional map librarians in the United States, the responsibility and function of creating or augmenting a reference collection of maps is often relegated to the general library or geography department. The person from either sphere responsible for developing the map collection faces many perplexing problems because of the lack of guidelines for map selection and acquisition. The enormous variety of maps available from

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[2]The word college is used in this dissertation to represent both colleges and universities.

an even greater variety of sources can be overwhelming to the inexperienced map curator.[3] There is a need for a set of criteria by which maps can be selected by those lacking expertise in the field. Equally, there is a need for a carto-bibliography for a basic map library by which new map curators can be guided. Three decades ago, Espenshade indicated that although the research needs of college libraries obviously would vary greatly, the development of an adequate collection could and should be planned systematically through application of a few basic principles and procedures. The result will be a balanced collection which can be enlarged in an orderly fashion (Espenshade, 1947). In the intervening 30 years, neither minimum standards nor basic guidelines have been formulated for the development of reference and research map collections by either qualified map librarians or geographers.

To assist in mitigating this unfortunate circumstance and to ease the difficulties of the novice map curator, this dissertation is concerned with factors influencing map selection, including the varying facets of cartography, map interpretation and map users' preconceptions. The evaluations are based not on the principles of current theoretical cartography, but rather on traditional cartographic information oriented toward the map users'

[3]The term map curator is used in this dissertation for simplification and refers to anyone responsible for selecting and acquiring maps for a map collection, whether map librarians, geographers or general librarians.

viewpoint. As such, the discussions of various cartographic elements are at a practical level, moreover there are available in the literature many fine articles examining each of the elements in great detail. Any number of these writings can be consulted for further elaboration of the subjects. A recent development in cartographic research has been to study and analyze how the map communicates and how the map is perceived by the user. Again, there are several excellent articles available discussing cartographic communication and mental maps.

One treads an ill-defined path to find introductory presentations concerning evaluation of maps for use or acquisition. This lack quite possibly is a reflection of the position of the map collection in both geography and the library world. It is particularly hard to locate articles regarding map selection when the map curator is not privy to "insider's" information. Usually the only acquisition guides available are lists of map sources circulated between map libraries; a closed circuit wherein the inexperienced map curator may be denied access by sheer ignorance of their existence.

Carto-bibliography Compilation

Using the evaluation criteria identified in this thesis, a carto-bibliography was compiled analogous to A Geographical Bibliography for American College Libraries (Lewthwaite et al., 1970). To

compile the carto-bibliography the map collections of the Library of Congress, The University of Wisconsin, Madison, and the University of Florida were searched and thousands of maps evaluated. Certain restrictions were established that a map had to meet before it could be considered for inclusion in the carto-bibliography. These limitations included: The map must be readily accessible to all United States college libraries; it must be a flat sheet map thus eliminating mounted wall maps for classroom use, photo maps and remote sensor imagery, plastic relief models, and atlases. The selected maps were annotated and included in the carto-bibliography to provide a basic collection of maps that should be contained in a map library. The map curator can consult the recommended carto-bibliography to determine basic reference maps that should be obtained for specific areas and subjects. Utilizing the evaluation criteria, the map curator should be able to develop a working sense of cartographic discrimination as regards newly published maps or specialized thematic materials not covered in the carto-bibliography.

The bibliography has been compiled as a foundation for a medium size map collection.[4] College libraries have neither the funds nor the storage facilities necessary to attempt to include in their collections every published map. Therefore, the map curator must be

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[4]A medium size map collection is considered to be a collection containing 50,000 to 75,000 maps (not individual titles). At this point, it is desirable to employ a full-time map librarian.

resourceful and discriminating to develop a well-balanced reference collection. The more specialized research collections servicing various disciplines may use this compilation as a foundation upon which the topical and/or area specialties may be emphasized i. e., a map library whose specialties are the Central American countries would still obtain World and Continental general and thematic maps, individual national maps, detailed United States maps and then particularly detailed coverage of the Central American countries. In this manner a significant research facility could be constructed which would be useful for studying all aspects of Central American countries and comparing them with other world nations and any inter-relationships which prove pertinent.

The usefulness of the carto-bibliography can be extended by employing it as a comparative tool to determine the deficiencies of the existing collection. Non-academic libraries with numerous map requests should also find the compilation quite advantageous.

Review of Literature

A review of geographical and library literature pertaining to maps and map libraries revealed a scarcity of publications concerned exclusively with standards for map evaluation and selection. Several articles have mentioned cursorily a specific selection principle but only a few have even dealt with the subject. Furthermore,

there has been no carto-bibliography published.

Among those few articles published by cartographers discussing the evaluation of maps, Espenshade was one of the first to attempt to provide criteria for planning a map collection and selecting maps. In "Maps for the College Library," he listed four factors he considered important:

> (1) the areas or parts of the world for which maps or coverage are desired,
> (2) the types of maps required,
> (3) the relative intensity of the coverage or scale over any particular area which is deemed necessary, and
> (4) the date of the material to be depicted.
> Any one or all four factors are limited by the material available (Espenshade, 1947, p. 132).

He also indicated that map curators can insure to a certain extent the balance and capability of the map collection to meet most requirements. This situation can be accomplished by obtaining World, Continental and United States coverage, showing the pattern and distribution of the basic natural and cultural (man-made) features of the earth's surface. While these guidelines are very helpful, they are not sufficiently inclusive of the structure that a "practical" approach might require.

Richard Eades Harrison presented a paper, later published in 1952, entitled "Evaluation of Modern Maps." In this article he discussed the appraisal of modern maps and how difficult this function was for the layman as well as the professional. Harrison stated that

the complexity of making maps and evaluating cartographic decisions required a considerable geographical and cartographical sophistication. Map appraisal was further complicated by the fact that maps differ so widely in size, scope, scale, purpose, projection, type of execution, degree of complexity and honesty. He felt that maps could be appraised using the same outline of the basic elements of map design, content and construction, these being source material, design and execution.

The publication which was the closest approximation of a carto-bibliography was the classic Foreign Maps by Olson and Whitmarsh (1944). For the first time were compiled in one volume descriptions and illustrations of representative foreign maps and commentary on the methods of studying foreign maps. Large and medium scale maps were emphasized but small scale maps were only cursorily examined. Unfortunately, most of the maps reviewed were European, large scale, and topographic; not the "typical materials for a basic map collection. The publication is now dated because of cartographic advances, political changes and the volume of map production form national publishers. The updating and revising of this compendium would be a valuable service but would involve the cooperation of many national mapping agencies, cartographers and map librarians.

Lock's Modern Maps and Atlases (1969) discusses some of the new mapping agencies and map series, but it is not a supplement to

Foreign Maps. It is a voluminous overview of the cartographic output of the World, surveying major map publishers and contributing a section on bibliographies that includes maps. Despite its size, it is not specific enough, and it would be overwhelming to the novice, trying to develop a map library. Thrower's two chapters on modern cartography in Maps and Man (1972) would possibly be as helpful and less confusing.

The only publications of actual holdings for map libraries are dictionary catalogs which are not selective in character: e.g., the New York Public Library has produced a Dictionary Catalog of the Map Division (1971) which is a non-selective, non-annotated reproduction of the catalog cards for all the maps in the library. Similar in format, the American Geographic Society's Index to Maps in Books and Periodicals (1968) excludes maps that are published separately from journals.

In library literature only a few short articles are published concerning map evaluation and selection. Thatcher in "Criteria for Atlas-Map Selection" (1972), outlines seven points that geographers use to evaluate maps: (1) general esthetic appeal, (2) physical relief representation, (3) accuracy, (4) balance, (5) symbols and symbolization, (6) bias of treatment, and (7) cartographic details. He indicates that points one and two are primary in any prospective buyer's or reviewer's mind, and the succeeding points are more often neglected.

Fetros in "Developing the Map Collection in Smaller Libraries" (1971) provides several useful suggestions for public library map acquisitions. These include purpose/use of the map, area, size, date, need for an index and whether it is in color or black and white.

There is no comprehensive index to newly published maps comparable to Books-in-Print, although an excellent compilation of map sources has been assembled by Richard Stephenson, "Published Sources of Information About Maps and Atlases" (1969). It is not however, a discussion of specific maps and does not contain comments concerning the quality of items received from the sources listed. Also the monthly American Cartographer lists "Distinctive Recent Maps."

Research Procedures

After an intensive literature search was completed, 11 criteria were identified by the author as being important factors in selecting maps for a map collection and are analyzed in the next chapter. An experimental pilot project was conducted at the University of Florida Map Library to determine if all evaluation factors had been included and how these criteria could be applied.

When the final criteria were formalized, the next step was a saturation survey of all persons in charge of known map collections in United States colleges. Questionnaires were sent to 249 map

curators to obtain from those persons most actively involved in map selection, their opinions of the criteria that had been identified. Of interest was the degree to which these criteria were used by them and if there was a consensus of opinion as to which were the most important criteria. Furthermore, it was desired to determine if any selection criteria had been overlooked. The responses were then computer-coded and several statistical tests conducted using non-parametric methods, i. e. , Chi-square analysis and Spearman's Rank Correlation.

After the returned questionnaires had been analyzed, the formalized criteria were applied to the selection of maps to be included in a basic map reference collection. The decisions were made by examining thousands of maps at the three large map libraries and selecting those maps which best typified the totality of the criteria. These maps were then included in the carto-bibliography with the majority of the maps being annotated.

Order of Presentation

The dissertation is arranged in five chapters with two appendices and a glossary. Chapter One is an introduction which includes the conceptual background. The identified map evaluation and selection criteria are discussed in Chapter Two plus comments on map perception, cartographic communication and the preconceptions of map users. Chapter Three is a discussion of the survey of persons

responsible for selecting maps for map libraries, including comments on the survey techniques and the results of the statistical tests. The format of the carto-bibliography and the guidelines for including those maps chosen are given in Chapter Four. The carto-bibliography is Chapter Five. The Glossary includes a list of many of the mapping terms used in the dissertation. Appendix One is the Questionnaire and Appendix Two includes statistical tables for the 14 variables and includes frequency distribution and chi-squares.

CHAPTER II

MAP PERCEPTION AND THE IDENTIFICATION OF MAP EVALUATION AND SELECTION CRITERIA

Throughout history the map has been an important medium for expressing spatial relationships and distributions of a variety of phenomena. In this century of advanced technology and expanded scientific research, maps are valuable analytical tools and repositories of information. Furthermore, economic and cultural data are frequently displayed on maps, re-asserting the old adage that one picture is worth a thousand words.

> A map has an advantage over text in that it can be seen at a glance, while words must come in sequence. No verbal description can rival the impact and retention possibilities of a map (Raisz, 1962, p. 1).

In colleges and universities maps are useful tools for faculty and students engaged in any level of research or travel. The variety of maps are diverse as the academic disciplines that utilize them. Geologists may use tectonic and geologic maps for earthquake research, while economists and architects may use the same maps with different emphasis and interpretation.

Providing a map collection that is a research facility responsive to the diverse interests and needs of the entire academic community is a challenge. The difficulty of implementing this challenge is compounded by the diversity of maps which manifest themselves in

an enormous variety of scales, projections, subjects and sizes from an almost infinite assortment of publishers. For those wishing to develop a map collection to meet the needs of a college or university, this situation often becomes frustrating. To select maps for the academic community requires experience with maps, cartographic knowledge and sound judgement. For the non-professional map librarian what is needed is a set of guidelines for evaluating and selecting maps for inclusion in the map collection. It is with this need in mind that the following analysis of maps and their evaluation has been written.

The Nature of a Map

A map has been described frequently as a graphic representation of a portion of the earth's surface. This definition however, provides only a bare sketch of the nature of a map. Therefore to understand more fully how the information on a map is organized and portrayed a brief review of Raisz's principles of cartography follows:

(1) Maps are drawn in a pre-determined scale. Each feature placed exactly in the proper direction from other points at a horizontal distance proportionate to the scale of the map. (This principle will be modified for small-scale maps in various projections.)

(2) Maps are selective. Only those features are shown which are important for the purpose of the map.

(3) Maps emphasize certain of the selected features.

(4) Maps are symbolized. All features are shown by standard symbols.

(5) Maps are generalized. Intricate detail is simplified, particularly on small-scale maps.

(6) Maps are usually lettered, titled and labeled.

(7) Maps are usually related to a system of parallels and meridians.

> From these principles we may try to define a map as a selective, symbolized and generalized picture of some spatial distribution of a large area, usually the earth's surface, as seen from above at a much reduced scale. Most maps are lettered and related to a coordinate system (Raisz, 1962, pp. 31-32).

It would further assist the map user to consider the diverse types, maps may be grouped into two inclusive classes, general and thematic. General maps, sometimes termed political maps, are the most common type of map published and usually show political boundaries, place names, and selected physical features. Thematic or special subject maps normally illustrate some particular aspect and may be quantitative or qualitative. A well-written discussion of the various types of maps is Tyner's World of Maps and Mapping (1973). A detailed examination of thematic and automation mapping is available in Muehrcke's Thematic Mapping (1972).

Map Objective

Every map has a purpose and contains information the cartographer wishes to communicate to the map user. The general map in its simplest form communicates basic areal and political relationships, whereas a multi-symboled and colored choropleth[5] map may illustrate several interlocking economic associations with spatial analysis as an important factor. Maps are used for many non-academic purposes by commercial and governmental mapping agencies. Whatever the aim, the map must be adapted specifically for a well-defined and feasible objective (Monmonier, 1977, p. 35).

How well the graphic elements are selected, manipulated, and integrated, greatly affect how effectively the information is displayed on the map. If the map reader is able to interpret the purpose of the map properly, it has succeeded.

Cartographic Communication and Map Perception

How the purpose of the map is transmitted to the map user is cartographic communication and how it is interpreted is known by the user as map perception. Only recently have geographers and cartographers begun to study and write about cartographic communication and map perception. Most of the literature has been concerned with

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[5]See Glossary.

the technical aspects of cartography and how the map information was displayed. Scant material has been written exploring the map user's perception of any given map and for what purposes he supposes the cartographer drafted it. Petchenik describes the situation when she states:

> The viewer's first reaction to the map under most conditions of use, is not to the individual elements of display, but rather to the map as a whole. And this reaction is likely to be more affective than cognitive in nature. The viewer likes, dislikes, or is essentially neutral in his immediate response to the map, an assessment that is based on a complex reaction to the map's appearance as a whole. Unfortunately the 'total' look of the map, unlike the character of each of the graphic elements, is a quality the cartographer usually fails to consider especially at any conscious level. . . . Instead, the overall appearance results by chance from the choice of graphic specifications (1974, p. 63).

In the Nature of Maps one possible reason was postulated for the relatively late appearance of developmental studies touching upon these components of cartography.

> Until recently most maps were relatively simple, showing the locations of some things with respect to others. As thematic cartography has developed, however, it has become necessary for us to be concerned with the depiction of highly abstract, nonvisual phenomena and relationships, and with the representation of subtle distinctions (1976, p. x).

Studies are now being conducted discovering the often tortuous, multi-faceted aspects of how a map communicates and how the map user perceives this attempt at communication. The studies at present seem to concentrate upon comprehending, then dissecting the communication process, buttressed with the psychological and

physiological bases underlying this perception of the map. Monmonier surmises that cartographic communication is a salient theme in cartography and that the map proper is only one link of a chain that starts with an image someone wishes to convey and culminates with the intellectual or physical responses of the user (1977, p. 9). There are several discussions available which are good introductions to these aspects of cartography such as Monmonier's Maps, Distortion, and Meaning (1977) and Robinson and Petchenik's The Nature of Maps (1976).

Another relatively recent development in cartographic research has been the concept of mental maps. Researchers in this fascinating field have discovered that the "real world" exists in varying degrees for any one human. We are familiar with the parody of the New Yorker's view of the eastern seaboard of the United States: The distance from New York City to Miami Beach is ludicrously telescoped. While this exaggeration is amusing, real studies show that such perception is uncommon. Often the "map user" deletes, emphasizes, reconstructs physical space to suit his perception of it. These concepts aid in comprehending the psychological underpinning of map perception and interpretation by the map user. For discussions of these concepts the reader may wish to refer to Dornbach's The Mental Map (1972), Gould and White's Mental Maps (1974), Downs and Shay's Maps in Minds (19).

Map User Preconceptions

How map users perceive and interpret maps are significant factors on yet another level: The preconceptions of the map user can ultimately influence the selection of maps for the map collection. Most of these preconceptions are based on past experiences and sometimes mis-adventures of the map user. The following observations are based on a map user study in the University of Florida Map Library.

The map user first sees a map as a whole and then his attention is frequently drawn to the colors. The map user's familiarity with traditional map altitude (hypsometric) tints and political coloring can influence his preference in maps to the point of disliking "new" color schemes. Also the darker hues on thematic maps seem to be more important than the lighter ones, no matter if it is a geological or a population map.

Then there are the two preconceptions that all maps should look like National Geographic Society maps or school wall maps or that any type of maps is preferable to the road map/school map/ National Geographic Society variety. In conjunction with this latter viewpoint, Spellman (1970) has offered one good explanation of the attitude. Road maps were easy to obtain in the United States and having been free somehow lessened their "authority." Some map

librarians find it difficult to treat these items as serious research tools. Since they are free, general users become accustomed to regarding them - and in fact all maps - as insignificant items of transient value. In Europe such is not the case because maps are bought, and as investments are well taken care of and regarded as items of genuine and continuing usefulness. Spellman's comments about road maps in some instances might be extended to National Geographic Society maps which come "free" as a supplement to the Society's magazine.

Another preconception is if it "looks" authoritative, it must be so, and it surely must be accurate it it is a national survey. The problem with this attitude was expressed by Wright in Map Makers are Human, Comments on the Subjective in Maps.

> The trim, precise, and clean-cut appearance that a well drawn map presents lends it an air of scientific authenticity that may or may not be deserved. A map may be like a person who talks clearly and convincingly on a subject of which his knowledge is imperfect. We tend to assume too readily that the depiction of the arrangement of things on the earth's surface on a map is equivalent to a photograph - which, of course, is by no means the case. . . . Not all cartographers are above attempting to make their maps seem more accurate than they actually are by drawing rivers. . . and so on with an intricacy of detail derived largely from the imagination (1942, pp. 527-528).

The overly optimistic map user presumes there is a map already published of the exact area and subject desired, precisely drafted to suit specific needs. Therefore, a "good" map should exist

with the state of Missouri and the country of Yugoslavia on the same sheet. Also a map clearly depicting the "undiscovered gold mines in Colorado" should also be published and readily available.

There are other map users who have a fascination with the Mercator Projection. They may not see it as a projection, or know its name, but believe that every map should look like this and also should be centered on the United States. A polar azimuthal projection is incomprehensible to map users who must have a map drawn on a Mercator Projection. Robinson pointed this preconception out in his Look of Maps. ". . . this projection has been regularly and indiscriminately used although many other projections more suitable for general purposes have long been known" (1952, p. 10). However, old habits die hard.

Identification of Selection Criteria

Although what one considers to be an attractive map is subjective opinion, there are cartographic elements which, when correctly applied, will result in a well-designed map. These elements and factors of date and reliability are essentially the criteria useful in evaluating and selecting maps for inclusion in the basic map collection for a college. As Lock stated:

> The contemporary maps are expected to convey their information as directly and as effectively as possible, without ornamentation but with full documentation and

> essential explanatory text using extreme accuracy in all stages of production (1969, pp. 39-40).

When selecting maps for a map library there are economical and physical constraints common to any library. These are acquisitions budget and the cost of maps, their availability, and their storage facilities. Within the parameters of these restraints there are 11 selection and evaluation criteria which have been identified as useful guidelines when obtaining maps.[6] These criteria area:

1. Area
2. Content (map information)
3. Reliability
4. Date (date of the source data and date of the printing and revisions)
5. Scale
6. Visual Impression (includes the graphic elements)
7. Symbolization
8. Projection
9. Size
10. Format
11. Grid or system of coordinates

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[6]The selection criteria were identified by the author after an intensive literature search and analysis. To a large degree they are based on her 16 years of experience as a professional map librarian during which time she developed three map libraries.

Two of these criteria, area and content are concerned with what the map has to say while the others are concerned with how the map says it. Most of the latter group involve graphic elements and design techniques as they are perceived by the map user. Each of these criteria will be discussed separately.

The ideal situation for evaluating and selecting maps for acquisition is to be able to examine the actual maps, compare them, and then choose the "best" from among the many. However, in reality, maps are bought sight unseen and often from limited descriptions in a dealer's catalog. There are map librarians who claim to obtain everything available for an area and not to use selection criteria. When questioned however, they admit to using at least the criteria of area and content, and usually the criteria of reliability and date. It is simply an unconscious choice based on experience. Even when not actually viewing the map, the selection criteria of reliability, content, area, scale are manifest and applied frequently to those of size and date. Occasionally the grid system will be mentioned in a catalog. However, the graphic elements involved with visual impression can not be applied without actually seeing the map and occasionally even the most experienced map evaluator wil acquire a poorly designed map.

Area

Area is decidedly an important criterion for development of the basic map collection. In addition to world-wide general and thematic maps there should be map coverage for every continent and nation of the world at either a small or medium scale. Once the foundation has been laid, the college will obtain maps to emphasize special areas of interest. Area is usually the first criterion applied when selecting maps. Its frequency is evident in a map library's acquisition policy.

Content

In developing the basic map collection "content" usually refers to the subjects of thematic maps, and on general maps to features such as highways, political boundaries, and place names. These features are affected by cartographic generalization and simplification and are expressed as a display of symbols. Occasionally a dealer's catalog will describe some of the map's content but customarily only special subject map lists will provide information on geographical content.

Reliability

"Reliability" establishes itself as a significant criterion for evaluating and selecting maps for inclusion in a map collection since

reliability of publisher, cartographer and source data are all crucial. Certain publishers have reputation for quality publications which consistly indicate date, scale and sources of data. Among publishers with such reputation are John Bartholomew and Son, Ltd., Scotland; Great Britain's Directorate of Overseas Surveys and the Geographical Section of the General Staff; Institut Geographique National, France; National Geographic Society and U. S. Geological Survey in the United States. Most of these publishers have developed design styles akin to artistic "signatures" with many of their maps conforming to recognizable standards within similar formats. When obtaining a unpreviewed map from these publishers, there is always the good possibility that it will resemble previously observed maps from the same publisher. Occasionally a cartographer such as Erwin Raisz will develop a reputation for a certain style of map, replete with meticulous detail. Again, unseen maps will probably resemble known maps.

Reliability of source materials greatly affects the accuracy of a map. Maps made according to the best practices will indicate the sources of compilation. Sometimes these consist only of references to a published map which served as a basis for the compilation; others indicate that original surveys were employed. A great aid to map users is relative reliability diagram which shows the quality and character of the surveys for various portions of the map. If these aids are not given, the user is forced to rely on whatever knowledge

he may have of the area or compare the map with others of known reliability (Harrison, 1953).

The knowledge that source materials may be questionable is critical for evaluation of detailed land survey maps and of particular concern for thematic maps. For instance, population maps based upon an out-of-date census can be misleading, especially in a rapidly developing third world nation.

Unfortunately, some national mapping agencies unintentionally or otherwise publish unreliable products. Some major national mapping agencies have deliberately mislocated cities, coastlines, and boundaries. Simply because a map looks authoritative does not mean it is reliable. Conversely a map which is technically less sophisticated will not automatically be less reliable. While the criterion of reliability is one of paramount importance, it is one of the most difficult to apply. One must be knowledgable of the basic data to evaluate the reliability of the map. Thus, the geographer especially is well equipped for the task of analysing map information and evaluating its reliability.

The map curator may have difficulties evaluating maps from national mapping agencies of newly independent counties. One helpful guideline is that these former colonies often reflect the quality of the former colonial ruler's mapping agencies. British ex-colonies, such as Kenya, have reliable mapping programs which have benefited

from assistance and training of Directorate of Overseas Surveys.

Date

"Date" assumes significance in studying political boundaries on a map, economic data, population display, etc. While all information has historical value, it is desirable to have the date of map compilation or printing and dated sources and statistical information. Date is a measure of reliability and can add immeasurably to the authority and value of a map.

> It is almost unnecessary to say that to be useful as reference material, a map should be dated as are all good ones. In some private and commercial work, the date is included for the convenience only, and is shown in very small type. . . often so disguised as not to be readily recognized as a date (Harrison, 1953, p. 43).

A publisher who does not display an obvious date, but uses a code is actually doing himself a dis-service. Knowledgeable map curators will frequently not choose their maps for purchase if anything else of similar quality is available. Careful scrutiny of several undated maps of such companies shows that there have been many name changes and boundary changes since the map selling as "new" was actually published. Out-of-date census and economic data on maps can also be misleading.

But again, the newest map is not always the most reliable or best designed. In thematic mapping such as geologic, the date is

not nearly as important as the content and how it is displayed. Also in politically stable areas the most recent map may not be as good as an older reliable or visually pleasing map with similar content.

> . . . but it is unreasonable, in the case of a map, to think that because it is out of date it is of no value and therefore should not be allowed to take up valuable space. The best maps and charts are nearly always compilations of data taken from earlier reliable maps or charts (Brown, 1964, p. 216).

The criterion of date frequently can be applied to acquisition tools such as dealer's catalogs for obtaining unseen maps. Some of the major dealers and publishers include dates in their catalogs but unfortunately many foreign governmental agencies and private publishers do not. These omissions hamper the selection process. In these instances standby measures can be instituted such as letters of inquiry to the issuing agency and/or searching cataloged map cards from the Library of Congress or similar printed catalogs of large map collections.

Scale and Generalization

Scale is another consideration which frequently can be applied to map selection without viewing the map. In map acquisition tools the scale is listed in most instances and more often than the date. The map curator needs a basic understanding of scale and how it affects the size of a map and the generalization of map content.

> The amount of information which may be compressed into a map depends for the most part on its scale. It is evident, therefore that the larger the scale, the more detailed is the information which may be shown.... When the scale is large the information shown is detailed and specific, and the map is concrete. When the scale is small, the map loses its concrete character and becomes more or less abstract in form (Espenshade, 1947, p. 135).

It is impossible to show on a map even the smallest area exactly as it appears on the earth's surface. To measure or compare distances on the map, the ratio or scale must be expressed on the map. "Scale is the ratio of distance on the map to the corresponding distance on the ground" (Monmonier, 1977, p. 4). There are three conventional methods of expressing scale on a map: These are (1) representative fraction, e.g., 1:24,000, means one unit on the map represents 24,000 units on the earth's surface. The unit does not have to be inches or feet but applies to any unit of measurement in any country and the meaning is always the same; (2) bar scale; and (3) verbally, as in the example "one inch to one mile."

> Surely one of the most significant characteristics of a map is its scale. The scale defines the size of the map or map features in relation to the earth. As the map user becomes familiar with scales he is able to judge distances readily and, very significantly, to form his expectations of map distance and feature size (Dahlberg, 1969, p. 72).

Scales may be classed in general categories of small, medium, and large. Small scale maps are generally considered to be those at 1:1,000,000 and smaller showing little detail. Medium scale maps are those with scales between 1:1,000,000 and 1:100,000, showing

more detail. At a regional level, the information included might be classified roads, railroads, and cities, with less generalized topographic features. Large scale maps are those with scales of 1:100,000 and larger on which the map maker can show more detail even to buildings, orchards, and other cultural features. Since maps are drawn at an almost infinite variety of scales, a map curator must learn to associate a degree of detail and generalization with the map scale. On very large scale maps, a great amount of detail can be shown but as the scale becomes smaller the detail decreases and the map becomes more generalized.

> Scale is so important in maps that it is a key to their classification. . . buying a map without first seeing it, you can judge its usefulness to you beforehand by knowing its scale (Greenhood, 1964, p. 47).

> Smoothing or filtering of detail is mandatory if a map is to be more than a collage of incomprehensible symbols. This process of generalization involves the selection of both meaningful details and relevant features. The smaller the scale of the map, the fewer the number of types of features that can be portrayed (Monmonier, 1977, p. 4).

Size

In selecting maps the size is useful to know primarily for presentation and storage. It is not unusual for map catalogs to list the size of maps in either inches or centimeters. Knowing the size of the map sheet it is possible to infer the detail of information on a map as

only a certain amount of information can be displayed on a map of specific size and scale.

The map user may wish an 8 1/2 x 11 inch size map for use as a base map. On the other hand, a lecturer will want a wall-sized map suitable for oral presentations that can be seen by the audience.

Visual Impression

Visual impression is the perception of map composition from the map user's viewpoint. What impression is given results from visual composition. Visual composition is the combination of the graphic elements of cartography which make up map design. Map design is:

> The manner of presenting the many map components so that together they appear as an integrated whole, devised systematically to fit the objective of conveying geographical information to the reader. . . so that each item included is clear, legible and neither more or less prominent than should be (Robinson and Sale, 1969, p. 250).

The most obvious of the elements are color, contrast, figure-ground, balance and lettering. In addition, the basic objective underlying these graphic elements is to promote clarity and legibility in communicating the map theme.

Clarity and Legibility

If certain portions of the map are not clear and/or legible, its quality and usefulness are diminished. The desirable map for map

user and curator alike is one that is clear, well-drawn with good contrast, precisely drafted, and contains information that is distinct and readable. Unfortunately these qualities cannot be ascertained without actually seeing the map so this creates a problem for the map curator ordering maps.

The graphic elements of map design are discussed clearly and at some length in Robinson and Sale's introductory text, Elements of Cartography (1969).

Color

The use of color on a map has many psychological aspects which are complex and not completely understood. Color affects the user's ability to distinguish fine detail, see boundaries and read lettering. Basically, color is described in three terms: (1) Hue (the tint or modification of basic color), (2) Value (sensation of lightness or darkness of the color), and (3) Chroma (the intensity or dullness).

> The importance of color in cartography arises for several reasons. One of the more important of these is that it is a remarkable simplifying and clarifying element. Even a small amount of color. . . tends to subdue the visual clutter of lines, point symbols and lettering (Robinson and Sale, 1969, p. 260).

In addition to Robinson and Sale's text, there are excellent articles on color perception by Michael Wood (1953) and Robinson (1967).

Color has great influence on the map user's opinions as to whether a map is attractive or not. Factors in this decision are whether the color scheme is harmonious or garish, whether it is bright and light or dull and dark, or if color has been assigned its usually traditional role of pictorial symbolization, i. e., "blue" for bodies of water, "green" for lowlands.

Contrast

Contrast is the variation of lines, shapes, patterns and characteristics of color to differentiate between classes of map information. "The degree to which a map appears precise and 'sharp' is dependent on the contrast structure of the map" (Robinson and Sale, 1969, p. 251).

Figure-ground

Figure-ground is the relationship of the main theme being portrayed on the map to the background upon which it is displayed. A balanced appearance is sought in which the image does not overwhelm the background nor loses its distinctiveness because of an ill-chosen background.

> The immediate perception of the fundamental elements in the map is of primary importance. . . ability to focus immediately on the characteristics that the cartographer had as his objective without visually fumbling and groping to find what he is supposed to be looking at (Robinson and Sale, 1969, p. 258).

Balance

Balance is of fundamental importance when designing a map. All components must be laid out so they are harmonious and do not distract from the map's objective. The portion of a map out of proportion or lop-sided will become a focal point to the detriment of the total map.

> . . . positioning of various components in such a way that their relationship appears logical and does not disturb the viewer. . . . Format or shape and size of paper is of considerable importance. . . . (Robinson and Sale, 1969, p. 264).

Lettering

> . . . cleanliness of general linework and the appropriateness of the letter faces employed should go a great way in evaluating a map. . . . Lettering should be simple and straightforward with no eye-halting eccentricities, it should convey information smoothly and easily, without in any sense overpowering other important details of a map (Harrison, 1953, p. 47).

Symbolization

> So geographers, in Afric maps,
> With savage pictures fill their gaps,
> And o'er unhabitable downs
> Place elephants, for want of towns.
>
> - Jonathan Swift

Although he is describing the mapping of unexplored areas, Swift also presents a colorful picture of pictographic symbolization.

All information placed on a map, whether specific points, distribution sequences, or concepts, are coded by graphic symbols.

> The use of symbols to portray characteristics on the earth's surface is one of the most distinctive qualities of the map. It distinguishes a map from an aerial photograph. By means of symbols the cartographer is able to present the user with simple but useful information in a universal language (Dahlberg, 1962, p. 74).

In evaluating the map, judgements are made as to neatness, ease of recognition, and adherence to mapping convention. An unintentionally oversized or harshly colored symbol can detract from the map's balance and may interfere with the map user's interpretation. Conventional symbols on topographic maps are generally divided into five categories:

(1) Hydrography, or water features (blue)
(2) Culture, as in man-made features (black and red)
(3) Hypsography, or physical relief features (brown)
(4) Vegetation and cultivation (green)
(5) Special symbols, as on aeronautical charts, etc. (purple, orange) (Raisz, 1962, p. 35).

Detailed studies have been conducted concerning perception and use of symbols, which are published in many cartographic journals. A useful introductory discussion of the symbolization is in Elements of Cartography (Robinson and Sale, 1969).

Projections

It is impossible to transfer information from the rounded surface of a globe to the flat map surface without distortion. Map projections

offer a method by which information may be geometrically transformed (projected) on to the flat surface while retaining some significant earth relationships.

No single projection can accurately represent the globe: Each has certain properties that emphasize some feature or features at the expense of others. The four main classes of projections according to prime properties are: 1) Equal area, or true comparison of surface area; 2) Conformality, or true shape in small areas; 3) Equidistance, or true distance measuring; 4) Azimuthal or true direction from a point.

On small scale maps the distortions are most obvious and exert considerable influence in psychological perception and interpretation of the data displayed. Map users must have an understanding of the properties of the various projecteions to interpret successfully the positive aspects and drawbacks of each map. There are several excellent discussions available on projections, their construction and properties for example Tyner's World of Maps and Mapping (1973) is compact and well written. For a more thorough examination there is Greenhood's Mapping (1968) or Robinson and Sale's Elements of Cartography (1969).

Grid System/Presence of Coordinates

Several fundamental systems of coordinates exist which when organized into a map grid system are very useful locational devices.

> Basic to any work with maps is an understanding of the earth's address system. Commonly referred to as the earth grid, this system is displayed on most maps and globes and provides a simple and unique address for any point on the earth's surface. By this means the reader is able to determine the location of specific features, to add information to the map or transfer information from one map to another (Dahlberg, 1969, p. 65).

The best known of these "address" or location systems is latitude-longitude, which is the angular distance measurement in degrees between meridians (longitude) and parallels (latitude). Meridians and parallels are imaginary lines on the earth's surface that run north-south and east-west respectively and intersect at right angles. Distances are read in degrees which are subdivided into minutes, seconds, and decimal fractions of a second.

On large scale topographic and cadastral maps several locational grid systems are used. For land surveying purposes the most common are township-range, and metes and bounds. A widely used rectangular grid system on medium and large scale topographic maps is the Universal Transvere Mercator (U. T. M.), employed by the military where pinpoint accuracy and uniformity of reference is required for much of its mapping.

Special Formats

Cartography has not escaped the influences of the computer age and other offerings of Twentieth Century technology. There are today numerous special format maps being produced which only partially resemble the traditional map. Among these groups the more familiar are the computer-assisted data base maps and the automatic plotter drawings. The SYMAP and SYMVU productions of Harvard University, and other digitized formats all present problems in interpretation, storage, and size limitations. These maps, plus Cathode Ray Tube displays, will require major re-thinking and re-tooling on the part of the map librarian if they are to be used as effective research tools or to be held on a permanent basis.

Some computer maps are produced from standard typographical keyboards, so that the cartographer can easily manipulate the data. Still the computer graphic display is frequently limited. Some of these limitations are: only two-color display (normally black on white) but with five or six possible tones of grey to differentiate area units; and boundaries becoming irregular and less accurate due to limitations of digitizing. The size of the map is limited by the size of computer paper so that large productions must be pieced together. In addition, the computer paper is not of archival quality. As technology improves, map users may be able to expect both an increase

in visual appeal and more refined programs, providing the ability to tailor make maps to display more specific data.

Another format change which will require adaptations to storage facilities will be micro-film maps. There are two kinds of micro-film maps: 1) the traditional micro-film process in which a paper map would be reproduced on film greatly reduced in size; 2) COM (Computer Output on Microfilm) which generates maps on microfilm by a process similar to a laser beam. This process was used by the U. S. Census Bureau to produce the Urban Atlas series for standard metropolitan statistical areas of the United States. Both of these types of micro-film maps will be valuable assets to the map library but will require an adjustment of traditional methods of using maps and changes in their storage and preservation.

Summary

Selecting maps for inclusion in a map collection is a frustrating task for the inexperienced map curator, compounded by the lack of guidelines and comprehensive acquisition tools. To assist in the solution to this problem, 11 evaluation criteria have been identified in this thesis as useful selection aids: Area, Content, Reliability, Date, Scale, Visual Impression, Symoblization, Projection, Size, Grid System, and Format.

In appraising maps, part of the difficulty is the frequent lack of

opportunities to view the map before purchase. The criteria of visual impression and symbolization are sight judgements which can not be applied without actually viewing the map. Also dealer's catalogs seldom describe essential factors for judging projection, format, grid and general map content. This lack of adequate descriptions complicates the selection process. However, the important criteria of reliability and area normally are available in the catalog descriptions. The criteria of date, scale, and size also will frequently be included in the map descriptions. There is no substitute for experience but understanding the principles of cartography and map evaluation will greatly assist the map curator.

CHAPTER III

SURVEY OF PERSONS RESPONSIBLE FOR SELECTING MAPS FOR MAP LIBRARIES

Purpose of Survey

The criteria considered pertinent to the evaluation and selection of maps having been identified, it was desired to learn how others evaluated maps and to what extent such criteria were actually used in acquisition of maps for college libraries. The following questions were posed:

1. How would others already involved in selecting maps perceive these criteria and to what degree did they use the criteria in the map selection process?
2. Would the map curators consider the list of criteria to be inclusive or had an important criterion been omitted?
3. Was there a consensus of opinion as to which were considered to be the most and the least important?
4. Was there a correlation between selecting maps for a library and selecting maps for the library user while doing reference work?

Questionnaire Design

To determine the answers to these questions, a questionnaire was designed and sent to every known college map collection in the

United States. The survey utilized a structured questionnaire with fixed response alternatives, since a substantial information base was needed to make any inference. This type of questionnaire is conducive to the responses being coded for the computer so statistical tests could be applied. One question remained open-ended so that the respondent could voice an opinion or volunteer additional information. Thus the results could be interpreted with respect to their statistical significance, while still providing an opportunity for personal opinions to be expressed.

The questionnaire (see Appendix I) was constructed to reflect the criteria perceived as pertinent to map evaluation and selection. It was organized into two basic parts. The first part was factual, concentrating on background information which included the area/subject concentrations of the map collection. These reflected the first two of the original 11 criteria. The questions asked were:

1. Who was in charge of the map collection?
2. Where was the collection housed?
3. Who selected and acquired the maps?
4. How many map sheets were in the collection excluding atlases and aerial photographs?
5. What special subject areas, topics or languages were emphasized in the collection?

These factors were also coded for possible future analysis.

The second portion of the questionnaire was concerned with the reactions of the respondents to the identified criteria and specifically to the remaining nine criteria that were to be statistically tested. The questionnaire was designed so that each question could be cross-checked by another statistical test. To concentrate solely on the nine identified criteria, the respondent was asked to assume the existence of an artificial situation in which non-criteria restrains would be neutralized. The respondent was to disregard the normal restraint factors of: budget, space/storage, map availability and appropriate language.

The first portion of this section was 7A and was concerned with all nine selection criteria. These were to be ranked according to importance by a descending rank of influence with 1 representing the important and 9 the least important. Part B of question 7 was a scaled response format which was actually a cross-check of part 7 A. It was hypothesized that the comparison of the two sets of data would indicate a relationship to the extent that the possibility of interrelated changes could be considered. A series of correlation coefficients would be calculated to determine if there was a statistically significant relationship between the several responses. For each of the nine criteria the respondent was asked to indicate a number between 1 and 9 which best described the importance of the individual criterion. A value of 1 indicated most important and a score of 9 represented least

important, while a value at the scale midpoint (5) indicated not appropriate or inapplicable for the respondent.

Part C of question 7 was designed in an open-ended format to determine if there were any criteria omitted in the questionnaire that the respondent frequently used in selecting maps. If there was an omission the respondent was asked to list it and indicate which criterion in question 7 part A was of equal importance.

Question 8 was designed in two parts and was concerned specifically with the criterion of visual impression. This specific criterion was of interest because the six graphic elements contained in the general category provided an opportunity to assess how knowledgeable the respondent was in cartography and specifically it provided insight on depth of understanding of map design.

In both sections of question 8, the respondents were asked to rank a number of map characteristics according to: a) their utility in selecting maps for acquisition; and, b) their utility in suggesting maps to users. The graphic elements were to be ranked according to importance in descending order of importance with 1 representing the most important. The major objective of this portion of the questionnaire was to determine whether the criteria were ranked the same in both groups because ideally maps should be chosen for a map library to satisfy the needs of their patrons.

Questionnaire Implementation

The questionnaire was pre-tested by a small group of map librarians and the final form was adopted after minor word changes. A saturation survey was then conducted to obtain the responses to the criteria by those most actively involved in map selection. The questionnaire was sent to every known map librarian or map collection in United States 4-year colleges and universities.

A total of 249 questionnaires were mailed. Of these six were never delivered for a variety of reasons. Of the 243 questionnaires apparently delivered, 133 questionnaires were returned with replies. This figure represented 55 percent of the total population surveyed. The 133 included 110 questionnaires answered in the format designed to be analyzed quantitatively. The 110 answers represented 45 percent of the total population surveyed and 83 percent of the total responses. The additional 23 questionnaire responses contained many interesting and useful comments, which could not be incorporated into the computer data because of the format of the responses.

To test and compare the questionnaire data, a standard statistical computer package known as the Statistical Analysis System (SAS) (Barr et al., 1976) was used. By using the frequency procedure, the character variables output was displayed in tables. The one-way tables showed the frequency distribution of one variable and in

addition gave:

1. percent of the total number of observations represented by that value
2. cumulative frequencies, giving the sum of the frequency counts of that value and all other values listed above it in the table.
3. cumulative percentages, giving the percentage of total number of values represented by that value and all others listed above it in the table (Barr et al., 1976).

The two-way frequency distributions were printed as cross-tabulation tables and were used to compare one variable with another. Each cell of the cross-tabulation table contained:

1. frequency counts, giving the number of times the indicated values of the two variables both appeared in an observation
2. the percentage of the total frequency count represented by that cell
3. the row percent--the percentage of the total frequency count for that column represented by the cell
4. the column percent--the percentage of the total frequency count for that column represented by the cell
5. the expected frequency count of the cell
6. the deviation of the actual value from the predicted value
7. the cell chi-square (χ^2) (Barr et al., 1976)

From the one-way tables it was possible to determine the mode of the typical respondent to the questionnaire. The average map collection is housed in the Library facility with the person in charge assigned only on a part-time basis. This person was a map librarian who was responsible for selecting and ordering the maps. The typical collection contains 51,000 to 100,000 maps and other than the United States, has no special emphasis as to area, subject, or language.

In question 7 parts A and B were analyzed to determine if there was a consensus of opinion among the respondents as to which criterion was considered the most important, which the second most important and so forth. First, the mode was used to rank importance (see Table 1) but it was not very precise; too many ties were involved and in addition, difficulties arose in comparing parts A and B.

For a more exact measurement, the statistical means ($\overline{X}$) for the response data were calculated so that the relative importance of the answers could be determined (see Table 2). The smallest mean in the table indicates it has the greatest importance while the largest mean can be assumed to have least importance for the group as a whole. Therefore, in both 7 part A and part B criterion 9, reliability shows as the most important criterion chosen by the respondents. Criteria 7, size, is the criterion the respondents considered to be the least important factor in selecting a map. For the rank of criteria according to relative importance see Table 3.

Table 1. Rank of importance of criteria by Mode.

Rank of Importance (Mode)	Criteria
1	Reliability (SA 9)
2	Date (SA 5) Scale (SA 3)
3	
4	Symbolization (SA 2)
5	
6	Visual Impression (SA 1)
7	Grid System (SA 6) Projections (SA 4)
8	
9	Format (SA 8) Size (SA 7)

Table 2. Statistical means for criteria question 7 part A and B.

7 B.		7 B.	
Criterion	$\bar{X}$	Criterion	$\bar{X}$
1	5.4	1	3.8
2	4.3	2	3.2
3	3.4	3	2.5
4	6.8	4	4.8
5	3.4	5	2.6
6	6.4	6	4.2
7	7.6	7	5.6
8	6.9	8	4.8
9	3.0	9	2.0

Table 3. Rank of criteria by relative importance.

7 A.		7 B.	
Rank of Importance	Criteria	Rank of Importance	Criteria
1	Reliability	1	Reliability
2-3	Scale/Data	2	Scale
		3	Date
4	Symbolization	4	Symbolization
5	Visual Impression	5	Visual Impression
6	Grid System	6	Grid System
7	Projections	7-8	Format/Projections
8	Format		
9	Size	9	Size

The questionnaire was so constructed that part B of question 7 was to be a cross-check on the results of part A. Ideally a positive relationship should exist in the correlation coefficient. Interpretation of the two-way cross-tabulation tables shows a statistically significant relationship between parts A and B; further the ranked statistical means exhibit a direct and positive relationship. It seems reasonable that the respondent choosing SA 9 as the most important would also indicate that SB 9 was the most important. Could these relationships exist for all nine of the criteria?

Several statistical tests were run to determine the presence or absence of a statistically significant relationship between corresponding criterion in question 7 part A and B. The results were strongly affirmative as indicated by a correlation coefficient of 0. 98989 and an error of probability of 0. 0001. The high correlation coefficient indicates that, for these data, a strongly positive relationship exists between the responses to question 7, part A and B. Thus the stability of the rankings in part A is confirmed.

The Chi-square test[7] for the two-way frequency distribution tables when examined, indicated that all criteria but SA 7 and SB 7

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[7]For an explanation of the Chi-square Test (χ^2) the reader may wish to consult Maurice Yeates, An Introduction to Quantitative Analysis in Human Geography (New York: McGraw-Hill, 1974).

(size) have a significant relationship.[8] The relationship between SA 7 and SB 7 is not statistically significant with a chi-square value of 0. 2283. For part A, the respondents were forced to rank items from 1 to 9 and few of them gave equal ranks (ties) to two criteria. In part B, ties were possible since each criterion could be ranked from 1 to 9. Size was still the least important criterion but it was not considered as unimportant in part B as in part A; i. e., since the question structure was different, respondents took this opportunity to give size a slightly higher level of importance. The lack of relationship indicates that the respondents will take any size available as long as other higher ranked criteria are met. Appendix II shows all the frequency tables for SA-SB and EA-EB, including the chi-square values.

Similar tests were applied to question 9 to determine whether a correlation existed between selecting maps for a library and selecting maps for the library user while doing reference work.

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[8] It should be noted that due to the small sample size, the expected cell frequencies are less than 5. With the exception of the relationship between SA 7 and SB 7 the strength of the relationship between a Part A question and a Part B question are so great that the small expected cell frequencies were regarded as acceptable. It will be recalled that the respondents constituted 45% of the total population. Considering that the number of respondents greatly exceeded the number required to insure that a statistically significant sample is drawn for most other statistical tests provides an additional basis for accepting the reduced expected cell frequencies.

The chi-square test when applied to question 8 part A and B demonstrated that a significant relationship existed between the criteria. The null hypothesis tested was that there was uniform relationship and not a pattern to the responses. The 95 percent confidence interval (i. e. , $\alpha = .05$) was acceptable. The significance level of $\alpha = .05$ was chosen to minimize the likelihood of commiting Type I and Type II errors. The test results infer that there is a significant relationship between the two sets of data and there is less than a .01 percent probability that the null hypothesis is correct.

The response data were then tested by using the statistical mean so that the relative importance of the answers, could be examined (see Table 4). Using the statistical means, the most important graphic element can be inferred as number 1, clarity and legibility, in both parts 8 A and 8 B. The least important in part A is number 6, Lettering, while in part B it is a tie between Balance and Lettering. For rank according to inferred importance see Table 5. Several statistical tests were run to determine the presence or absence of a statistically significant relationship between corresponding criterion in question 8 part A and B. The correlation coefficient was calculated for the statistical means between both part A and part B. The results were high with the correlation coefficient being 0. 97779 with the probability of these coefficients incorrectly describing the relationships of the two sets of data being 0. 0007. The high

Table 4. Statistical means for criteria question 8 part A and B.

8 A.		8 B.	
Criterion	$\bar{X}$	Criterion	$\bar{X}$
1	1.7	1	1.7
2	4.9	2	4.5
3	4.8	3	4.6
4	3.9	4	3.7
5	4.7	5	5.1
6	5.3	6	5.1

Table 5. Rank of criteria by relative importance.

8 A.		8 B.	
Rank of Importance	Criteria	Rank of Importance	Criteria
1	Clarity and Leg.	1	Clarity and Leg.
2	Figure-ground	2	Figure-ground
3	Balance	3	Color
4	Contrast	4	Contrast
5	Color	5-6	Balance Lettering
6	Lettering		

correlation coefficient indicates that, for these data, a strong relationship exists between the responses to question B on part A and B. Thus the stability of the rankings in part A are confirmed by the correlation coefficient between the mean responses to part A and part B. Therefore, it has been demonstrated that a significant relationship exists between choosing maps for inclusion in the library's map collection and for the patron's use.

Question 7 C asking for the identification of any additional selection criteria not already mentioned in the questionnaire, produced no new criteria. The few comments about additional criteria could all be accounted for as differing interpretations of the instructions or criteria that had already been identified.

Summary

The results of the several statistical tests applied to the questionnaire data supported the following conclusions:

1. The majority of the respondents were in agreement that the identified criteria were important although many felt that there was little opportunity to apply the criteria of visual impression, symbolization, projection, and grid. The map curators stated that often the map selection was done from dealer catalog descriptions without ever having an opportunity to view the maps.

2. The list of criteria was inclusive with no important criterion being omitted. No new criteria were suggested although many respondents mentioned the criteria of area and content which were not statistically tested.

3. There was a consensus as to which criteria were considered to be the most and least important. The statistical tests confirm a consensus that reliability of source was considered the most important criterion, of those identified, in choosing and using maps in the map library. Conversely the size of the map was considered the least important criterion in acquiring a map. As long as the other criteria were met the respondents would take any size map available. The remaining criteria ranked in order of their importance were: scale, date, symbolization, visual impression, grid system, projections, and format.

4. A high correlation exists between selecting maps for a library and selecting maps for the library user while doing reference work. By using the criterion of visual impression the respondents were polled to determine if a relationship existed between selecting maps for purchase and the needs of the map library user. The ranking of the graphic elements by order of importance demonstrated that a significant relationship did exist between selection criteria for map acquisition and selection criteria to provide the needed map to the map user.

The analysis of the questionnaire results also produced an outline of the typical map library responding to the survey. The average college map library was: housed in the Library facility with the person in charge a part-time map librarian who was responsible for selecting and ordering the maps. The typical collection contains 51,000 to 100,000 maps and the only common factors of area and content were the United States and topographical maps from the United States Geological Survey and Defense Mapping Agency.

CHAPTER IV.

SCOPE AND ORGANIZATION OF THE CARTO-BIBLIOGRAPHY

For a practical application of the evaluation criteria and a major contribution of this thesis a carto-bibliography was compiled comparable to A Geographical Bibliography for American College Libraries (Lewthwaite et al., 1970). The carto-bibliography is world-wide in scope providing small-scale, thematic, general, and topographic coverage by continental areas and the world as a whole. A general reference map is included for each country wherever one was found meeting the criteria. North America differs from this format as the United States, Canada, and Mexico selections also include thematic and topographic small-scale coverage. Florida is listed in detail as an example of types of local maps that should be obtained. Excluded from the carto-bibliography were all non-flat maps such as plastic relief models and mounted class-room maps used for instructional purposes. Atlases also were excluded as well as photo maps and remote sensor imagery.

The entries in the carto-bibliography are based upon personally examining and applying the evaluation criteria to thousands of maps in the collections of the Library of Congress, University of Wisconsin-Madison, and the University of Florida. Undoubtedly some excellent maps were not included in the carto-bibliography because they were

not available for review in these three collections. The Library of Congress has over 3,500,000 maps in its collection so the chances of omitting good maps should have been kept to a minimum.

The carto-bibliography provides a foundation for a basic map reference collection. Colleges that wish to establish a map library may begin by consulting the carto-bibliography to determine which types of maps are recommended for specific areas and subjects. The bibliography is intended only to indicate a core around which a map library can be built. To further develop the evaluation criteria may be used as guidelines to aid in map acquisition.

Ideally, the maps included should have some relief indicated, place names and cultural information identified, internal boundaries visible, and be aesthetically pleasing. Of the identified evaluation criteria, date and reliability of the source/publisher/information, are of prime importance.

For the general political/physical maps a recent publication date of within the last five years (1971-1976) was emphasized. Maps less than ten years old were acceptable for politically stable countries,[9] if other reliable maps were not available. Currency in thematic mapping is not so important unless yearly statistics are involved.

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[9]Politically stable country is used here to mean countries without name changes as well as those without radical governmental changes.

Because of questionable reliability even some current maps were not included but instead an older one was selected. When only one map from a questionable source was available for review of a country, this was so noted in the annotation or the pertinent portion of a continental map series was substituted. Certain maps from reliable sources considered cartographically interesting were excluded because of difficulty in acquisition and/or foreign language. For example, no Glavnoe Upravlenie Geodezii i Kartografii maps from the Union of Soviet Socialist Republics were included because the maps chosen must be generally accessible to the average college library. Also non-Roman alphabet maps were excluded unless they contained an English translation. In contrast, all United States Central Intelligence Agency maps were included because they are quality maps from a reliable source, readily accessible for a minimal cost.

Visual impression is also an important evaluation criterion, for the "look of the map" will have a visual effect on the map reader. He reacts not only to each individual graphic element but to the map as a whole (Petchenik, 1974).

Scale and size were often considered together and were weighted similarly in their importance in map selection. Whenever possible, an attempt was made to select a one sheet, medium-scale (1:250,000 to 1:1,000,000) map of the country. Occasionally, a two sheet map was

chosen because it best satisfied the criteria. For a more detailed view of a specific country the appropriate continental series can be consulted. If all other criteria were satisfied, the map most visible at a distance was chosen, with a view to use in oral presentations. Because of their relatively small size and degree of generalization, the C. I. A. maps, in most instances, are accompanied by a larger, more detailed map of each country. However, when no other map meets the criteria, only the C. I. A. map is suggested.

The scope of the maps included in the bibliography is as follows:

1. World - general and thematic (special subject coverage)
2. Continental - general, thematic, and sectional
3. Country - only specific political/physical maps and C. I. A. maps where available.
4. United States - Exception to #3, for it will include detailed series and thematic maps for the nation, with some state materials listed.
5. Florida - Is used as an example of the types of local maps which should be obtained, and will include detailed thematic maps. A collection should be adjusted to meet the individual subject and area needs of each college.

The regional entries are arranged in hierarchical order by world, continent, section and country. Within the country

classification, the nations are arranged alphabetically. The names of the countries used are those accepted by the United Nations as of March 15th, 1977. In those countries wherein the present political situation makes obtaining a current accurate map difficult, alternative suggestions have been made for more easily accessible maps.

Annotations are included for particularly significant maps. Since no well-developed approach to map criticism exists, where applicable, a systematic, reasonably objective attempt has been made to evaluate the maps by means of verbal descriptions.

The bibliographic entries are arranged by a modified Library of Congress cataloging sequence of information in order of country, title, place, author, publisher, size, series, scale, and language.

If a publisher has had one map annotated, any additional listings for its maps, if of similar format and quality, will have a "SEE" reference to the original entry. Many World series are cross-listed for continents but are not separately annotated.

Abbreviations most frequently used are as follows:

A. G. S.	American Geographical Society
C. I. A.	United States Central Intelligence Agency
D. M. A.	United States Defense Mapping Agency (old Army Map Service)
L. C.	Library of Congress

N. G. S.	National Geographic Society
N. O. S.	National Ocean Survey
U. S. G. S.	United States Geological Survey

CHAPTER V

CARTO-BIBLIOGRAPHY

WORLD

General

The World, a Political Map with Physical Relief
Edinburgh, John Bartholomew and Son Ltd., 1975. 61x100 cm. 1:30,000,000.

Attractive combination of pastel colors and coherent information. The layout is well proportioned with easily discernible place names and international borders. Relief is by shading and spot heights. One of the better World maps published, it is from a reliable publisher and is updated frequently. The new edition should include the African name changes.

The World. Ottawa, Canada. Surveys and Mapping Branch, 1974. 3rd ed. (MCR46) 77x117 cm. 1:35,000,000.

Generalized political map with individual countries emphasized by contrasting pastel colors. Reliable publication useful as a locational device and for oral presentations. Vander Grinten Projection with two insets of Polar areas. Distances shown in statute miles for air routes and between ports in nautical miles. Updated every several years and new edition should include African name changes. Crisp appearance with a high degree of legibility.

The Physical World. Washington, National Geographic Society, 1975. 62x89 cm. 1:48,140,000.

Generalized physical map colored with subtle brown/green shades to simulate predominant relief features. Useful for understanding the inter-relationships of major world physical features. Town names are not given, but a multitude of place names are included on the Political World which is printed on the verso. The two maps make a useful and reliable set to show the physical and political geography of the World. Insets Physical side: Earth's Crust; Food Production and Vegetation, Winds, Currents. On verso: Language Groups; Religions; Time Zones; and Population Density.

A Student Map of the United Nations. New York, United Nations, 1976. 76x56 cm. 1:53,000,000.

A simplified but useful map which is updated every year to include all the national name changes. On a buff background, all World nations are shown with a purple dot for U. N. member nations. Also a table is given listing U. N. members with date of membership, area and population. The buff colored countries are displayed against a bright green base on a Mollweide Projection. The overall appearance is attractive.

World. London, Philip (George) and Son Ltd., 1976. 56x88 cm. 1:45,000,000.

Up-to-date generalized map with countries in contrasting colors. There is some relief shading and spot heights.

Thematic

Administrative. U. S. Foreign Service Posts and Department of State Jurisdictions January 1, 1976. Washington, U. S. Central Intelligence Agency, 1976. 50x96 cm. 1:42,000,000.

Utilitarian map colored for jurisdictions with clear place names for towns with embassies, consulates, or special offices. Lists sources of data, standard time zones and shows 1976 international boundary lines.

The World. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1972. 64x36 cm. (DOS951) 1:70,000,000 approx.

Shows United Kingdom Commonwealth member countries, associated states and dependent territories. Interrupted Sinusoidal Projection.

Base/Outline. Cleartype Outline Map of the World. New York, American Map Company, 1975? No. 8236, 43x28 cm. 1:120,000, No. 919, 56x43 cm. 1:75,000,000.

Up-to-date base map in black and white with country names. Current to at least Dec. 1, 1975 with Benin as new name for Dahomey.

Biogeography. Biogeographical Provinces of the World. Miklos Udvardy, 1975. 55x97 cm. 1:39,629,000.

Vegetation and temperature realms shown in bright colors. Examples of realms are: Neo-tropical, Neo-Arctic, and Indo-Malaysian.

The Great Whales Migration and Range. Washington, National Geographic Society, 1976. 76x56 cm. 1:58,090,000.

Pictorial map showing range of whales by colors and also migration routes. Text on whales and illustrations of floating factories of whalers. Verso: illustrations of whales of the world.

Climate. Climates of the Earth. Chicago, by Glen Trewartha, Rand McNally, 196? 145x81 cm. 1:22,800,000.

Climatic zones based on the Köppen classification in color.

Geology. Geological World Atlas. Paris, UNESCO and The Commission for the Geological Map of the World, 1976+. size varies 75x52 cm. and smaller. 1:10,000,000; Ocean sheets. 1:36,000,000

The first world-wide geological series has been in progress since 1976 and will contain 20 maps and a legend sheet when completed. Currently 6 sheets are published: North America - 2; Africa - 3; Pacific Ocean - 1; and Europe - 1 sheet is in preparation. Over 100 tints are being used to depict the various rock types and geological stages in detail. The entire spectrum of bright, light colors is utulized. Geological surveys from all over the world are collaborating, resulting in a uniform legend and common scale being used for all continents for the first time. Based on the American Geographical Society 1:5,000,000 map using a Miller Orthomorphic Polyconic Projection.

Geology/Hydrography. Age of Ocean Basins. Boulder, Geological Society of America, 1974. 117x63 cm. 2 sheets.

Ages differentiated by bright colors. Sheet 2 displays magnetic lineations of the Oceans. Summary and references appear on a separate sheet.

Geology/Seismicity. World Seismicity 1961-1969. Washington, National Earthquake Information Center and U. S. Coast and Geodetic Survey, 1970. 124x81 cm. 1:35,000,000 approx.

Outline map with no place names but depth of focus is indicated by color. Projection is Miller's Cylindrical centered on the Americas. Data sources are given.

Landforms. Physiographic Map of the Earth. Minneapolis, compiled by William L. Chesser and W. Kenneth Hamblin. Burgess Publishing Co., 1975. 75x125 cm. 1:34,500,000.

A pictorial relief map with spot heights developed to accompany a textbook in physical geology. Drawn on a Mercator Projection.

Landforms of the World. Washington, by Richard Murphy, Association of American Geographers, 1968. 71x86 cm. (Map supplement No. 9) 1:50,000,000.

Landforms (landforms) classified.

Carte du Fond des Oceans. Editions Pierre Charron, 1972. 56 x 98 cm. 1:50,000,000.

Attractive relief map pictorially in color with spot heights.

Minerals. World Copper Resources. Salt Lake City, by Paul L. Eimon, Mineral Research, 1974. 3 sheets 107x72 cm. 1:20,000,000.

Distribution of copper worldwide is shown by symbols and color differentiation on a Mercator Projection.

World SubSea Mineral Resources: Preliminary Maps. Washington, by V. E. McKelvey and F. F. Wong, U.S. Geological Survey, 1970. 4 maps 108x85 cm. and smaller. 1:39,000,000; 1:60,000,000.

Shows potential mineral resources on the ocean floor in colors and generalized geology and physiography of the areas.

Carte Miniere du Globe. Orleans, by P. Laffite and P. Rouveyrol, France. Bureau de Recherches Geologiques et Minerals, 1969. Size varies 1:20,000,000. French.

Distribution of world minerals shown by symbols and bright colors on a tectonic base. In addition to the almost 40 minerals located, features such as faults, folds and uplift are indicated. Although informative, the map is crammed with information to the point of being cluttered. Has an accompanying text for both maps.

Population. World Mortality Pattern. Washington, U.S. Bureau of the Census, International Statistical Programs Center, 1972. 24x39 cm. No scale.

World Fertility Pattern. Washington, U.S. Bureau of the Census, International Statistical Programs Center, 1972. 24x39 cm. No scale.

World Population Growth Pattern. Washington, U. S. Bureau of the Census, 1974. 24x39 cm. No scale.

Projections. Azimuthal Projection. Northbrook, Hubbard (T. N) Scientific Company, 1973. 31 cm. diameter. 1:69, 000,000.

One of the many maps designed to provide understanding of the properties and applications of various projections. These are excellent teaching aids. This set has a transparent outline map printed on clear plastic inset with metal snaps at 180° w., so that the map can be viewed in three dimension. Other useful projections are not as elaborate but it is advisable to obtain as many examples of different projections as possible.

Conical Projection. Northbrook, Hubbard (T. N.) Scientific Company, 1973. 37 cm. diameter. 1:60, 000, 000.

Cylindrical Projection. Northbrook, Hubbard (T. N.) Scientific Company, 1973. 44x68 cm. 1:60, 000, 000.

Map Showing Great Circle Distances and Azimuths from Wellington to All Parts of the World. Wellington, New Zealand. Dept. of Lands and Surveys, 1973. 57x49 cm. (NXMS47) Equidistant Azimuthal Projection.

One of various maps on azimuthal projections centered on large cities.

The World on the Azimuthal Equidistant Projection Centered at New York City. Washington, U. S. National Ocean Survey, 1970. 106x92 cm. (chart #3042) 1:47, 423, 730.

Text on construction. Also insets of the projection centered on London and Tokyo.

Outline Map for the Construction of the World Base on the Lambert Conformal Conic Projection. Washington, U. S. Coast and Geodetic Survey. 76x58 cm. (Chart #3093) 1:55, 803, 788.

World Mercator Projection. Washington, U. S. National Ocean Survey, 1973. 119x86 cm. 1:26, 000, 000.

Outline map in white and pastel yellow with international boundaries but not names. Centered on the western hemisphere with a grid system of 20° latitude and longitude.

Soils. Soil Map of the World. Paris, UNESCO and the World Food and Agriculture Organization, 1971-. 115x82 cm. 1:5,000,000. Legend French, English, Spanish, Russian.

First world-wide soil survey has been in progress since 1971 and will contain 18 sheets and a legend when completed. Currently complete sets of maps and explanatory booklet are available for North and South America. Maps are available for Central America, Africa, and South Asia. The base is the American Geological Society 1:5,000,000 map. Color combinations are used to depict the 101 major soil groups with symbols reflecting soil texture, association and slope.

Time Zones. Standard Time Zone Chart of the World. Washington, U. S. Naval Oceanographic Office, 1970. 79x117 cm. (Defense Mapping Agency-Hydrographic Center Chart #5192) 1:39,000,000.

Transportation. World Air Distances. Washington, U. S. Navy Hydrographic Office, 1974. 136x91 cm. (Defense Mapping Agency-Hydrographic Center Chart #V-1262) 1:39,000,000 at Equator. Mercator Projection.

Buff colored countries with distances in nautical miles and the great circle routes drawn in red. Only cities with air traffic are included.

Topographic Series

The World. Washington, U. S. Defense Mapping Agency, 1973. 3 sheets complete 138x185 cm. (Series 1144) 1:22,000,000.

A visually appealing topographic map with altitude tints. With bathymetric curves and tints, the overall appearance is attractive, resembling portrait relief. Towns and cities classified by population are shown plus various physical and hydrographic features. Shipping lanes and distances are also shown with clock times based on noon at Greenwich. Mercator Projection.

The World. Washington, U. S. Defense Mapping Agency, 1972. 9 sheets 104x134 cm. or smaller (Series 1142) 1:11,000,000.

Similar style and format as series 1144 but more detailed with the 3 hemisphere sheets expanded into 9 sheets. Excellent as a continental physical relief map.

The World. New York, American Geographical Society/ Washington, U. S. Defense Mapping Agency. 120x103 cm. and smaller. 1:5,000,000.

Topographic map series with traditional altitude tints and form-line relief. International and civil administrative divisions are overshadowed by the many place names and altitude tints. Classified roads and operating railroads are shown plus a detailed drainage pattern. Sheet format and projection varies for the western and eastern hemispheres. Newest sheet of the Arctic regions is centered on the North Pole and is one of the best of its kind.

Karta Mira-World Map. Moscow, co-publication of the official surveys of Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, and the U. S. S. R., 1964-. 100x80 cm. average. 1:2,500,000.

Physical world map series which will have 234 sheets when completed. Relief is shown by contours, isobaths, and bold altitude tints. International and internal administrative boundaries are shown with numerous place names. A detailed drainage system is indicated with limits of navigation. A standard format and symbolization are used although projections vary with the latitude to minimize distortions. Legend is in English and Russian and map lettering is in Latin script. Names are given in the native language or in transcription. An impressive series at a useful scale and comparatively up-to-date.

The World. Washington, U. S. Defense Mapping Agency and other participating countries. Various dates and editions. (Series 1301) 1:1,000,000.

The classic International Map of the World drawn at the scale of 1:1,000,000. This was the first project of international cooperation involving mapping the World at a uniform scale with standard symbols. Each country was to map its area using a Modified Polyconic Projection so that adjacent sheets fit on all 4 sides. The map series was organized into standard sheets delimited by parallels and meridians and having a sheet index numbering system. Some national surveys have been completed while others have been drawn by the Defense Mapping Agency, American Geographical Society or the Directorate of Overseas Surveys. Standard relief is by contour lines, altitude tints from green/lowlands through ochre to brown/mountains. The visibility and attractiveness of these colors differ according to publishing agencies. Those for Australia and Canada are particularly attractive with light, bright and harmonious tints.

The D. O. S. maps vary in quality of cartography and printing. International boundaries are clear on most sheets and a multitude of place names are presented. Hispanic America mapped and available from American Geographic Society, while U. S. sheets are available from the U. S. Geological Survey. Canadian sheets are published by the Surveys and Mapping Branch. Most of the sheets published can be obtained from D. M. A. The series is unfinished although revised sheets of some areas previously mapped in this series have already appeared. The Pacific Ocean islands and portions of the U. S. are among those areas not yet mapped at this scale. It was intended as a general planning map, which would be a base for a series of thematic maps. Only very limited use of the series has been made for this purpose. However, it is the most detailed world-wide series published.

Sectional

Antarctica. New York, American Geographic Society. 1:5,000,000.

SEE World-Topographic Series annotation.

Eurasia. Edinburgh, John Bartholomew and Son, Ltd., 1972. 1:15,000,000.

SEE Asia annotation.

Indonesie-Australie. Paris, French. Institut Geographique Nacional. 66x95 cm. in 6 sheets. 1:5,000,000. French/English.

Visually appealing with relief by bright and lively altitude tints and hill shading.

Northern Hemisphere. Ottawa, Canada. Surveys and Mapping Branch, 1965. 101x91 cm. (MCR34).

Polar Equidistant Projection centered on the North Pole. Outline map with dull yellow for land and blue/green for water.

Oceans

Arctic Ocean. Arctic Ocean Floor. Washington, National Geographic Society, 1971. 48x63 cm. 1:9,757,000.

The Arctic Ocean Floor is sculptured relief. Pictorally illustrated is the marine topography with trenches, ridges, sea mounts, etc. in shaded blues. Land features are in muted yellows.

Atlantic Ocean. Atlantic Ocean Floor. Washington, National National Geographic Society, 1973. 48x63 cm. 1:30,580,000.

SEE Arctic Ocean annotation.

Atlantic Ocean Islands

Azores. SEE Sheet #NJ26 World 1:1,000,000.

Bermuda. Tolworth, Gt. Britain Directorate of Overseas Surveys, 1971. 39x21 cm. (DOS956) 1:75,000.

Traditional brown shades altitude tints with place names, hotels, public buildings, etc.

Falkland Islands, South Georgia, South Sandwich Islands and British Antarctic Territory. Tolworth, Gt. Britain Directorate of Overseas Surveys, 1973. 48x31 cm. (DOS 960) 1:9,500,000.

Outline style with place names, would be useful primarily as a locational map.

Saint Helena; Ascension; Tristan Da Cunha. Tolworth, Gt. Britain Directorate of Overseas Surveys, 1972. 3 maps each 17x25 cm.

Small but interesting shaded relief maps showing physical features and limited place names.

Indian Ocean. Indian Ocean Floor. Washington, National Geographic Society, 1971. 48x63 cm.

SEE Arctic Ocean annotation.

Indian Ocean Islands

Mauritius. Washington, U. S. Central Intelligence Agency, 1972. 24x17 cm. on sheet 38x28 cm. Shaded Relief (500430) 1:400,000.

Carte Touristique et Routiere La Reunion. Paris, Institut Geographique Nacional, 1971. 65x78 cm. 1:100,000.

Visually appealing map with shaded relief that is is particularly effective in displaying the volcanic mountain in a three dimensional style. The detailed placenames and roads do not detract from the artistic appearance of the map.

Seychelles. Washington, U. S. Central Intelligence Agency, 1971. 24x18 cm. Shaded Relief (500597) 1:500,000.

Western Hemisphere

The Americas. New York, American Geographical Society, 1952. 85x127 cm. 1:12,500,000.

Physical map of both Americas with contoured altitude tints depicting relief. Dated but useful map for studying relationships in the Western Hemisphere. Insets: Agricultural Land Use, Moisture Regions, Natural Vegetation, and Cities and Transport.

AFRICA

General

Africa. Edinburgh, John Bartholomew and Son Ltd., 1975. 92x74 cm. (Bartholomew World Travel Series) 1:10,000,000.

Attractive combination of soothing colors and coherent information. Layout well proportioned with legible borders and distinct place names. Relief shown by subtle gradient tints. Reliable publisher. Frequently updated, current edition includes Guinea-Bissau but not Benin, the new name for Dahomey. Insets of island groups.

The Daily Telegraph Map of Africa. London, Geographia, Ltd., 1975. 96x71 cm. 1:12,000,000.

Generalized political map with individual countries emphasized by distinctive coloring. Reliable publication useful for country and major city location. Insets of population and economic activities.

Imperial Map of Africa. Chicago, Rand McNally. 86x122 cm. 1:10,000,000.

Utilitarian map with brightly colored country outlines that are visual at a distance. Text information on countries including: area, population, and capitol. A very useful map but obtain only if data is current since this publisher frequently does not display a date. For Africa an out-of-date political map is only of limited value.

Africa. Washington. National Geographic Society, 1973. 102x78 cm. 1:10,000,000.

Reliable map with very detailed place names. Updated frequently. Detailed place names are surprisingly legible.

Thematic

Energy. Electric Energy Map: Carte de l'Energie Electrique. Addis Ababa, United Nations' Economic Commission for Africa, 1972. 86x68 cm. 1:12,000,000.

Includes location of power plants and transmission lines.

Ethnography. The Heritage of Africa: The Peoples of Africa. Washington, National Geographic Society, 1971. 71x57 cm. 1:14, 572, 800.

Background map for Africa's history and culture. In addition to descriptive text includes insets of: "States and Kingdoms of African Past" "Ethnolinguistic Map of the Peoples of Africa," and "Peoples and Languages." Generalized but interesting.

Geology. Geological World Atlas. Africa sheets: 6, 7, 8. SEE World-Geology annotation.

Geology/Tectonics. International Tectonic Map of Africa. Paris, UNESCO and the Association of African Geological Surveys, 1968. 9 sheets each 93x68 cm. 1:5, 000, 000. Explanatory booklet 48 pages.

Detailed representation of faults, folds, and other tectonic features, with structure and bathymetric contours. Coloring for geologic ages. Easy to read artistic cartography reflects the influence of the Institut Géographique National.

Landforms. Landform Map of Africa. Erwin Raisz, 1952. 53x118 cm. 1:5, 000, 000.

Classic map showing relief of Africa by hachures and shading. Inset of land form regions.

Minerals. Mineral Map of Africa, Carte Minerale de l' Afrique. Paris, UNESCO and the Association of African Geological Surveys, 1969. 92x120 cm. 1:10, 000, 000. Explanatory brochure.

Subdued geologic base with location overprint of approximately 600 mineral occurrences of 27 substances. Symbols are differentiated by shape, size, and color to indicate the morphology of the deposits, their substance, and relative importance including percentage of world production. Interesting and legible although a cluttered map.

Soils. Soil Map of the World. Africa Group VI. Sheets: 1, 2, 3.

SEE World-Soils annotation.

Topographic Series

The World. Washington, U. S. Defense Mapping Agency. (Series 1106) 1:5, 000, 000. Africa in 3 sheets: sheet #2 Northwest; sheet #3 Northeast; sheet #4 Southern.

SEE World-Topographic Series annotation.

Africa. Washington, U. S. Defense Mapping Agency, date and edition varies. 36 sheets varying in size to 76x58 cm. (DMA series 2201). 1:2,000,000.

Detailed and reliable topographic series with gradient tints that range from dark and harsh to subtle and attractive. In some instances the use of brown for higher altitudes might be confusing (i. e., brown in the Congo rainforest). A comprehensive series with numerous towns, railroads, drainage and arid features. Newer editions most attractive with crisp type face and orderly appearance with contours for elevation and colors for vegetation.

The World. Washington, U. S. Defense Mapping Agency. (Series 1301) 1:1,000,000. Africa in 135 sheets.

SEE World-Topographic series annotation.

Sectional

East Africa. Washington, U. S. Central Intelligence Agency, Shaded relief (500578) 1:15,000,000.

SEE Algeria annotation.

Mean Annual Rainfall Map of East Africa. Nairobi, East Africa Community, Meteorological Dept., drawn by the Survey of Kenya, 1966. 2 sheets 95x73 cm. 1:2,000,000.

Large informative map of Kenya, Uganda, and Tanzania.

Africa North-East. Paris, Manufacture francaise des pneumtiques Michelin, 1973. 99x99 cm (#154) 1:4,000,000.

Typical well-drawn and reliable Michelin highway map. A "road map" at its finest, useful for many other purposes. Subtle shaded relief with forests and deserts color keyed. Attractive map despite moderately cluttered appearance due to detail place names. Lettering and international borders are bold and distinct while internal boundaries are less intense. Includes specific road and tourist information. Table of monthly temperatures and rainfall for selected sites.

North East Africa. Edinburgh, John Bartholomew and Son Ltd., 1975. 74x98 cm. (Bartholomew World Travel Series) 1:5,000,000.

Attractive combination of soothing colors and coherent information. Layout well proportioned with clear borders and distinct place names. Relief shown by subtle gradient tints. A reliable publisher. Frequently updated.

Africa North and West. Paris, Michelin, 1973. 142x99 cm. (#153) 1:4,000,000.

SEE Africa North-East annotation.

North-West Africa. Edinburgh, Bartholomew, 1974. 72x94 cm. 1:5,000,000.

SEE North-East Africa annotation.

Africa Central and South; Madagascar. Paris, Michelin, 1974. 92x142 cm. (#155) 1:4,000,000.

SEE Africa North-East annotation.

South Africa, South-West Africa, Rhodesia. Johannesburg Map Studio Productions, 1976. 83x111 cm. fold to 20x13. 1:2,750,000.

Highway map with clear boundaries, many place names and distances. Also shows Botswana, Lesotho, Swaziland, and Mozambique.

Central and Southern Africa. Edinburgh, Bartholomew, 1973. 96x74 cm. 1:5,000,000.

SEE North-East Africa annotation.

Algeria

Algerie-Tunisie. Paris, Manufacture fracaise des pneumtiques Michelin, 1976. 74x131 cm. fold to 25x 12 cm. (#172) 1:1,000,000.

Typical well-drawn and reliable Michelin highway map. A "road map" at its finest, useful for many other purposes. Subtle shaded relief with forests and deserts color keyed. Attractive map despite moderately cluttered appearance due to detailed place names. Lettering and international borders are bold and distinct while internal boundaries are less intense. Includes specific road and tourist information. Prohibited areas are shown in addition to national parks/reserves. Table of monthly temperatures and rainfall for selected sites.

Algeria Washington, U. S. Central Intelligence Agency, 1971. 39x40 cm. (78692) 1:5,700,000.

Typical reliable C. I. A. shaded relief map. Subtle tonal variations represent the terrain. The attractive map has limited place names and although moderate in size is legible. Informative but generalized marginal maps include: Economic activity; Population; Ethnic groups, and Vegetation.

Angola

Republica Portuguesa: Estado de Angola. Lisbon, Junta de Investigacō es do Ultra mar. Centro de Geografia, 1973. 83x76 cm. 1:2,000,000.

Although a preindependence map, it is still probably the best map and currently most accessible. Shows relief and depths by spot heights and contours. Detailed place names.

Angola. Washington, U. S. Central Intelligence Agency, 1970. Base map (77962); Shaded relief (77961) 1:3,250,000.

SEE Algeria annotation.

Benin (Dahomey)

Republique du Dahomey Carte Routiere et Touristique. Paris, Institut Geographique National, 1968. 2 sheets 70x184 cm. 1:500,000.

Since I. G. N. maps updated frequently, the newer edition should reflect the name change. For annotation SEE Burundi.

Dahomey. Washington, U. S. Central Intelligence Agency, 1970. Base (77259) shaded relief (77258) 1:500,000.

Botswana

Republic of Botswana; Lefatche la Botswana. Gaborone, Dept. of Surveys and Lands, 1970. 105x105 cm. 1:1,000,000.

Large map with internal political boundaries including game preserves conspicuous.

Burundi

Burundi Carte Routiere. Paris, Institut Geographique National, 1967. 101x87 cm. 1:250,000.

Variation of characteristic I. G. N. map. An artistic map from a reliable source showing many place names, with internal boundaries and road information. Shaded relief and spot heights with contours on some editions. Green/brown tints represent vegetation and arid features.

Burundi, Administrative Divisions. Washington, U. S. Central Intelligence Agency, 1969 (59143) 1:1,600,000.

Cameroon

Cameroun Carte Routiere. Yaounde, Institut Geographique National, Centre de Yaounde, 1975. 90x65 cm. 1:1,500,000.

SEE Burundi annotation.

Cameroon. Washington, U. S. Central Intelligence Agency, 1970. Base (76243); Shaded relief (76242).
SEE Algeria annotation.

Central African Republic

Republique Centrafricaine: Carte Routiere. Paris, Institut Geographique National, 1969. 66x99 cm. 1:500,000.
Format is typical of I. G. N maps (SEE Burundi annotation) however, this edition has inferior shading and color choice resulting in indistinct cultural features. Hopefully the new edition will be more crisp since this is still one of the few reliable maps of the area.

Central African Republic Washington, U. S. Central Intelligence Agency, 1967. Base (53246); Shaded relief (55933).
SEE Algeria annotation.

Chad

Republique du Tchad. Paris, Institut Geographique National, 1974. 2 sheets 83x126 cm. 1:500,000.
SEE Burundi annotation.

Chad. Washington, U. S. Central Intelligence Agency, 1969. Base (59887); Shaded relief (59886) 1:3,890,000.
SEE Algeria annotation.

Congo

Republique Populaire du Congo. Paris, Institut Geographique National, 1973. 109x33 cm. 1:1,000,000.
SEE Burundi annotation.

Congo. Washington, U. S. Central Intelligence Agency, 1971. Base (500029); Shaded relief (500028).
SEE Algeria annotation.

Ghana

Ghana Road Map. Accra, Ghana Survey Dept., 1970 6th edition. 2 sheets each 94x71 cm. 1:500,000.

Ghana. Washington, U. S. Central Intelligence Agency, 1971. Base (500121); Shaded relief (500120).
SEE Algeria annotation.

Guinea

Guinea. Washington, U. S. Central Intelligence Agency, 1973. Shaded relief (501172).

SEE Algeria annotation.

Guinea-Bissau (Portuguese Guinea)

Mapa de Guine. Lisbon, Silva, J. R., Editorial Organizacoes, 197?. 1"=15 Kilometers. 60x45 cm.

Generalized map with place names in bold letters including internal divisions. Bright red unclassified roads indicated with some text information. One of few maps available for this area.

Ivory Coast

Cote D' Ivoire. Paris, Manufacture francaise des pneumtiques Michelin, 1973. 98x87 cm. fold to 25x12 cm. (#175) 1:800,000.

SEE Algeria.

Republique de Cote D'Ivoire. Paris, Institut Geographique National, 1972. 1:1,000,000.

SEE Burunde annotation.

Ivory Coast. Washington, U. S. Central Intelligence Agency, 1972. Base (500456); Shaded relief (500455).

SEE Algeria annotation.

Kenya

Tourist Map of Kenya. Nairobi, Survey of Kenya, 1975. 68xt0 cm. 1:1,750,000.

Attractive highway map with misleading title since the information is more detailed than would normally be expected.

Kenya. Washington, U. S. Central Intelligence Agency, 1974. Base (501721); Shaded relief (501722).

SEE Algeria annotation.

Lesotho

Lesotho with part of the Republic of South Africa; West, East Sheet. Tolworth, Gt. Britain Directorate of Overseas Surveys, 1969. 99x100 cm on 2 sheets (D. O. S. 621) 1:250,000.

Topographic map crowded with place names and relief information.

Lesotho. Washington, U. S. Central Intelligence Agency, 1972. Shaded relief (501420) 1:1,400,000.

SEE Algeria annotation.

Liberia

Africa, sheet 16. Washington, U. S. Defense Mapping Agency, 1969. 73x66 cm. (AMS series 2201) 1:2,000,000.
SEE Africa-Topographic series annotation.

Liberia. Washington, U. S. Central Intelligence Agency, 1973. Base (501557); Shaded relief (501556).
SEE Algeria annotation.

Libya

Shell Road Map of Libya. Shell Oil Corp., 1976. 79x82 cm. fold to 28x12 cm. in cover. 1:2,000,000.
Attractive and detailed with relief by gradient tints, hachures and spot heights. Index accompanies.

Libya. Washington, U. S. Central Intelligence Agency, 1974. Base (501565); Shaded relief (501564) 1:3,780,000.
SEE Algeria annotation.

Madagascar (Malagasy Republic)

Madagascar Carte Routiere. Tananarive, France. Institut Geographique National, Centre a Madagascar, 1973. 82x71 cm. 1:2,000,000.
SEE Burundi annotation.

Madagascar. Washington, U. S. Central Intelligence Agency, 1973. Base (501246); Shaded relief (501245) 1:3,465,000.
SEE Algeria annotation.

Malawi

Malawi. Blantyre, Malawi Dept. of Surveys, 1974. 89x30 cm. (D. O. S. 825/1) 1:1,000,000.
Visually appealing with harmonious symbolization. Relief shown by gradient tints and shading with depths by contours. Internal boundaries are distinct. A well coordinated map with aesthetically pleasing colors.

Malawi. Washington, U. S. Central Intelligence Agency, 1968. Base (54165).
SEE Algeria annotation.

Mali

Republique du Mali. DaKar, France. Institut Geographique National, Centre de DaKar, 1975. 57x76 cm. 1:2,500,000.
SEE Burundi annotation.

Mali. Washington, U. S. Central Intelligence Agency, 1970. Shaded relief (77257).
SEE Algeria annotation.

Mauritania

Maruitanie Carte au 1:2, 500, 000. Paris, Institut Geographique National, 1973. 64x64 cm. L; 2, 500, 000.
SEE Burundi annotation.

Mauritania. Washington, U. S. Central Intelligence Agency, 1967. Base (56071); Shaded relief (56070).
SEE Algeria annotation.

Morocco

Maroc, Carte General. Rabat, Morocco Division du Cadastre et de la Cartographie, 1972. 98x124 cm. on 2 sheets. 1:1, 000, 000. French/Arabic.
Attractive map with pleasing coloring. Relief shown by contours, gradient tints, and spot heights. Clear and legible with bold and distinct lettering. Conspicuous roads are slightly confused with boundaries but the total map is a handsome production.

Morocco. Washington, U. S. Central Intelligence Agency, 1973. Base (50098); Shaded relief (50097).
SEE Algeria annotation.

Mozambique

Central and Southern Africa. Edinburgh, Bartholomew, 1973. 96x74 cm. 1:500, 000.
SEE Africa-Sectional annotation.

Mozambique. Washington, U. S. Central Intelligence Agency, 1973. 49x32 cm. Base (501371); Shaded relief (501370) 1:3, 860, 000.
SEE Algeria annotation.

Niger

Republique du Niger. Paris, Institut Geographique National, 1973. 59x73 cm. 1:2, 500, 000.
SEE Burundi annotation.

Niger. Washington, U. S Central Intelligence Agency, 1969. Shaded relief (52903).
SEE Algeria annotation.

Nigeria

Map of Nigeria. Lagos, Nigeria Federal Surveys, 1972. 57x70 cm. 1:2,000,000.

Detailed place names with legible river systems and the new internal boundaries.

Nigeria. Washington, U. S. Central Intelligence Agency, 1972. Base (500835); Shaded relief (500834).

SEE Algeria annotation.

Rhodesia

Rhodesia: Relief. Salisbury, Surveyor General's Dept., 1973. 7th edition. 79x86 cm. 1:1,000,000.

Relief by gradient tints, shading, and spot heights. An artistic map with well-chosen symbols and pleasing colors. Has detailed cultural features.

Rwanda

Republique Rwandaise. Kigali, Ministere de l'Agriculture et de l'Elevage, Service des Terres, 1969. 84x97 cm. 1:250,000.

Utilitarian map shows many place names, hydrologic features, and roads-paths. More useful than attractive but little else available, particularly at this scale.

Rwanda and Burundi. C. I. A. SEE Burundi.

Senegal

Senegal Carte au 1:1,000,000. Paris, Institut Geographique National, 1973. 64x86 cm. 1:1,000,000.

SEE Burundi annotation.

Senegal and Gambia. Washington, U. S. Central Intelligence Agency, 1972. Base (500709); Shaded relief (500708).

SEE Algeria annotation.

Sierra Leone

Sierra Leone. Washington, U. S. Army Map Service, 1964. 79x97 cm. (G442) 1:500,000.

Large topographic map with traditional altitude tints. Rivers dark and prominent, detailed place names including internal divisions.

Sierra Leone. Washington, U. S. Central Intelligence Agency, 1969. Base (58963); Shaded relief (58962).

SEE Algeria annotation.

Somalia

Somalia and the French Territory of the Afars and Issas. Washington, U. S. Central Intelligence Agency, 1971. 48x35 cm. Base (500056); Shaded relief (500055).

SEE Algeria annotation.

South Africa, Republic of

Central and Southern Africa. Edinburgh, Bartholomew, 1973. 96x74 cm. 1:5,000,000.

SEE Africa-Sectional annotation.

South West Africa (Nambia)

Suidwest-Afrika. South West Africa. Windhoek, Surveyor General's Office, 1972. 140x105 cm. 1:1,000,000.

Large detailed map showing administrative and political divisions, diamond mining areas, game reserves, and relief by gradient tints and form lines.

South West Africa. Washington, U. S. Central Intelligence Agency, 1971. Base (500318).

SEE Algeria annotation.

Spanish Sahara (status in doubt)

Spanish Sahara. Washington, U. S. Central Intelligence Agency, 1974. Shaded relief (502310).

SEE Algeria annotation.

Africa North and West. Michelin (#153)

SEE Africa-Sectional annotation.

Sudan

Sudan. Khartoum, Sudan Survey Dept. (Maslakat al-Misahah), 1976. 61x52 cm. (topo No. 5, 625-40) 1:4,000,000.

Internal boundaries distinct in bold red with the Nile clearly emphasized. Block lettering with detailed place names.

Sudan. Washington, U. S. Central Intelligence Agency, 1971. Base (78032); 1970 Shaded relief (78031). 49x42 cm. 1:4,780,000.

SEE Algeria annotation.

Swaziland

Swaziland. Pretoria, Africa Institute of South Africa Dept. of Geography, 1969. 37x29 cm. 1:500,000.

Visually appealing with tasteful coloring for the gradient tints. Relief also shown by contours. Detailed place names with internal boundaries.

Swaziland. Washington, U. S. Central Intelligence Agency, 1973. Base (50157).

SEE Algeria annotation.

Tanzania

Tanzania. Dar es Salaam, Tanzania Survey and Mapping Division, 1972. 69x68 cm. 1:2,000,000.

Relief by contours and form lines which occasionally clutter an otherwise coherent and legible map. Traditional style with place location and distinct internal boundaries.

Tanzania. Washington, U. S. Central Intelligence Agency, 1970. Shaded relief (76839).

SEE Algeria annotation.

Togo

Republique du Togo. Paris, Institut Geographique National, 1975. 1:500,000.

SEE Burundi annotation.

Togo. Washington, U. S. Central Intelligence Agency, 1967. Base (54915); Shaded relief (54916).

SEE Algeria annotation.

Tunisia

Algerie-Tunisie. Michelin, 1976. SEE Algeria.

Tunisia. Washington, U. S. Central Intelligence Agency, 1972. Base (500588).

SEE Algeria annotation.

Uganda

Philips' Regional Wall Map of Uganda. London, Philip (George) and Son, Ltd., 1970. 120x95 cm. 1:750,000.

Generalized and legible with distinct internal boundaries. Relief by gradient tints.

Uganda. Washington, U. S. Central Intelligence Agency, 1970. Base (78259); Shaded relief (78258).

SEE Algeria annotation.

Upper Volta

Carte Routiere de Republique de la Haute Volta. Paris, Institut Geographique National. 8xx64 cm. 1:1, 000, 000.

SEE Burundi annotation.

Upper Volta. Washington, U. S. Central Intelligence Agency, 1968. Base (58208); Shaded relief (58207). 40x54 cm. 1:1, 700, 000.

SEE Algeria annotation.

Zaire

Republique du Zaire: Carte politique et administrative. Kinshasa, Institut Geographique du Zaire, 1973. 76x76 cm. 1:3, 000, 000.

In addition to cultural features also has relief by contours and spot heights.

Zaire. Washington, U. S. Central Intelligence Agency, 1973. Base (500983); Shaded relief (500982).

SEE Algeria annotation.

Zambia

Republic of Zambia. Lusaka, Zambia Survey Dept., 1975. 74x90 cm. 1:1, 500, 000.

Relief by gradient tints, contours, and spot heights. An attractive detailed map with appealing colors.

Zambia. Washington, U. S. Central Intelligence Agency, 1970. Base (77375); Shaded relief (77374).

SEE Algeria annotation.

ASIA

General

Asia. Bern, Kümmerly und Frey, 1975. 73x95 cm. 1:12,000,000.

Generalized political map with traditional coloring for various countries. Reliable publication useful for country and major city locations. Relief by shading and spot heights. Includes pipelines, oases and some road and railroad information. Inset of Australia.

Asia. Washington, National Geographic Society, 1975. 134x154 cm. 1:13,812,480.

EurAsia. Edinburgh, John Bartholomew and Son Ltd., 1970. 90x71 cm. (Bartholomew World Travel Series) 1:15,000,000.

Attractive combination of soothing colors and coherent information from a reliable publisher. Relief shown by subtle altitude tints and contours. Principal roads and railroads. Covers all of Asia and Europe and is updated frequently.

Philips' Graphic Relief Wall Map of Asia. London, London Geographical Institute, Philip (George) Ltd., 1968. 120x95 cm. 1:12,000,000.

Generalized physical map colored with bold brown/green shades to simulate predominant vegetation cover. No town names are given but map is useful as an overview of the relationship of the mountains to the deserts.

Thematic

Energy. Oil and Natural Gas Map of Asia and the Far East. Geneva, UNESCO and United Nations Economic Commission for Asia and the Far East, 1962. 4 sheets 97x69 cm. 1:5,000,000.

Generalized geologic base with overprints of oil and gas fields, pipelines and refineries. Encompasses area from Iran to Indonesia and north to Mongolia.

For Middle East area SEE Europe-Energy.

Asia-Pacific, Japan and Australia. Petroleum and Petrochemical International, August, 1972 issue. 88x58 cm. Scale varies.

5 maps showing: oil and gasfields and discoveries, pipelines, refineries, tanker terminals, annual crude capacity of refineries.

Geology. Geological Map of Asia and the Far East. Geneva, UNESCO and United Nations Economic Commission for Asia and the Far East, 1971. 2nd edition. 4 sheets 79x109 cm. 1:5,000,000.

Detailed synoptical series of particular value in geological study. A well-coordinated color scheme and symbolization. Illustrates rock types and ages, tectonic features and stratigraphic subdivisions. Encompasses area from Iran to Indonesia and north to Mongolia.

For Middle East area SEE Europe-Geology.

Hydrogeology. For Middle East area SEE Europe-Hydrogeology.

Minerals. Mineral Distribution Map of Asia and the Far East. Geneva, UNESCO and United Nations Economic Commission for Asia and the Far East, 1963. 97x69 cm in 4 sheets. 1:5,000,000.

Mineral distribution depicted on a colored geologic base. Encompasses area from Iran to Indonesia and north to Mongolia. With explanatory text.

For Middle East area SEE Europe-Minerals.

Population. Population Density Map of Asia and Far East. Bangkok, Thailand. Survey Dept., 1970. 4 sheets 84x111 cm or smaller. 1:5,000,000.

Dated but still useful.

Vegetation. For Middle East area SEE Europe-Vegetation.

Topographic Series.

The World. Washington, U. S. Defense Mapping Agency. (Series 1106). 1:5,000,000. 6 sheets.

SEE World-Topographic Series annotation.

Karta Mira. Moscow, co-publication of the official surveys of Bulgaria, Czechoslovakia, German Democratic Republic, Poland, Hungary, Romania and the U. S. S. R., 1964-.

SEE World-Topographic Series annotation.

The World. Washington, U. S. Defense Mapping Agency. (Series 1301). 1:1,000,000.

SEE World-Topographic Series annotation.

Sectional

Asia Overland. London, Roger Lascelles, 1975. 76x103 cm. 1:7,000,000.

One of few maps available that shows countries from Turkey and the Middle East through the South West Asia, completely on one sheet at the same scale. Although simplified, it is intended for traveler's planning road trips through the area. Roads are classified by: recommended main, secondary, summer, winter, historical and desert; fueling points, medical and repair services and passes are shown. Insets of climatic map and highway distances. Shows no relief with countries politically colored and only towns and villages along roads are named.

Far East; Philip's Regional Wall Map. London, London Geographical Institute, Philip (George) and Son Ltc., 1967. 95x120 cm. 1:6,500,000.

Large colored relief map with subordinate cultural information. Altitude tints in sturdy browns and greens plus blue depth tints. Includes China through Indonesia.

China, Mongolia and Korea. Edinburgh, John Bartholomew and Son Ltd., 1973. 93x72 cm. (Bartholomew World Travel Series) 1:4,500,000.

Attractive combination of soothing colors and coherent information from a very reliable publisher. Relief shown by subtle gradient tints, contours and hill shading. Updated frequently.

The Middle East. Edinburgh, John Bartholomew and Son Ltd., 1975. 72x94 cm. (Bartholomew World Travel Series) 1:4,000,000.

The relief is shown by agreeable, subtle altitude tints, contours and hill shading.

Middle East Briefing Map. Washington, U. S. Defense Mapping Agency, 1968. (Series 1308) 1:1,500,000.

Physical map showing classified roads, armistice demarcation lines, railroads, pipelines and drainage. Although slightly dated it is still a useful, detail map of the area on one sheet.

World Road Maps: Middle East. Washington, U. S. Defense Mapping Agency, 1062. 6 sheets (series 1304W) 1:1,000,000.

Detailed series in 6 sheets of Egypt, Middle East and Iran. Relief as shown by altitude tints with specific hydrographic features. Although dated the cultural information is useful and includes explicit road information, railroads and place names.

Near East and Middle East; Philip's Regional Wall Map. London, Philip (George) and Son, Ltd., 1972. 94x119 cm. 1:4,000,000.

Large colored relief map with simplified cultural information. Altitude tints in sturdy browns and greens with blue depth tints. Includes Turkey through Iran.

Carta's Map of the Middle East. Jerusalem, Carta, 1973. 93x93 cm.

Politically colored map of countries from Tunisia through Iran. Insets of: Israel cease firelines June, 1967; Area and Population; Minorities, Physical, Agriculture and Natural Resources; Oil; and table of economic and population information for all the countries. Sources of information are given.

Peoples of the Middle East. Washington, National Geographic Society, 1972. 55x87 cm. 1:7,096,000.

Relief by shading and spot heights. 13 diagrammatic maps plus maps on "Holy Land Today" and Morocco, Algeria and Tunisia. On verso: Cultural Map of the Middle East.

South-East Asia. Edinburgh, John Bartholomew and Son Ltd., 1973. 69x97 cm. (Bartholomew World Travel Series) 1:5,800,000.

Includes countries through Indonesia. Relief is shown by agreeable, subtle altitude tints, contours and hill shading.

Viet Nam, Cambodia, Laos, Thailand. Washington, National Geographic Society, 1967. 77x98 cm. 1:1,900,800.

Dated but useful map because of the large quantity of place names. Also it is easily accessible and inexpensive.

Indian Subcontinent. Edinburgh, John Bartholomew and Son Ltd., 1973. 96x73 cm. (Bartholomew World Travel Series) 1:4,000,000.

Attractive combination of soothing colors and coherent information from a very reliable publisher. Relief shown by subtle gradient tints, contours and hill shading. Updated

frequently, it includes Bangladesh but not the new name for Ceylon. Internal boundaries are subordinate but visible.

Afghanistan

Physical Map of Afghanistan. Kabul, Afghan Cartographic Institute, 1968. 63x70 cm. 1:2,000,000. English and Pusto.

Title is misleading as actually it is crowded with place names and highways are conspicuous.

Afghanistan. Washington, U. S. Central Intelligence Agency, 1972. 48x75 cm. Base (500546).

Arabian Peninsula

Economic Geography of the Arabian Peninsula. Riyadh, Ministry of Petroleum and Mineral Resources Kingdom of Saudi Arabia, 1970. 71x62 cm. 1:4,000,000.

Versatile map clearly showing cultural and physical features with selected mineral prospects. Includes lava flows, sand dune areas and types, oil fields and pipelines, roads and areas under cultivation. Names are out of date for the Emirates.

Saudi Arabia. Washington, U. S. Central Intelligence Agency, 1971. Shaded relief (78749).

Typical C. I. A. map. Shaded relief map with subtle tonal variations representing the terrain. The attractive map has limited place names and although moderate in size is highly legible. Informative but generalized marginal maps can include: Economic activity; Population; Ethnic groups; and Vegetation. Frequently updated with new serial number.

Yeman. Washington, U. S. Central Intelligence Agency, 1973. 50x53 cm. Base (501037); Shaded Relief (501036).

SEE Saudi Arabia annotation.

Yeman (Aden). Washington, U. S. Central Intelligence Agency, 1973. 48x68 cm. Base (501281); Shaded Relief (501280).

Kuwait, Bahrain, Qatar and United Arab Emirates. Washington, U. S. Central Intelligence Agency, 1972. 51x51 cm.

Arabian Peninsula SEE ALSO Asia-Sectional, Middle East.

Bahrain

Bahrain Islands. Manama, Bahrain Public Works Dept., 1968. 74x105 cm. 1:63,360.

Topographic in the traditional style of the Great Britain Directorate of Overseas Survey, however this map is more attractive with clear, crisp lettering and symbols. Detailed cultural information includes: roads, buildings, date gardens and cultivated areas, and water features. Also shows marine contours and fishing areas.

Bahrain C. I. A. SEE Arabian Peninsula.

Bangladesh

The People's Republic of Bangladesh. Calcutta, Rabindra Gopal Gosh, Orient Publishers, 1972. 64x43 cm. 1:1,200,000.

Bangladesh SEE ALSO Asia-Sectional, India Subcontinent.

Bhutan

Bhutan. Delhi, India (Republic) Survey Dept., 1972. 89x155 cm. 1:250,000.

Large garishly colored map with shaded relief, detailed place names but no administrative boundaries.

Bhutan C. I. A. SEE India.

Burma

Burma. Washington, U. S. Central Intelligence Agency, 1972. Base (500426); Shaded Relief (500425) 1:3,990,000.

SEE Saudi Arabia annotation.

Burma SEE ALSO Asia-Sectional, South East and South West Asia.

Cambodia (Khmer Republic)

Cambodia. Washington, U. S. Central Intelligence Agency, 1972. 45x60 cm. Base (77968); Shaded Relief (77967).

SEE Saudi Arabia annotation.

Cambodia SEE ALSO Asia-Sectional, South East Asia.

China, People's Republic of

China, Chine KVitaVi, Zhongguo. Stockholm, Esselte Map Service in cooperation with Cartographia in Budapest, 1967. 106x78 cm. 1:5, 500, 000. English, French, German and Russian.

Political map with internal divisions colored individually. Map insets of: Mining and Industry, Nationalities, and population. Separate Index. Includes islands of the South China Sea.

People's Republic of China. Washington, U. S. Central Intelligence Agency, 1971. 60x68 cm. Shaded Relief (500410) 1:10, 000, 000.

SEE Saudi Arabia annotation.

China, Republic of (Taiwan)

Map of Taiwan. Taipei, Nan Hua Ch'u Pan She, 1975. 74x51 cm. 1:5, 000, 000.

Internal boundaries and names are noticeable with roads secondary, but shows no relief. Frequently updated.

Republic of China. Washington, U. S. Central Intelligence Agency. 43x44 cm. 1974- Base (501766); 1972- Shaded Relief.

SEE Saudi Arabia annotation.

Cyprus

Survey of Cyprus Administration and Road Map. Nicosia, Dept. of Lands and Surveys, 1975. 55x89 cm. 1:250, 000.

Administrative divisions and place names dated because of political situation but currently the most informative and attractive map available for the area. Relief by altitude tints.

Cyprus. Washington, U. S. Central Intelligence Agency, 1972. Shaded Relief (500862).

SEE Saudi Arabia annotation.

Cyprus SEE ALSO Europe-Sectional, Mediterranean and Europe-Thematic.

Hong Kong

Hong Kong and New Territories. Southampton, D. Survey, Ministry of Defense United Kingdom, 1974. 88x64 cm. (GSGS Series L681) 1:100, 000.

Topographic set in 2 sheets with detailed place names, roads, wooded areas but no street names. Has elevation tints and marine contours. Although a 2 sheet set, actually only sheet #1 is needed.

Hong Kong. Washington, U. S. Central Intelligence Agency, 1970. Shaded Relief (78321).
SEE Saudi Arabia annotation.

India

Political Map of India. Dehra Dun, India (Republic) Survey Dept., 1972. 2nd edition. 75x83 cm. 1:4,500,000. Flamboyantly colored by administrative divisions. Roads and railways are subordinate. For more detailed place names use the Bartholomew map.

India. SEE ALSO Asia-Sectional, India Subcontinent.

India with Sikkim and Bhutan. Washington, U. S. Central Intelligence Agency, 1973. 56x49 cm. Base (501058); Shaded Relief (501057) 1:6,530,000.

Indonesia

Indonesia. Jakarta, Pembina, 1974. 60x115 cm. 1:4,500,000. Physical map with relief by bright altitude and hill shading. Includes district boundaries and a list of Administrative divisions.

Indonesia. SEE ALSO Asia-Sectional, Far East and South East Asia.

Indonesia. Washington, U. S. Central Intelligence Agency, 1972. 75x55 cm. Base (500870); Shaded Relief (500869).
SEE Saudi Arabia annotation.

Iran

Map of Iran. Tehran, Iran National Cartographic Center, 1968. Size varies 62x65 - 62x78 cm., 4 sheets. 1:1,500,000. Relief by altitude tints and contours. Roads prominent in red with extensive place names. Inset of internal administrative boundaries.

Iran. SEE ALSO Asia-Sectional, Middle East.

Iran. Washington, U. S. Central Intelligence Agency, 1973. 43x48 cm. Base (501164); Shaded Relief (501163).
See Saudi Arabia annotation.

Iraq

Iraq. Washington, U. S. Central Intelligence Agency, 1970. 42x44 cm. Base (77427); Shaded Relief (77426).
SEE Saudi Arabia annotation.

Iraq. SEE ALSO Asia-Sectional, Middle East.

Israel

Israel with Jordan. Edinburgh, John Bartholomew and Son Ltd., 1973. 81x61 cm.
The relief is shown by agreeable, subtle altitude tints, contours and hill shading. Insets of: Middle East, Sinai, and Gaza Strip.

State of Israel. Tel Aviv, Israel Dept. of Surveys, 1975. 1:500,000. English or Hebrew.

Japan

Great Map of Japan. Tokyo, Japan Topography Ass., Nippon Kokuseisha, Co., 1973. 110x79 cm. 1:1,200,000.
Relief map has altitude tints and many place names. There are 8 inset maps on the sheet with each island group separate. There is an inset map for proper alignment. The color choice and precise lettering are visually appealing.

Japan and Korea. Washington, National Geographic Society, 1975. 103x78 cm. 1:3,801,600.
Reliable map with detailed place names. Updated frequently. Extensive place names are surprisingly legible.

Japan. Washington, U. S. Central Intelligence Agency, 1971. Base (78644); Shaded Relief (78643).
SEE Saudi Arabia annotation.

Jordan

Jordan. Washington, U. S. Central Intelligence Agency, 1972. Base (500865); Shaded Relief (500864).
SEE Saudi Arabia annotation.

Jordan. Bartholomew SEE Israel.

Jordan. SEE ALSO Asia-Sectional, Middle East.

Korea

Korea Road Map. Washington, U. S. Defense Mapping Agency, 1970/71. 88x113 cm. 2 sheets. (Series L351) 1:700,000.

Topographic series with altitude tints. International and provincial boundaries are clearly drawn. Extensive place names (romanized) with classified roads.

North Korea. Washington, U. S. Central Intelligence Agency, 1972. 68x60 cm. Shaded Relief (58946) 1:1,220,000.

SEE Saudi Arabia annotation.

South Korea. Washington, U. S. Central Intelligence Agency, 1973. 50x96 cm. Base (501380).

SEE Saudi Arabia annotation.

Korea SEE ALSO Asia-Sectional, China, Mongolia and Korea.

Kuwait

Map of Kuwait and Basreh. Tehran, Sahab Geographic and Drafting Institute, 1965. 55x65 cm. 1:500,000.

Printed all in blue cluttered with tiny unnamed streams, includes extensive information about towns, oil fields and pipelines, roads, sandy areas, mud flats and marshes and even date palms. Insets: the capitol, Kuwait town and Environs.

Kuwait, Bahrain, Qatar, and United Arab Emirates. Washington, U. S. Central Intelligence Agency, 1972. 51x51 cm. Shaded Relief (500348) 1:2,000,000.

SEE Saudi Arabia annotation.

Laos

Laos. Washington, U. S. Central Intelligence Agency, 1970. Base (77028).

Laos. SEE ALSO Asia-Sectional, South East Asia.

Lebanon

Carte Routiere et Touristique du Liban. Beirut, Director Geographical Affairs, 1966. 69x95 cm. 1:200,000.

A well-drawn topographical map with shaded relief, place names, tourist sites and classified roads.

Lebanon. Washington, U. S. Central Intelligence Agency, 1971. Base (78464); Shaded Relief (73463).
SEE Saudi Arabia annotation.

Malyasia

Malaysia. Kuala Lumpur, Malaysia. Jabatanarah Pemetaan Negara, 1973. 125x69 cm on 2 sheets 92x76 cm. 1:2,000,000. Malaysian and English.
Bold type and well placed information lends to the crisp appearance and makes this map highly legible.

Malaysia and Brunei. Washington, U. S. Central Intelligence Agency, 1971. Base (500012); Shaded Relief (500011).
SEE Saudi Arabia annotation.

Malay Archipelago. Washington, U. S. Central Intelligence Agency, 1974. 84x97 cm. 1:5,790,000.
SEE Saudi Arabia annotation.

Mongolian People's Republic

Mongolia. Washington, U. S. Central Intelligence Agency, 1970. Base (78715); Shaded Relief (78310).
SEE Saudi Arabia annotation.

Mongolia. SEE ALSO Asia-Sectional, China, Mongolia and Korea.

Neapl

Relief Karte Nepal. Relief Map of Nepal. Bern, Kümmerly und Frey, 1974. 28x63 cm. 1:1,408,000.

Nepal. Feltham, D. Survey Ministry of Defense, United Kingdom; 1967-West sheet 108x85 cm., 1969-East sheet 85x72 cm. 1:506,880.
Detailed topographic map with shaded relief. Boundaries to district and tribal area with distinctive purple borders. Small villages and mountains named.

Pakistan

Road Map of West Pakistan. Rawalpindi, Survey of Pakistan, 1973. 90x58 cm. 1:1,584,000.
Bright yellows makes the roads, place names and internal boundaries difficult to read but it is still one of the few current maps available.

Pakistan SEE ALSO Asia-Sectional, Indian Subcontinent.

Pakistan. Washington, U. S. Central Intelligence Agency, 1973. 48x73 cm. Base (501384).

Philippines

Philippines. Manila, Bureau of Coast and Geodetic Survey, 1974. 117x85 cm. 1:500,000.

Philippines. SEE ALSO Asia-Sectional, Southeast Asia and the Far East.

Philippines. Washington, U. S. Central Intelligence Agency, 1973. 49x35 cm. on sheet 52x66 cm. 1:4,000,000. Base (501476); Shaded Relief (501475).

SEE Saudi Arabia annotation.

Saudi Arabia. SEE Arabian Peninsula.

Sikkim

The Kingdom of Sikkim. Washington, Pradyumns Prasad Karan, Association of American Geographers, 1969. 86x68 cm. 1:150,000. Map Supplement of Annals Vol. 59 no. 1

Physical map with unusual mountain shadings. Also contours, glaciers, settlements and roads.

Singapore

Singapore. Singapore Survey Dept., 1974. 91x64 cm. 1:75,000.

Topographic map with roads and many place names.

Singapore. Washington, U. S. Central Intelligence Agency, 1973. 23x40 cm. Shaded Relief (501015).

SEE Saudi Arabia annotation.

Sri Lanka (Ceylon)

Sri Lanka Physical. Colombo, Sri Lanka Survey Dept., 1976. 47x33 cm. 1:1,000,000.

Relief by altitude tints and shaded relief in harmonious tones. Many place names and clear district boundaries.

Sri Lanka. Washington, U S. Central Intelligence Agency, 1974. 50x37 cm. Base (501805); Shaded Relief (501804). 1:1,000,000.

Syrian Arab Republic

Syrie, Carte Routiere et Touristique. Damascus, Syria. Wizarat al-MuWasalat, 1971. 60x76 cm. 1:1,000,000. French.

Shows many place names near coast but few in the interior. Relief by altitude tints.

SEE ALSO Asia-Sectional, Middle East.

Syria. Washington, U. S. Central Intelligence Agency, 1972. Base (500143); Shaded Relief (500142).

SEE Saudi Arabia annotation.

Thailand

Map of Thailand. Bangkok, Royal Thai Survey Dept., 1974. 87x49 cm. 1:1,000,000.

SEE ALSO Asia-Sectional, South East Asia.

Thailand. Washington, U. S. Central Intelligence Agency, 1974. 53x55 cm. Base (501552); Shaded Relief (501551).

SEE Saudi Arabia annotation.

Turkey

Turkiye, Turquie Carte de poche. Turkey Pocket Map. Frankfurt, Ravenstein Verlag, 1975. 55x78 cm. 1:2,000,000. Legend in German, Turkish, English and French.

Relief by shading with roads and place names. Internal boundaries are indistinct.

Turkey. Washington, U. S. Central Intelligence Agency, 1974. 50x60 cm. Base (501872); Shaded Relief (501871).

SEE Saudi Arabia annotation.

Turkey. SEE ALSO Asia-Sectional, Middle East and Europe-Sectional, Mediterranean.

Viet Nam

South Viet Nam. Washington, U. S. Central Intelligence Agency, 1972. Base (501463); Shaded Relief (500874).

Viet Nam. SEE Asia-Sectional, South East Asia.

Yemen

SEE Arabian Peninsula.

AUSTRALIA - PACIFIC OCEAN ISLANDS

Australia-General

Australia. Canberra, Australia. Division of National Mapping, 1974. 81x96 cm. 1:5,000,000.

Attractive combination of harmonious colors and coherent information from a reliable publisher. Land and ocean relief shown by gradient tints. Lettering has a high degree of legibility.

Australia. Washington, National Geographic Society, 1974. 1:6,358,000. Fabric.

Typical reliable N. G. S. map with detailed place names. The state boundaries and place names are surprisingly legible. Includes ocean currents, depth contours and generalized deserts and water features. Insets of 7 major cities, Index on verso.

Australia, Gregory's Commemorate Edition. Clive Barrass, 1973. 114x88 cm. 1:5,000,000.

Road map with prominent roads and bold lettering for place names. Useful particularly for simplified insets. Physical, Climatic Regions, Rainfall, Artesian Basins, Primary Industries, Mining etc., Products, Railways, Time Zones, and Australia and the South Pole. Principal cities with estimated population are listed separately and pastoral homesteads are shown.

Australia-Thematic

Climate. Annual Rainfall Map of Australia. Melbourne, Australia, Bureau of Meteorology, 1974. 38x44 cm. 1:10,000,000.

Updated every 2 years with a new edition. On verso is indicated the monthly distribution of rainfall.

Forests. Australia: Forests. Canberra, Australia. Division of National Mapping, 1974. 80x96 cm. 1:5,000,000.

Types and distribution of forests.

Geology. Geological Map: Australia. Canberra, Australia. Bureau of Mineral Resources, Geology, and Geophysics, 1971. 33x35 cm. 1:12,000,000.

Colorful generalized geological map.

International Geological Map of the World - Australia and Oceania. Paris, Commission for the Geological Map of the World, 1971. 44x55 cm. 1:5,000,000.

Detailed synoptical series with standard geological symbols showing rock types, ages, subdivisions and basic tectonics. The series is in progress and will have 14 sheets when completed. Currently the sheets available are: Australia - 4 sheets; West Micronesia - 1 sheet; New Zealand - 1 sheet; Polynesia - 2 sheets.

Minerals. Metallogenic Map of Australia and Papua New Guinea. Canberra, Australia. Bureau of Mineral Resources, 1972. 86x105 cm. 1:5,000,000.

Contrasting colors used to show Time-Tectonic Units, structure, and mineral locations. Inset of New Zealand and Bouganville.

Population. Population Distribution Maps of Australia. Bureau of Census, 1969. 7 sheets. 72x58 cm. 1:2,027,000.

Each state individually mapped with the 1966 population census information indicated on a physical base map.

Soils. Soil Map of the World. Australia-Pacific Islands Group V in preparation.

SEE World-Soils annotation.

Australia-Topographic Series

The World. Washington, U. S. Defense Mapping Agency/New York, American Geographical Society. (Series 1106). 1:5,000,000. Australia in 1 sheet.

SEE World-Topographic Series annotation.

Karta Mira-World Map. Moscow, co-publication of many countries, 1964-. 1:2,500,000.

SEE World-Topographic Series annotation.

The World. Washington, U. S. Defense Mapping Agency/ Canberra, Dept. of National Development. (Series 1301) 1:1,000,000. 47 sheets.

SEE World-Topographic Series annotation.

Australia-Sectional

Tasmania. Hobart, Tasmania. Survey Branch, 1973. 5th ed. 97x71 cm. 1:500,000.

Relief by altitude tints and shading. Updated frequently.

New Zealand-General

New Zealand. Wellington, New Zealand Dept. of Lands and Survey, 1975. 54x41 cm. 1:1,700,000.

A "touring" map showing extensive place names and highways with relief by shading.

New Zealand. Edinburgh, John Bartholomew and Son Ltd., 1975. 75x54 cm. (Bartholomew World Travel Series) 1:2,000,000.

Visually appealing with soothing colors, a well proportioned layout, legible borders and distinct place names. Relief is shown by subtle altitude tints. A frequently updated map from a reliable publisher.

New Zealand in the South-Pacific Including New Zealand Island Territory. Wellington, New Zealand. Dept. of Lands and Survey, 1970. 60x75 cm. (NZMS 231) 1:10,000,000.

Outline map of New Zealand and the Pacific Ocean islands with 28 large scale insets of islands including: New Hebrides, Ellice Islands and Fiji.

New Zealand-Thematic

Geology. Geological Map of New Zealand. Wellington, New Zealand Geological Survey, 1972. 2 sheets each 88x115 cm. 1:1,000,000.

Detailed synoptical series of particular value to the researcher and practical geologists. Drawn in bright but agreeable tones with easy to read lettering and an overall neat appearance. Includes rock types and structural features on a cultural base including submarine contours. Inset of Auckland Island.

International Geological Map of the World-Australia and Oceania.

SEE Australia-Geology annotation.

Minerals. Metallogenic Map of Australia and Papua New Guinea.

SEE Australia-Minerals annotation.

New Zealand-Topographic Series

SEE World-Topographic Series annotations.

Pacific Ocean Islands-General

Islands of the Pacific. Washington, National Geographic Society, 1974. 56x92 cm. 1:18,000,000.

Reliable N. G. S. map with an abundance of islands located and named. Includes elevations, ocean currents, generalized coral reefs, prevailing winds, and political/historical notes about the islands. On verso are: descriptive notes, map of ancient sea ways plus numerous illustrations.

Islands of the Pacific. Wellington, New Zealand, Dept. of Lands and Survey, 1974. 71x108 cm. (NZMS 275) 1:10,000,000.

Depicts a multitude on islands including small atolls and is even more copious than the N. G. S. map. There is some relife by shading. The overall appearance is less crowded and more legible than the N. G. S. map.

Pacific Ocean/Pacific Ocean Floor. Washington, National Geographic Society, 1969. 48x63 cm. 1:36,432,000.

Two maps are printed on either side of one sheet. The Pacific Ocean is a typical N. G. S. map while the Pacific Ocean Floor is a portrait of sculptured relief. Pictorally illustrated is the marine topography with trenches, ridges, sea mounts, etc. in shaded blues. Land features are simplistic in muted yellows with relief.

Thematic

Geological World Atlas. Sheet 20, Pacific Ocean.

SEE World-Geology.

Tectonic Map of the South West Pacific. Wellington, New Zealand Oceanographic Institute, 1970. 44x72 cm. (misc. series #20). 1:10,000,000.

Topographic Series

The World. Washington, U. S. Defense Mapping Agency/ New York, American Geographic Society. (Series 1106) 1:5,000,000. 2 sheets.

SEE World-Topographic Series annotation.

Karta Mira-World Map. Moscow, co-publication of many countries, 1964-. 1:2,500,000.

SEE World-Topographic Series annotation.

Melanesia

Bismark Archipelago. Sheet #141. Karta Mira.
SEE World-Topographic Series.

Bismark Archipelago. SEE ALSO Papua New Guinea.

Fiji. Fiji. Tolworth, Great Britain Directorate of Overseas Surveys, 1967. 55x43 cm. (DOS961) 1:1, 500, 000.
A conventional D. O. S. map with traditional; lettering, brown altitude tints and layout. Shows principal towns and island shapes and locations.

New Caledonia-New Hebrides. Nouvelle Hebrides-Nouvelle Caledonie. Paris, France. Institut Geographique National, 1971. 1:2, 000, 000.
Topographic with hill shading and vegetation tints. A variation of the characteristic reliable yet artistic I. G. N. map.

New Caledonia-New Hebrides. Sheet #162. Karta Mira.
SEE World-Topographic Series.

Papua New Guinea. Papua New Guinea Geographic Map. Canberra, Australia. Division of National Mapping, 1973. 60x93 cm. 1:2, 500, 000.
Conventional altitude tints with harmonious shades, shows the relief. Boundaries and lettering are clear and clean. Includes: the Solomons and the Bismark Archipelago. Gazetteer on verso.

Papua New Guinea. Sheets #140 and 141. Karta Mira.
SEE World-Topographic Series.

Papua New Guinea. SEE ALSO Australia.

Solomon Islands. British Solomon Islands Protectorate. Tolworth, Gt. Brit. Directorate of Overseas Survey, 1969. 2 sheets 84x110 cm. (DOS347A). 1:1, 000, 000.
Typical utilitarian DOS map with boundaries to the district level.

Solomon Islands. Sheets #141 and 142. Karta Mira.
SEE World-Topographic Series.

Micronesia

Micronesia. Sheets #100, 101, 102, 120, 121, 122, 123. Karta Mira.

SEE World-Topographic Series.

Gilbert Islands. Gilbert and Ellice Islands, Tarawa Atoll. Tolworth, Gt. Brit. Directorate of Overseas Survey, 1968. 34x39 cm. (DOS515) 1:120,000.

Guam, Mariana Islands. Topographic Map of Guam, Mariana Islands. Washington, U. S. Geological Survey, 1965. 73x88 cm. 1:62,500.

Black and white update of 1953 map. Minor corrections indicated. Contours interval 20 feet with supplementary interval of 10 feet.

Polynesia

Samoa Islands. Topographic Map of Tutuila Island, American Samoa. Washington, U. S. Geological Survey, 1963. 88x152 cm. 1:24,000.

Samoa Islands. Topographic Map of Manua Island, American Samoa. Washington, U. S. Geological Survey, 1963. 76x142 cm. 1:24,000.

Samoa Islands. Western Samoa. Wellington, New Zealand Dept. of Lands and Surveys, 1974. 26x41 cm. (NZMS279) 1:400,000.

Tahiti. Tahiti Carte Touristique et Routiere. Paris, France. Institut Geographique National, 1974. 88x45 cm. 1:1,000,000.

Typical I. G. N. format with fine detail and information artistically laid out and portrayed. Includes: public buildings, cocoa and coffee plantations, tourist sites, forests and coral reefs.

Polynesian Islands. Karta Mira.

SEE World-Topographic Series annotation.

EUROPE

General

The Daily Telegraph Map of Europe. London, Geographia, Ltd., 1974. 71x91 cm. 1:6,635,000.

Generalized political map with individual countries emphasized by distinctive coloring. A reliable publication useful for country and major city location. Includes insets of: Central Europe 1938, European members of N.A.T.O. and the Communist Alliance, European Economic Community.

Imperial Map of Europe. Chicago, Rand McNally, 1974. 108x71 cm. 1:4,000,000.

Brightly colored country outlines that are visual at a distance. Relief by hachures and spot heights. Marginal index with populations. Inset of Scandinavia.

Europe. Washington, National Geographic Society. 67x76 cm. or Enlarged edition 127x144. 1:6,488,064.

Reliable map with very detailed place names. Updated frequently. The detailed place names are surprisingly legible. Includes generalized dept contours for the Atlantic Ocean, Mediterranean and Black Sea.

Europe (Physical Map) Bern, Kümmerly and Frey, 1975. 50x60 cm. fold to 26x13 cm. 1:10,000,000.

Small but attractive shaded relief edition with generalized thematic maps on verso including: Population, Gross National Products, NATO and Warsaw Pact countries, European Economic community, Petroleum, Natural Gas, OCDE, COMECON, and European Council Countries. Language: French, German, English.

Thematic

Economic. An Economic Map of Europe West of the Soviet Union, Based on National Censuses of Population, Housing, Agriculture, Manufacturing and Employment. Stockholm, Department of Geography at the Stockholm School of Economics, 1970. 107x93 cm. 1:4,000,000.

Interesting symbolization for a variety of statistical data. The information is dated but still of value, particularly for understanding the economic geography of the European nations. Legend in English, German, French, and Swedish.

Energy. International Map of Natural Gas Fields in Europe. Hannover, United Nation Commission for Europe Committee on Gas, 1972. 9 sheets, 80x70 cm. 1:2,500,000.

Natural gas and oilfield locations overprinted in reds and green on a generalized geologic unit map. Specific rock types are not indicated but includes information as to depth of the base sedimentary and paleography. The base map is drawn in pastel colors which blend well but still are contrasting and legible.

Carte Internationale des Depotes Houillers en Europe. Moscow, Glavnoe Upravlenie Geodezii i Karto-graffii, in co-operation with the International Geological Congress, 1967/1968. 70x55 cm. 1:2,500,000.

Depicts European coal deposits.

Geology. International Geological Map of Europe and the Mediterranean Region; Western and Eastern Sheet. Hannover, UNESCO, Commission for the Geological Map of the World, 1971. Eastern sheet 84x121 cm.; Western sheet 79x121 cm. 1:5,000,000. French/English.

Well drawn representation of stratigraphic subdivisions, facies, rock types and ages. Bright colors display the information without blurring the lettering.

Carte Geologique Internationale de l'Europe: International Geological Map of Europe. Hannover, UNESCO, Commission for the Geological Map of Europe, International Geological Congress, 1974-. 63x63 cm. French.

Detailed synoptical series of particular value to the researcher and practical geologist. Drawn in bold but not harsh colors with easy to read lettering and an overall neat appearance. Although in French there is a series of translation brochures and standard geological symbols predominate. This second edition of the classic International Geological Map of Europe has been in progress since 1964. The completed series will have 49 sheets, currently 29 sheets are available.

International Quaternary Map of Europe. Hannover, UNESCO and the Bundesanstalt für Geowissenschaften und Rohstoffe, 1967-. 84x67 cm. 1:2,500,000. German with English, Russian and French.

Glacial and geomorphological features are shown plus stratigraphic and lithogentic subdivisions. In addition to

volcanic rocks, deposits of fluvial, marine, chemical, etc. origin are shown. Bathymetry and recent deposits on the ocean floor are indicated. Colors are bright with easy to read lettering. A well-coordinated color scheme and symbolization. Series in progress since 1967 and will have 16 sheets when completed. Currently 11 sheets are available. Translation Brochures available.

Geology/Tectonics. Carte Techonique Internationale de l'Europe. Moscow, UNESCO and the Academy of Sciences of the U. S. S. R., 1973-. 63x66 cm. 1:2, 500, 000. French.

Revision of the Tectonic Map of Europe, 1964. In progress since 1973 will be 20 sheets when completed. In preparation, will be released soon.

Hydrogeology. International Hydrogeological Map of Europe. Hannover, UNESCO and the Budesanstalt für Geowissenschaften und Rohstoffe, 1970-. 93x67 cm. 1:1, 500, 000. English, German and either French, Russian or Spanish.

Contrasting colors used to show the nature and extent of water-bearing formations and to indicate availability of ground water. Series in progress since 1970 and will have 35 sheets when completed. Currently two sheets are available covering most of France, Austria, Switzerland, Northern Italy and Southern Germany. An explanatory booklet is available for each sheet.

Hydrographic. Stanford's General Chart of the Southern North Sea. London, Philip (George), 1975. 100x76 cm. No. 19.

An example of available navigation chart. Information shown includes distances, depths, banks, ports, tides and routes.

Landforms. Landforms of Europe. Chicago, Raisz, Erwin, Rand McNally, 1960. 32x53 cm. 1:12, 682, 200.

Classic map showing relief of Europe by hachures and shading. Inset: Physiographic Provinces. . . Europe during the Ice Age.

Minerals. Carte Metallogenique de l'Europe. Paris, UNESCO and the Bureau de Recherches Geologiques et Minieres, 1968-. 68x96 cm. 1:2, 500, 000. French.

Subtly colored geologic base map showing orogenic regions, simplified stratigraphy, lithology, tectonic and geophysical features, and detailed data on mineral deposits. Most sheets

are accompanied by a mineral deposits list. In progress since 1968 and will have 9 sheets when completed. Currently five sheets are available.

Transportation. Map of the European Railroads. Bern, Swiss Federal Railroads, 1974. 52x71 cm.

Shows network on which Euraltariff and Eurailgroup tickets are valid. Useful for travel purposes. Shows border crossing points and railroads of Europe giving names of participating railroads.

Vegetation. Vegetation Map of the Mediterranean Region. Paris, UNESCO-FAO, 1970. 2 sheets, each 75x100 cm. 1:5,000,000.

Detailed map with bright color for vegetation types, shades of pink-purple-red predominating. Also relief indicated by contours. Covers all of Spain, Italy, Greece and Balkins besides eastern Asia and northern Africa.

Topographic Series

The World. Washington, U. S. Defense Mapping Agency. (Series 1106) 1:5,000,000. Europe sheet #1.

SEE World-Topographic Series annotation.

Karta Mira. Moscow, co-publication of the official surveys of Bulgaria, Czechoslovakia, German Democratic Poland, Hungary, Romania and the U. S. S. R., 1964-. 1:2,500,000.

SEE World-Topographic Series annotation.

The World. Washington, U. S. Defense Mapping Agency. (Series 1301) 1:1,000,000.

SEE World-Topographic Series annotation.

Sectional

Central Europe. Edinburgh, John Bartholomew and Son Ltd., 1973. 49x78 cm. (Bartholomew World Travel Series) 1:1,250,000.

Attractive combination of soothing colors and coherent information from a reliable publisher. Relief shown by subtle tints, contours and hill shading. Updated frequently.

Belgien, Niederlande, Luxemburg; Strassenkarte mit Sehenswürdigkeiten. Bern, Hallwag A. G., 1976. 103x69 fold in cover 22x15. 1:600,000. Legend in German, English, French and Italian.

Shows classified roads, ferries, railroads and campsites. Detailed place names with shaded relief.

Eastern Europe. Edinburgh, John Bartholomew and Son Ltd., 1970. 72x94 cm. (Bartholomew World Travel Series) 1:2,500,000.

SEE Central Europe annotation.

North Cape - Central Europe Political Edition. Bern, Kummerly ünd Frey, 1971. 128x92 cm. 1:2,750,000.

Subtly colored map with subdued highways. Covers from Iceland to Russia including Great Britain.

Scandinavia. Edinburgh, John Bartholomew and Son Ltd., 1972. 80x53. (Bartholomew World Travel Series) 1:2,500,000.

SEE Central Europe annotation.

Skandinavien. Vienna, Freytag, Berndt und Artara, 1974. 101x83 cm. fold in cover 23x15 cm. 1:2,000,000.

Visually attractive with shaded relief. Rather prominent highways with distances and state frontiers indicated. Legend in 6 languages.

Südosteuropa. Reise and Verkehrsverlag, 1972. (RV98) 1:2,500,000.

JRO-Strassenkarte Balkanländer. IRO Road Map of Danube Countries. Munich, Iro-Verlag, 1973. 98x137 cm. f9ld in cofer 23x16 cm. 1:1,000,000.

Large map printed on both sides with detail place names, classified roads, distances and tourist information. Relief by attractive altitude tints and hill shading. Despite detail has an uncluttered appearance.

Espagne-Portugal Grandes Routes; Spain-Portugal. Paris, Manufacture francaise des penumtiques Michelin, 1975. 110x96 cm. (#990) 1:1,000,000.

Typical well-drawn and reliable Michelin highway map. A "road map at its finest, useful for many other purposes." Subtle shaded relief with vegetation color keyed. Attractive map

despite moderately cluttered appearance due to detailed place names. Lettering and international borders are bold and distinct while internal boundaries are less intense. Includes specific road and tourist information.

Peninsula Iberica, Baleares y Canarias. Madrid, Spain. Instituto Geografico y Catastral, 1974. 1:1,000,000.

Relief by contours, altitude tints and hill shading. Detailed place names with non-prominent roads.

Daily Telegraph Map of the Mediterranean and Middle East. London, Geographia Ltd., 197?. 100x75 cm. 1:7,100,000.

Generalized political map with individual countries emphasized by distinctive coloring. Extends from Atlantic Ocean to include all of Iran. Insets of Nile Delta and Cyprus.

Western Europe. Edinburgh, John Bartholomew and Son Ltd., 1974. 99x83 cm. (Bartholomew World Travel Series) 1:3,000,000.

SEE Central Europe annotation.

Albania

Jro-Strassenkarte Balkanländer. Iro Map of Danube Countries. Munich, Iro-Verlag, 1973.

SEE Europe-Sectional Annotation.

Albania. [Washington, U. S. Central Intelligence Agency]. 1971. Base map (78745); shaded relief (78744).

Typical reliable C. I. A. maps. Shaded relief map with subtle tonal variations representing the terrain. The attractive map has limited place names and although moderate in size is highly legible. Informative but generalized marginal maps can inlcude: Economic activity; Population; Ethnic groups; and Vegetation. Frequently updated with new serial number.

Andora. Paris, France. Institut Geographique National, 1966. 45x40 cm. 1:80,000.

Color map with relief by unusual stipling process. Shows roads, paths and tourist information. One of few detailed maps available for the area.

Austria

Austria. Stuttgart, Mairs Geographischer, 1975. 80x51 cm. (available as Bartholomew Road Map #BMC2) 1:850,000. Legend in 12 languages.

Artistically colored shaded relief with detailed place names. Roads are prominent in purple but not overwhelming.

Austria. Washington, U. S. Central Intelligence Agency, 1970. Base (77707); shaded relief (77706).

SEE Albania annotation.

Belgium

BelgiëToeristksche Kaart. Belgium Tourist Map. Brussels, Belgium National Tourist Office, 1974. 61x72 cm. 1:400,000. French, Flemish, German, English.

Visual well-drawn map with roads, tourist information, place names and distinctive internal boundaries. Probably can obtain free.

Map of Belgium. Brussels, Belgium Information and Documentation Institute, 1975. 56x68 cm. Scales vary. English.

Excellent thematic map divided into 4 separate maps: Largest one shows Industry and Agriculture; others show location, population (1973 distribution) by colored intervals (Isopeths), and a shaded relief map in harmonious colors. Text information given also on education, the economy, the government and population. Overall crisp and well-proportioned appearance.

Belgium. Washington, U. S. Central Intelligence Agency, 1969. Base (75520); shaded relief (75519).

SEE Albania annotation.

Bulgaria

Bulgarian Alles für Den Autotouristen. Sofia, Zentrum Für Fremdenoverkehrwerbung/Bulgaria. Komitee für Tourismus, 196?. 78x96 cm. 1:800,000. Legend in German, French, English and Bulgarian.

Road and tourist information with subtle hill shading but no internal boundaries.

Bulgaria. Washington, U. S. Central Intelligence Agency, 1972. Base (500253); shaded relief (500252).

SEE Albania annotation.

Bulgaria. SEE ALSO: Europe-Sectional (Balkans)

Czechoslovakia

Ceskoslovensko-Tchecoslovaquie Carte de Poche. Czechoslovakia, Pocket Map. Frankfort au Main, Ravenstein Geographische, 1975. 58x78 cm. 1:800,000. Legend in Czechoslovakian-German, English and French.

Relief attractively shaded with roads distinct. Internal boundaries are indicated.

Czechoslovakia. Washington, U. S. Central Intelligence Agency, 1974. 52x56 cm. Base (501821); shaded relief (501820).

SEE Albania annotation.

Denmark

Kongeriget Danmark. Copenhagen, Danmark Geodaetisk Institut, 1975. 78x102 cm.

Handsome topographic map in Danish but with standard symbols. Insets of Greenland and the Faeroe Islands.

Denmark. Washington, U. S. Central Intelligence Agency, 1974. 62x44 cm. Shaded relief (501760) 1:1,000,000.

SEE Albania annotation.

Finland

Finnlan, Shell Reisekarte, Finland, Shell Road Map. Stuttgart, Mairs Geographischer Verlag, 1974. 84x49 cm. 1:1,500,000. Legend in 12 languages.

Relief colorfully shaded with classified roads and distances.

Finland. [Washington, U. S. Central Intelligence Agency] 1969. Base (58420); shaded relief (58419).

SEE Albania annotation.

France

Carte de la France. Paris, France. Institut Geographic National, 1976.

Characteristic I. G. N. map, artistically drawn shaded relief with gradient tints and contours. Shows detailed place names, with internal boundaries and road information. From a reliable source that updates its maps frequently.

A Traveler's Map of France. Washington, National Geographic Society, 1971. 80x56 cm. 1:1,900,800.

Variation on typical N.G.S. map in that it illustrates relief by handsome colored shading. The colors are subtle and make the detailed place names and notes more readable than the normal flat white surface. Contains extensive historical and tourist notes. Insets of 7 French cities, Corsica and the Riviera. Text on verso.

La France Geographic Physique et Humaine. Paris, Manufacture Francaise des Pneumatiques Michelin, 1971. 88x50 cm. Scales vary.

Comparable to a miniature atlas printed on both sides of one sheet through careful choice of symbols, a great deal of information is depicted with only a slightly cluttered appearance. A variety of data and text including: Economic map, relief, climate, population, agriculture by province, and energy.

France. [Washington, U.S. Central Intelligence Agency] 1972. Base (500198); shaded relief (500197).

SEE Albania annotation.

Plan de Paris. Paris, Manufacture Francaise des Penumontiques Michelin, 1975. 97x130 cm. fold to 25x11 cm. (carte #10) 1:10,000.

One of the detailed street plans of Paris that are available.

Germany

(General) Germany. Washington, National Geographic Society, 1974. 71x54 cm. 1:1,380,000.

Typical detailed place named map published by N.G.S.

(General) Deutschland. Frankfurt av Main, Federal Republic of Germany Institute für Angewandte Geodäsie, 1968. 102x137 cm. 1:1,000,000.

Relief by altitude tints, contours and shading. Roads are inconspicuous with distinct international and internal boundaries. Inset of Berlin showing the 4 power division.

(West Germany, Federal Republic of Germany) Deutschland - German - Allemagne - Germania. Bern, Kümmerly and Frey, 1973. 77x92 cm. 1:1,000,000. Legend in German, English, French and Italian.

West Germany. [Washington, U. S. Central Intelligence Agency] 1972. Base (500471); shaded relief (500470).

(East Germany - German Democratic Republic) DOR, Deutsche Demokratische Republik: Grosse Autokarte. Berlin, Kartographisches Institut Bertelsmann, 1973. 106x84 cm. fold in cover 25x13 cm. 1:500,000. Legend in German, English, French and Italian.

Relief by shading with clear internal boundaries that are not overpowered by the roads. Inset map of internal state divisions.

East Germany. Washington, U. S. Central Intelligence Agency, 1973. 71x45 cm. Base (501042); shaded relief (501041).

SEE Albania annotation.

Greece

Hellas, Grece, Carte de Poche: Greece Pocket Map. Frankfurt au Main, Ravenstein Geographische Verlag, 1975. 57x80 cm. 1:1,300,000. Legend in Greek, German, English and French.

Visually appealing shaded relief map with extensive place names and subordinate highways.

Greece. Washington, U. S. Central Intelligence Agency, 1973. 40x42 cm. Base (501685); shaded relief (501684) 1:2,000,000.

SEE Albania annotation.

Hungary

Ungarn. Vienna, Freytag, Berndt and Artaria, 1975. 66x100 cm. 1:6,000,000. Legend in German, English, French, and Hungarian.

Relief shading in muted tones with roads distinct but not overpowering. Many place names but not overly crowded.

Hungary. Washington, U. S. Central Intelligence Agency, 1973. 48x45 cm. (501074).

SEE Albania annotation.

Iceland

Island [Tourist Map of Iceland] Reykjavik, Touring club of Iceland, 1972. 53x76 cm. 1:750,000. Icelandic, Danish and English.

Attractively shaded relief map with contours. On verso map of roads with distances and conditions.

Iceland. Washington, U. S. Central Intelligence Agency, 1973. 43x45 cm. Base (500976); shaded relief (500975).
SEE Albania annotation.

Ireland (ERIE)

Ireland. Dublin, Ireland (Erie) Ordance Survey, 1973. 82x62 cm. 1:575,000.
Topographic map with altitude tints. Coherent although crowded with place names and relief information. Includes Northern Ireland.

Italy

Italia, Carta Fisico-Politica. Milano, Touring Club Italiano, 1973. 120x96 cm. 1:1,000,000.
Large detailed map with shaded relief. Has legible internal boundaries with highways not overly conspicuous. Insets of Sicily, Sardinia and Corsica.

Italy. Washington, U. S. Central Intelligence Agency, 1973. 65x5- cm. Base (501446); shaded relief (501445).
SEE Albania annotation.

Liechtenstein

Fürstentum Liechtenstein. Vaduz, Lehrmittelverlag, 1976. 75x75 cm. 1:50,000.
Detailed topographic map with roads and footpaths.

Luxemburg

Grand Duche de Luxembourg. Bruxelles, Rene de Rouck, 1976. 125h edition. 105x70 cm. 1:100,000. Dutch, French, English and German.
Detailed topographic map. A symmetrical presentation with crisp lettering and visible internal boundaries. Explicit highway information.

Luxembourg. SEE ALSO: Benelux, Europe-Sectional.

Malta

Malta. Tolworth, Directorate of Overseas Surveys, 1969. 3 sheets vary from 63x86 to 75x57 cm. (D. O. S. 352) 1:25,000.
Traditional almost oldfashioned style but orderly and highly visible. Relief by contours with rock outcrops indicated. Shows all classes of roads and antiquities. Sheet I is for Gozo and Comino.

Malta. Washington, U. S. Central Intelligence Agency, 1973. 28x43 cm. Shaded relief (501165).

SEE Albania annotation.

Monaco

Monaco, Monte Carlo, Beausoleil. Paris, Plan-Guide Blay, 1975. 43x27 cm. 1:8,000.

Small but readable and useful street plan showing public buildings and casinos. Includes index to buildings, street guide and text information on history, etc.

Netherlands

Michelin Nederland. Paris, Manufacture Francaisedes Pneumtiques Michelin, 1976. 97x75 cm. 1:400,000. Legend in French, Dutch, German and English.

Typical well-drawn and reliable Michelin highway map. A "road map" at its finest, useful for many other purposes. Subtle shaded relief with specific road and tourist information. Impressive map despite moderately cluttered appearance due to detailed place names. Lettering and international borders are bold and distinct while internal boundaries are less intense.

Netherlands. [Washington, U. S. Central Intelligence Agency] 1970. Base (76864); shaded relief (76863).

SEE Albania annotation.

Norway

Norwegen Shell Reisekarte, Norway, Shell Road Map. Stuttgart, Mairs Geographischer Verlag, 1974. 83x49 cm. 1:1,500,000. Legend in 12 languages.

Detailed place names and highways displayed well. Because of the shape of the country it has been drawn in 2 parts on the map and not one elongated whole.

Norway. [Washington, U. S. Central Intelligence Agency] 1971. Base (500008); shaded relief (500007).

SEE Albania annotation.

Poland

Polska, Polen, Poland, Pologne. Frankfurt au Main, Ravenstein GubH, 1974. 68x95 cm. 1:1,000,000. Legend in 6 languages.

Frequently updated "highway" map with shaded relief. Earlier editions were more attractive as this one is a little too green. Hopefully the new edition will have more

harmonious colors and have the new Polish internal divisions. Until the new edition use the Mapa Administracyjna for the new boundaries.

Polska Rzeczpospolita Ludowa Map Administracyjna. Warsaw, Panstwowe Przedsiebiorstwo Wydawnictw Kartograficznych, 1975. 94x87 cm. 1:750,000. Polish.

Political coloring for new internal administrative divisions. Although in Polish it is easy to use. On verso is a detail index.

Poland. Washington, U. S. Central Intelligence Agency, 1973. 63x40 cm. Base (501308); shaded relief (501307).

SEE Albania annotation.

Portugal

Carta de Portugal. Lisbon, Instituto Geografico e Cadastral, 1970. 69x47 cm. 1:1,000,000.

Relief by contours, hill shading and altitude tints. Roads are noticeable but not overwhelming.

Portugal. Washington, U. S. Central Intelligence Agency, 1972. 55x55 cm. Base (500531); shaded relief (500530).

Portugal. SEE ALSO Iberian Peninsula, Europe-Sectional.

Romania

Rumänien Bulgarien; Strassenkarte mit Sehensürdigkeiten. Bern, Hallwag A. G., 1976. 83x83 cm. 1:1,000,000. Legend in 6 languages.

Roads classified with detailed place names and shaded relief. Internal divisions are named but boundaries are not.

Romania. [Washington, U. S. Central Intelligence Agency] 1970. Base (76859); shaded relief (76858).

SEE Albania annotation.

Romania. SEE ALSO Balkans, Europe-Sectional.

San Marino

Republica di San Marino, Helmatkarte der Republik. 1973. 66x101 cm. 1:15,000. Legend in 4 languages.

Spain

Spain. Washington, U. S. Central Intelligence Agency, 1974. 68x51 cm. Base (501746); shaded relief (501745).

Spain. SEE ALSO Iberian Peninsula, Europe-Sectional.

Sweden

Schweden, Shell Reisekarte; Sweden Shell Road Map. Stuttgart, Mairs Geographischer Verlag, 1974. 109x49 cm. 1:1, 500, 000. Legend in 12 languages.

One of few maps where Sweden is shown in one piece. Relief by shading with extensive place names but not too cluttered.

Sweden. Washington, U. S. Central Intelligence Agency, 1973. 50x45 cm. Base (500867); shaded relief (500866).

SEE Albania annotation.

Sweden. SEE ALSO Scandinavia, Europe-Sectional.

Switzerland

Schweiz Offizielle Strassenkarte des Automobilclub der Schweiz. Bern, Kümmerly and Frey, 1974. 90x127 cm. 1:250, 000. Legend in German, French, English and Italian.

One of the many fine maps of this nature published by Kümmerly ünd Frey. This one selected because of the attractive shaded relief with subordinate highways and distinct canton boundaries.

Union of Soviet Socialist Republics

U.S.S.R. and Adjacent Areas. London, Great Britain. Directorate of Military Survey, 1964. 3rd edition. 77x112 cm. (GSGS/AMS5104) 1:8, 000, 000.

Attractive physical map with relief shown by altitude tints which are in restrained and harmonious colors. Only international borders are distinct as provincial boundaries and names are drawn in pale brown. For administrative divisions see the companion map. Shows roads, extensive place names, glaciers, deserts and limits of unnavigable Sea Ice. Neighboring countries are also shown in altitude tints. From a reliable source and a compilation diagram is provided.

U. S. S. R. and Adjacent Areas, Administrative Map. London, Great Britain. Directorate of Military Survey, 1:8, 000, 000.

Legible administrative division map with distinct international and internal boundaries and names. Individual oblasts shown by color differentiations. Neighboring countries are shown but subordinate in grey tones. From a very reliable source and a compilation diagram is provided plus a glossary

of Russian abbreviations. An excellent map for understanding the concept of the "Union" of the Republics. A companion map of the physical map series 5104.

U.S.S.R. Washington, U. S. Central Intelligence Agency, 1974. Base (501612); Summary map (501614).

Typical C. I. A. format but includes 12 generalized colored maps on a sheet 59x78 cms. Maps shown are: Population, Ethnic Groups, Land use, Metallurgy, Petroleum, Refining and Chemical Industry, Building and Metal Working, Administrative Divisions, Major Terrain Features, and comparative area and latitude to North America.

United Kingdom

Ordnance Survey Route Planning Map of Great Britain. Southampton, Great Britain. Ordnance Survey, 1976. 2 sheets 78x98 cm. complete. 1:625,000.

General map showing classified roads, distances, railways and detailed place names. The relief is by subtle altitude tints, updated annually.

Administrative Areas of Great Britain. Southampton, Great Britain. Ordnance Survey, 1976. 2 sheets. 78x156 cm. complete. 1:625,000.

Utilitarian map showing explicit administrative divisions to the rural district level. Includes the Shetland and Orkney Islands, with an inset of the London area with an index.

Great Britain-Physical. Southampton, Great Britain. Ordnance Survey, 1974. 2 sheets. 98x156. complete. 1:625,000.

Visually appealing with harmonious altitude tints and shading features with no towns shown. Inset for the Shetland and Orkney Islands.

A Traveler's Map of the British Isles. Washington, National Geographic Society, 1974. 80x55 cm. 1:1,675,200.

Variation of typical N. G. S. map, for description SEE France annotation. Has 14 inset maps including: Dublin, London, Edinburgh and Stratford on Avon.

Map of Northern Ireland. Belfast, Northern Ireland Ordnance Survey, 1973. 34x42 cm. 1:500,000.

Small but highly legible with relief by altitude tints. Shows detailed place names, highways and rivers.

London Map. London, British Tourist Authority, 1975. 42x69 cm. 1:15,300.

One of the more reliable detailed street plans available for London. Based on Ordnance Survey maps, it clearly shows underground and bus stations, and tourist sites. Updated frequently.

Scotland and Wales. SEE Great Britain maps.

Yugoslavia

Jugoslavija-Yougoslavie, Carte de Poche; Yugoslavia Pocket Map. Frankfurt, Ravenstein, 1974. 55x78 cm. 1:1,000,000. Legend in Croatin, German, English, and French.

Visually appealing use of relief by colored shading with highways prominent but not blatant. Internal divisions are named but boundaries not shown.

Yugoslavia. Washington, U. S. Central Intelligence Agency, 1973. 43x68 cm. Base (500600); shaded relief (500599).

SEE Albania annotation.

NORTH AMERICA
Including Central America and the West Indies

General

North America. Edinburgh, John Bartholomew and Son Ltd., 1972. 91x70 cm. (Bartholomew World Travel Series) 1:10,000,000.

Visually appealing combination of soothing colors and coherent information. Layout is well proportioned with easily discernible place names and international borders. The internal boundaries while included are less legible. Relief is shown by subtle altitude tints. One of the best of the many continental maps available for North America, it has an inset for Hawaii. This map is from a reliable publisher and is updated frequently.

North America. Washington, National Geographic Society, 1974. 59x76 cm. 1:14,040,000.

Reliable map with very detailed place names, that is updated frequently. The detailed place names and international and state borders are surprisingly legible. Includes area from North Pole to north coast of South America with an inset of the Bering Sea and the Aleutian Islands. The fabric copy would wear best and have a longer life expectancy.

North America. Ottawa, Canada. Surveys and Mapping Branch, 1971. 95x77 cm. (MCR 31) 1:10,000,000.

Generalized political map with individual countries emphasized by contrasting color. Reliable publication useful as a locational device and for oral presentations. Inset: Aleutian Islands, Alaska.

Philips' Graphic Relief Wall Map of North America. London, London Geographical Institute, Philip (George) Ltd., 1962. 91x120 cm. 1:8,750,000.

Generalized physical map colored with bold brown/green shades to simulate predominant vegetation cover. No town names are given but the map is useful as an overview of the relationships of coastal plains - mountains - deserts.

Thematic

Biogeography. Plant Hardiness Zone Map. Washington, U. S. Dept. of Agriculture, Agricultural Research Service, 1965. 76x56 cm. (Misc. Pub. #814) 1:7,500,000.

Gives average annual minimum temperature needed for plants to survive. Included are indicator plant examples and cold hardiness ratings of some woody plants.

Ethnography. Indians of North America. Washington, National Geographic Society, 1973. 92x79 cm. 1:10,610,000.

By color differentiation shows tribal locations and historical and battle sites. Shaded relief adds measureably to the map. Contains illustrations, text, chart: "A Chronicle of the North American Past," 5 insets, and a map of "North America before Columbus."

Geology. Geologic Map of North America. Washington, North American Geologic Map Committee, U. S. Geological Survey, 1965. 2 sheets 102x148 cm. 1:5,000,000.

Revision of the classic map of the same name. Detailed synoptical series of value for general use or for research. Drawn in bright but not harsh colors with precise type which is not overshadowed by the colors. Use of standard geologic symbols to indicate age, rock type and structure. Includes sources of geologic data. Inset: Aleutian Islands. Extends through Mexico and includes Greenland.

Basement Map of North America. Tulsa, American Association of Petroleum Geologists and the U. S. Geological Survey, 1967. 97x128 cm. 1:5,000,000.

Shows base rocks between latitudes 24° and 60° N. with details as to batholiths, uplifts, arches, etc.

_____. Geological World Atlas. North America sheets: 1, 2.

SEE World-Geology annotation.

Geology/Glacial. Glacial Map of North America. New York, Geological Society of America, 1945. 2 sheets 140x105 cm. 1:4,555,000.

By color contrast indicates stages of continental glaciation, depositional features and existing glaciers. Inset: Glacial map of the North Polar Hemisphere. Includes explanatory text and bibliography/sources.

_____. Retreat of Wisconsin and Recent Ice in North America, Speculative Ice-Marginal Positions during Recession of Last Ice-Sheet Complex. Ottawa, Canada. Geological Survey, 1969. 103x118 cm. 1:5,000,000.

Artistic rendering in shades of pastel blue.

Geology/Tectonics. Tectonic Map of North America. Washington, Philip Burke King, U.S. Geological Survey, 1969. 2 sheets 186x155 cm. 1:5,000,000.

Detailed representation of fracture zones, rock ages, anticline/synclines, faults, with bathymetric contours. Bright coloring for geologic ages. Easy to read with clean. legible type. Includes Central America with an inset of the Lesser Antilles and Northeastern South America. Lists sources of information.

Hydrography. Map Showing Relation of Land and Submarine Topography Nova Scotia to Florida. Washington, U.S. Geological Survey, 1965. 3 sheets 85x101 cm. (Misc. Map I-451) 1:1,000,000.

Submarine topography drawn in fine detail with bright to pastel blues. Topographic features named such as seamounts, canyons, deeps, etc.

Landforms. Physiographic Diagram of North America. New York, Erwin Raisz, Columbia University, 1950. 81x58 cm. 1:12,000,000.

Classic map showing relief by hachures and shading. Inset: Geological sections across Canada, Mexico and United States. On verso: Physiographic provinces of North America with a list of the provinces.

Soils. Soil Map of the World. North America 2 sheets.

SEE World-Soils annotation.

Topographic Series

The World. Washington, U.S. Defense Mapping Agency. (Series 1142) 1:11,000,000.

SEE World-Topographic Series annotation.

The World. New York, American Geographical Society/ Washington, U.S. Defense Mapping Agency (Series 1106) 1:5,000,000.

SEE World-Topographic Series annotation.

Karta Mira-World Map. Moscow, co-publication of many countries, 1964-. 1:2,500,000.

SEE World-Topographic Series annotation.

The World. New York, American Geographical Society/ Washington, U. S. Defense Mapping Agency. (Series 1301) 1:1,000,000.

SEE World-Topographic Series annotation.

Canada-General

Canada. Ottawa, Canada. Surveys and Mapping Branch, 1966. 102x142 cm. (MCR 8) 1:4,055,040.

Individual provinces emphasized by contrasting but harmonious colors. A well-proportioned map with clear type and a crisp appearance. A large reliable map for illustrating the area relationships of the U. S. S. R., Greenland, and the Arctic Islands. Detailed rivers and place names depicted, with generalized roads and railroads. Arctic Islands are on a separate sheet.

French edition also available.

Canada. Ottawa, Canada. Surveys and Mapping Branch, 1970. 86x95 cm. (MCR10) 1:6,336,000.

Smaller more recent edition of MCR8.

Canada. Washington, National Geographic Society, 1972. 55x77 cm. 1:7,460,000.

Canada-Thematic

Ethnography. Canada Showing Locations of Indian Bands with Linguistic Affiliations. Ottawa, Canada. Surveys and Mapping Branch, 1968. 75x95 cm. 1:6,336,000.

Geology. Geological Map of Canada. Ottawa, Canada. Geological Survey, 1969. 109x119 cm. (1250A) 1:5,000,000.

Well-coordinated color scheme and symbolization illustrate explicitly; rock types, ages, tectonics and subdivisions.

Geology/Glacial. Glacial Map of Canada. Ottawa, Canada. Geological Survey, 1968. 108x118 cm. (1253A) 1:5,000,000.

Brightly colored areas show depositional features, existing glaciers, unglaciated area, and geomorphic subdivisions. Other information includes continental ice sheets limits and moraines. Verso: References for each province and index to the Canadian "National Topographic System."

Geology/Tectonics. Tectonic Map of Canada. Ottawa, Canada. Geological Survey, 1969. 111x121 cm. (1251A) 1:5,000,000.

Bright but harmonious colors illustrate the structure and lithologic features.

Landforms. Landforms of Canada. Cambridge, Erwin Raisz, 1945- corrected to 1965. 76x86 cm. 1:6,200,000.

Classic map showing relief by hachures and shading.

Minerals. Principal Mineral Areas of Canada. Ottawa, Canada. Mineral Development Sector, 1975. 25th edition. 84x93 cm. (900A) 1:7,603,200.

Colors and symbols indicate location of minerals. In Margin: Index to Principal Producing Areas and to Principal Oil and Gas Fields. 8 insets of graphs and tables showing mineral production. Also inset of geological provinces. Edition available in French also.

Canada-Series

Canada. Ottawa, Canada. Surveys and Mapping Branch, 1971. 6 sheets 16x98, total 272x294 cm. (MCR5). 1:2,000,000.

Provinces boundaries indicated in distinctive colors and bold type. A multitude of place names, internal administrative divisions, crammed together with numerous named rivers, lakes and parks. Grid of township-range. Time zones also shown in inset.

Canada-Sectional

Atlantic Provinces. Ottawa, Canada. Surveys and Mapping Branch, 1973. 97x67 cm (MCR77) 1:2,000,000.

Characteristic of the governmental maps at this scale for the provinces. Large, functional map crammed with numerous place names, small named streams, and generalized roads and railroads. Distinctive administrative divisions to the local level with parks and Indian reservations. A grid of township and range overlays the map which is distracting on some maps. No land relief is shown but bathymetric contours are included.

Prairie Provinces. Ottawa, Canada. Surveys and Mapping Branch, 1973. 69x99 cm. (MCR27) 1:2,000,000.

SEE Atlantic Provinces annotation.

Alberta. Ottawa, Canada. Surveys and Mapping Branch, 1972. 2 sheets 87x101 cm. and 84x101 cm. (MCR83) 1:750,000.

Tinted river/stream base, detailed towns, mountains, forest reserves, Indian reservations and parks. Grid system more subtle than on the 1:2 million series.

British Columbia. Ottawa, Canada. Surveys and Mapping Branch, 1973. 69x99 cm. (MCR3) 1:2,000,000.

SEE Atlantic Provinces annotation.

Manitoba. Ottawa, Canada. Surveys and Mapping Branch, 1964. 2 sheets 101x120 cm. (MCR26) 1:760,000.

New Brunswick. Ottawa, Canada. Surveys and Mapping Branch, 1972. 84x90 cm. (MCR29) 1:500,000.

Tinted river/stream base with no relief but detailed towns, coast features, roads, prominent administrative divisions to the local level, forest reserves, parks and Indian reservations. Layout more proportional than the 1:2 million series and decidedly more legible.

New Foundland. Ottawa, Canada. Surveys and Mapping Branch, 1969. 105x65 cm. (MCR30) 1:500,000.

SEE New Brunswick annotation.

Northwest Territories; Yukon Territory/Territoures du Nord-ouest, Territoure du Yukon. Ottawa, Canada. Surveys and Mapping Branch, 1974. 95x120 cm. (MCR36) 1:4,000,000.

Ontario. Ottawa, Canada. Surveys and Mapping Branch, 1973. 92x86 cm. (MCR39) 1:2,000,000. English/French.

SEE Atlantic Provinces annotation.

Prince Edward Island; Ile-Du-Prince-Edouard. Ottawa, Canada. Surveys and Mapping Branch, 1974. 57x84 cm. (MCR41) 1:250,000.

Topographic map with green-forest tint and named coastal features. Detailed administrative boundaries including parks, and extensive place names. General appearance is crisp and clean with well-proportional layout.

Quebec. Ottawa, Canada. Surveys and Mapping Branch, 1973. 102x89 cm. (MCR42) 1:2,000,000. French edition available.

SEE Atlantic Provinces annotation.

Saskatchewan. Ottawa, Canada. Surveys and Mapping Branch, 1963. 2 sheets 187x87 cm. (MCR45) 1:760,320.

Crammed with place names and numerous named streams. Besides distinctive administrative boundaries there are Indian reservations, parks, mines, oil and gas pipelines and fields. The baseline/grid system is particularly distracting on the South sheet but it is the most reliable map available for the province.

Yukon Territory. Ottawa, Canada. Surveys and Mapping Branch, 1976. 58x52 cm. (MCR47) 1:2,000,000.

SEE Atlantic Provinces annotation.

Central America/West Indies-General

Mexico/Central America. Washington, National Geographic Society, 1973. 55x83 cm. 1:3,800,000 Mexico; 1:2,534,000 Central America.

Reliable map with detailed place names frequently updated. Distinct internal boundaries in Mexico and international boundaries in Central America. Type-face is modern and the names are surprisingly legible. Shading with depths by contours and gradient tints. Inset: Jamaica.

Mapa de America Central. Guatemala. Instituto Geografico Nacional, 1972. 2 sheets 50x76 cm. 1:2,000,000.

Generalized political map with individual countries emphasized by contrasting colors. Rivers, major towns, lakes, and swamps shown. Bold block lettering for countries can be seen at a distance. Does not include Mexico.

Archaeological Map of Middle America; Land of the Feathered Serpent. Washington, National Geographic Society, 1972 47x62 cm. 1:2,250,000.

Central America-Sectional

Belize. Belize. Tolworth, Surrey, Gt. Brit. Directorate of Overseas Surveys, 1974. 36x44 cm. (DOS958) 1:800,000.

Characteristic D. O. S. map with traditional brown altitude tints and lettering with an utilitarian appearance. Many islands and reefs are named.

Belize. SEE ALSO Guatemala.

Costa Rica. Costa Rica; Mapa Fisico-Politico. San Jose, Instituto Geografico de Costa Rica, 1974. 84x82 cm. 1:500,000.

Relief shown by handsome brown/green altitude tints with physical features named. Detailed place names are in square, highly legible letters. Insets: Zona Central; Isla del Coco.

Costa Rica. Costa Rica. Washington, U. S. Central Intelligence Agency, 1970. 27x36 cm. Base (77666) 1:1,500,000.

El Salvador. Mapa Official de la Republica de El Salvador. San Salvador, Instituto Geografico Nacional, 1968. 100x68 cm. 1:300,000.

Numerous place names are shown with internal divisional boundaries visible but secondary. The bold block lettering for the divisions, however, are very apparent. Relief is shown by contours.

Guatemala. Mapa Hipsometrico de la Republica de Guatemala. Guatemala City, Instituto Geografico Nacional, 1976, 4 sheets 58x56 cm. 1:500,000.

Visually attractive with bright altitude tints that are harmonious despite the choice of garish orange for the highest elevations. No relief is shown below 300 meters so a large part of the map has no differentiation of colors. Modern, crisp appearance to map with internal boundaries clear although the use of non-black letters causes occasional problems in the darker altitude tint areas. Inset of Elevations of the Volcanos of the Republic. Has index of towns and shows Belize in detail.

Guatemala. Guatemala. Washington, U. S. Central Intelligence Agency, 1972. 37x34 cm. Shaded Relief (500829) 1:1,510,000.

Characteristic, reliable C. I. A. map. Shaded relief with subtle tonal variations representing the terrain. This aesthetically pleasing map has limited place names and although moderate in size it is highly legible. Informative but generalized marginal maps can include: Economic Activity; Population; Ethnic Groups, and Vegetation. Frequently updated with a new serial number and/or base map published separately.

Honduras. Mapa General Republica de Honduras. Tegucigalpa, Instituto Geografico Nacional, 1970. 82x55 cm. 1:1,000,000.

Numerous place names given with internal divisional boundaries in contrasting colors. Departmental names occasionally are indistinct as a result of type being in green ink instead of black. Relief by contours. Insets of islands and a list of "politica administrativa" is given.

Honduras. Honduras. Washington, U. S. Central Intelligence Agency, 1973. 32x52 cm. Shaded Relief (501374) 1:1, 500, 000.
SEE Guatemala annotation.

Mexico. Carta General de Mexico. Mexico City, Departamento Geografico Militar de Secretaria de Defensa Nacional, 1973. 116x178 cm. on 4 sheets. 1:2, 000, 000.
Handsome combination of colors, type and layout. Relief is by contours and states are named and boundaries faintly apparent.

Mexico. Imperial Map of Mexico. Chicago, Rand McNally, 197? 122x91 cm. 1:3, 000, 000.
Utilitarian map with brightly colored countries in contrasting hues, that are visual at a distance. Obtain only if data is reasonably current since unfortunately this publisher frequently does not display a data. Index to cities and Inset of Distrito Federal.

Mexico. SEE Central America/Mexico, N. G. S.

Mexico. Mexico. Washington, U. S. Central Intelligence Agency, 1974. Shaded Relief (500306)
SEE Guatemala annotation.

Mexico. Carta Geologica de la Republica Mexicana. Mexico City, Comite de la Carta Geologica de Mexico Instituto Geologia, Ciudad Universitaria. Mexico, 1976. 120x160 cm. 1:2, 000, 000.
Geologic map with rock ages and structure colored keyed with basic symbols. Depths given in bathymetric contours.

Mexico. Tectonic Map of Mexico. Boulder, Zoltan de Cserna, Geological Society of America, 1961. 103x89 cm. 1:2,500,000. English/Spanish.
Contrasting colors illustrate structural and lithologic features.

Mexico. Mapa de Tipos de Vegetacion de la Republica Mexicana. Mexico. Direccion de Agrologia, 1971. 105x152 cm. 1:2, 000, 000.
Vegetation types differentiated by bright colors. The accompanying summary and bibliography are in English with the map in Spanish.

Nicaragua. Republica de Nicaragua Mapa Oficial. Managua, Direccion General de Cartografia, 1968. 119x106 cm. 1:500,000.

Physical map with traditional altitude tints with intense red as the highest elevation. Roads in red are prominent but not overpowering. The internal divisional boundaries are distinct and the names are in big bold letters.

Nicaragua. Nicaragua. Washington, U.S. Central Intelligence Agency, 1970. 39x41 cm. Base (77077). 1:1,500,000.

Panama. Republica de Panama Mapa Politico. Panama, Instituto Geografico Nacional, Tommy Guardia, 1974. 56x135 cm on 2 sheets 58x72 cm and 48x73 cm. 1:500,000.

Bold province colors with internal districts not quite as clear. Type varies in color and kind with occasionally blurry results. Relief by shading.

Panama. Republica de Panama Mapa Fisico. Panama, Instituto Geografico Nacional, Tommy Guardia, 1970. 56x135 cm on 2 sheets 58x72 cm and 58x73 cm. 1:500,000.

Physical relief shown by traditional altitude tints. Same base as the Mapa Politico.

Panama. Panama. Washington, U S. Central Intelligence Agency, 1974. Base (501561); Shaded Relief (540212) 1:1,500,000.

SEE Guatemala annotation.

Panama/Canal Zone. The Panama Canal: Map of the Canal Zone and Vicinity. Canal Zone Section of Office Engineer, 1967. 80x100 cm. 1:100,000.

Panama/Canal Zone. Panama and Canal Zone. Washington, U. S. Central Intelligence Agency, 1976. 2 maps on sheet. 20x26 cm. (502696).

West Indies-General

West Indies and the Caribbean. Edinburgh, John Bartholomew and Son, Ltd., 1974. 77x88 cm. (Bartholomew World Travel Series) 1:3,250,000.

Visually appealing combination of soothing colors and coherent information. Layout is well proportioned with easily discernible place names and international borders. The internal

boundaries while included are less legible. Relief is shown by subtle altitude tints. One of the best of the many maps available for the West Indies and is particularly useful for the many insets for 19 islands. This map is from an extremely reliable publisher and is updated frequently.

Imperial Map of West Indies and the Caribbean. Chicago, Rand McNally, N. D. 122x92 cm. 1:3, 500, 000.

Generalized political map with islands colored as to their political situation, i. e. pink-British, green-French. Slightly larger than the Bartholomew, this map would be more visible for oral presentations and as a locational device. Contains 17 insets of many islands and names banks and passages. Includes Central America from Guatemala to Northwestern South America.

The Caribbean. Kingston, Macmillan Education Ltd. Jamaica Pub. House, 1971 87x112 cm. 1:3, 500, 000.

Bahama Islands

The Bahama Islands. Chicago, Rand McNally for Texaco. 1974. 51x45 cm. 1:2, 000, 000.

One of few current maps naming and locating all the islands on 1 sheet. On verso are enlarged maps of: Freeport and Grand Bahama; Nassau and New Providence; Inset of air and sea routes plus text and an index.

Cuba

Mapa de Cuba. Fort Lauderdale, Dolph Map Company, 1970. 36x103 cm. 1:1, 950, 000.

Basic map without new political boundaries changes. One of the few maps that can be obtained at this time. For detail see the World topographic series at 1:1, 000, 000 and 1:2,500,000.

SEE Guatemala annotation.

Dominican Republic

Mapa de Dominican Republic. Santa Domingo, Instituto Geografico Universitario. 1975. 76x51 cm. 1:600, 000.

Provinces colored in contrasting hues to emphasize internal divisions. Only current governmental map readily accessible.

Dominican Republic. Washington, U. S. Central Intelligence Agency, 1971. 34x50 cm. Base (78963); Shaded Relief (78962) 1:1, 000, 000.

SEE Guatemala annotation.

Haiti

Haiti. Chicago, Rand McNally for Texaco, 1975. 73x46 cm. 1:700,000. English/French.

Up-to-date general map with extensive place names and prominent roads. Internal boundaries are secondary but the entire map is quite legible. On verso: Cap-Haiten and Port-au-Prince with an index to Port-au-Prince.

Haiti. Washington, U.S. Central Intelligence Agency, 1970. 31x41 cm. Base (77973); Shaded Relief (77972).

SEE Guatemala annotation.

Jamaica and the Cayman Islands

Jamaica. Tolworth, Gt. Brit. Directorate of Overseas Surveys for Jamaican Government, 1966. 103x60 cm. 1:250,000.

Relief shown by dark conventional altitude tints. Numerous place names are shown as are classified roads, railroads and swamps.

Jamaica. Washington, U.S. Central Intelligence Agency, 1968. 24x50 cm. Base (58781); Shaded Relief (58780) 1:500,000.

Cayman Islands. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1975. 34x33 cm. (D.O.S. 928). 1:150,000.

Typical D.O.S. map with altitude tints.

Puerto Rico

Puerto Rico e Islas Limitrofes. Washington, U.S. Geological Survey, 1963. 137x55 cm. 1:240,000.

Topographic map with extensive place names and internal boundaries. Inset of administrative districts.

Virgin Islands (American)

Virgin Islands. Washington, U.S. Geological Survey. 8 sheets. 1:24,000.

Topographical set with: 3 sheets-St. Thomas; 2 sheets-St. John; and 3 sheets-St. Croix.

Leeward Islands

Antigua, Lesser Antilles. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1973. 48x78 cm. (D.O.S. 406) 1:50,000.

Large scale modern style topographical map from D.O.S. Has a vegetation tint and shows parish boundaries, numerous place names, marshes and cultivation. Inset of St. John's English Harbour; with a diagram of administrative boundaries.

British Virgin Islands. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1963. 56x69 cm. (D. O. S. 546) 1:100, 000.

Saint Christopher [Kitts]-Nevis-Anguilla. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1963. 36x44 cm. (D. O. S. 1000) 1:127, 000.

Windward Islands

Barbados. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1974. 74x62 cm. (D. O. S. 418) 1:50, 000.

Dominica. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1964. 38x51 cm. (D. O. S. 998) 1:122, 500.

Grenada. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1964. 37x42 cm. (D. O. S. 995) 1:100, 000.

Guadeloupe: Carte Touristique et Routiere. Paris, Institut Geographique National, 1971. 89x109 cm. 1:100, 000.

Variation of characteristic I. G. N. map. An artistic map from a reliable source showing detailed place names, with internal boundaries and road and tourist information. Relief is shaded and when combined with the green vegetation tint the volcanos are displayed beautifully. Insets: Saint-Martin, Saint Barthelemy.

Martinique. Paris, Institut Geographique National, 1972. 66x77 cm. 1:100, 00 .

Insets: Fort-de-France; Saint-Pierre and Circuits Touristiques. SEE Guadeloupe for description.

Saint Lucia. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1971. 96x65 cm. (D. O. S. 445). 1:50, 000.

Saint Vincent. Tolworth, Gt. Brit. Directorate of Overseas Surveys, 1960. 23x38 cm. (D. O. S. 994) 1:150, 000.

Tourist Map of Tobago. Govt. Trinidad and Tobago Dept. of Lands and Survey, 1969. 57x41 cm 1:85, 000.

Modern well drawn physical map with contours and light conventional altitude tints. Detailed place names, tourist sites and roads.

Trinidad. Govt. Trinidad and Tobago Dept. of Lands and Surveys, 1975, 85x68 cm. 1:150,000.

Map has prominent internal boundaries, place names, and tourist facilities. Text on verso.

United States-General

[Fifty State United States Map]. Washington, U. S. Geological Survey, 1976. 1:6,000,000 and 1:10,000,000.

New general reference map of the United States drawn to solve the problem of showing the "whole" United States in correct and proportional relationships. Standard color and symbols are used to depict roads, railroads, population centers, rivers and national parks. lace names are adequate and in clean, precise type. An especially designed Lambert Conformal Projection was used to reduce distortion of position and perspective.

United States. Washington, U. S. Coast and Geodetic Survey [National Ocean Survey] 1956. 2 sheets. 180x128 cm. (#3060c) 1:3,000,000.

Physical relief map with brown/green altitude tints and contours to the 1,000 foot interval. Shows major towns, rivers and state boundaries very clearly in modern type. The visually appealing map is good for overall view of U. S. relief but because of gross contour interval, the eastern United States is generally one color with very little relief visible. Represents only the continental United States.

United States. Washington, National Geographic Society, 1976. 106x70 cm. 1:4,560,000.

Up-to-date reliable map with detailed place names and distinctive boundaries. New boundary style and reliefing gives a modern, attractive appearance to the map. On verso is Portrait U. S. A. "The First Color Photomosaic of the 48 Contiguous United States" produced with NASA Landsat imagery land approximates natural colors. This visual relief map has no cultural information but has general reference map at same scale on verso. Artistic presentation and innovative concept. Insets: Hawaii, Alaska, and Anchorage to Fairbanks.

Vacationlands-United States and Canada. Washington, National Geographic Society, 1968. 96x66 cm. 1:5,062,375.

Dated but still useful guide map for location of National parks, monuments, scenic and historical sites. Verso: popular recreation areas.

Imperial Map of the United States of America. Chicago, Rand McNally, 197? 77x122 cm. 1:4,000,000.

Generalized political map with states colored by contrasting colors for higher visibility. Insets: Hawaii and Alaska. This publisher frequently does not display a date and it is difficult to tell if the map is current.

Thematic

Base/Outline

United States. Washington, U.S. Geological Survey, 1972. 123x198 cm on 2 sheets 138x107 cm. 1:2,500,000.

Reliable map with county boundaries distinctly shown with state capitals and water features. An edition is available also with land tint background. Insets of: Guam; Hawaii; Alaska; American Samoa; and outlying islands of the United States in the Pacific and the Caribbean.

County Outline Map of the United States. Washington, U.S. Bureau of the Census in the GE-50 series. Boundaries are as of 1970 and an Albers Equal Area Projection is used. Insets of Hawaii and Alaska and at a different scale.

Outline Map of the United States. Washington, U.S. Geological Survey, 1954. 102x69 cm. 1:5,000,000.

Black and white map showing state borders and names only. Insets: Alaska, Hawaii and Puerto Rico and different scales.

State County Outline Map for State... Chicago, Rand McNally, 197? 21x28 cm.

Series of state base maps at the 8 1/2x11 inches standard sheet of paper size. Published by various companies with varying type sizes of the county names. Some have major populated places.

Cleartype County-Town United States. New York, American Map Company, 1972. 49x71 cm. (No. 771) 1:6,500,000.

Black and white base map showing cities with population of 20,000 and over.

Cleartype County Outline United States. New York, American Map Company. 96x126 cm. printed both sides of map (No. 129) 1:2,600,000 approx.

Very large bold type and borders on black and white base map. Insets of Hawaii and Alaska.

State of . . . . Washington, U. S. Geological Survey, 196-. 1:1,000,000.

A series of state base maps published in black and white for each of the states. A Lambert conformal conic projection is used and information depicted includes roads, place names, internal division boundaries and names.

Administrative Divisions

. . . : County Subdivisions-Towns, Plantations, Unorganized Territories and Places, 1970. Washington, U. S. Bureau of the Census, Govt. Printing Office, 1971.

A series of County or Census County Divisions maps available for each of the states generally at the scale of 1:500,000. These are the base maps for the state census information and were also published for the 1950 and 1960 census. Only administrative divisions are shown on this black and white map, with no other cultural or physical information.

Congressional Districts for the . . . Congress. Washington, U. S. Bureau of the Census, Geography Division, Govt. Print. Office. 106x76 cm. GE-50. Series Maps. 1:5,000,000.

Part of the GE-50 Map series published by the Bureau of the Census since 1960 based on the U. S. Census statistics. Maps with * mark are limited in publication and available only to libraries.

#3 - Congressional Districts for the 89th Congress (1965-1966)*
#11 - Congressional Districts for the 90th Congress (1967-1968)*
#25 - Congressional Districts for the 91st Congress (Including Redistricting Actions to August 1, 1968)
#46 - Congressional Districts for the 93rd Congress*
#62 - Congressional Districts for the 94th Congress
#72 - Congressional Districts for the 95th Congress

Climate

United States Weather and Climate Maps. Washington, U. S. Geological Survey, 1970. National Atlas of the United States of America.

Map sheets from the National Atlas published and sold separately. These thematic maps generally are isopleth and choropleth maps with relationships shown by bright and contrasting colors. The layouts are well proportioned and the

colors harmonious. Climate sheets are numbers:

94-95 - Monthly Sunshine, 1966. Thirteen maps on one sheet: total hours of sunshine for each month and total hours of sunshine during year at selected locations.

97 - Annual Sunshine, Evaporation, and Solar Radiation, 1970.

106 - Monthly Average Temperature, 1965.

110 - Monthly Minimum Temperature, 1965.

Hurricane Information and Atlantic Tracking Chart. Washington, U. S. National Oceanographic and Atmospheric Administration, 1972. 71x20 cm.

Ecology

Ecological Regions of the United States. Ogden, Ut., U. S. Forest Service. 44x65 cm text; map 83x104 cm. 1:7, 500, 000.

Regions differentiated by bright, harmonious colors. Text provides discussion of the regions and their characteristics.

Economic

United States Census Maps. Washington, U. S. Bureau of the Census, Geography Division. Govt. Printing Office. 106x76 cm. GE-50 Series Maps. 1:5, 000, 000.

Part of the statistical map series, GE-50 published by the Bureau based on 1960 and 1970 census data. Maps with * mark are limited publication and available only to libraries. The majority of these maps are choropleth with information shown by color differentiation at the county level. The color scale is bright but attractive and the type face is clean and legible. The economic maps in the series are:

#8 - Per Capita Money Income for 1959, by Counties of the United States*

#12 - Employment in Manufacturing, by Counties of the United States: 1960*

#13 - Employment in Professional, Technical, and Kindred Occupations, by Counties of the United States: 1960*

#18 - Retail Trade in the United States: 1963*

#19 - Sales of Retail Shopping Goods Stores for Selected Standard Metropolitan Statistical Areas in the United States: 1963*

#20 - Wholesale Trade in the United States: 1963*

#21 - Hotel-Motel Receipts in the United States: 1953*

#22 - Manufacturing in the United States: 1963*

#23 - Mineral Industries in the United States: 1963*
#24 - Families in Poverty Areas for Selected Cities in the United States: 1960*
#26 - Shipments of Commodities by Manufacturers in the Conterminous United States OUTFLOW from Census Geographic Divisions: 1963*
#27 - Shipments of Commodities by Manufacturers in the Conterminous United States INFLOW to Census Geographic Divisions: 1963*
#29 - Size of Farms, by Counties of the United States: 1964*
#30 - Percent Change in Size of Farms, by Counties of the United States: 1940-1964*
#31 - Value of Farm Products Sold per Acre of Land in Farms, by Counties of the United States: 1964*
#32 - Percent Change in Value of Farm Products Sold per Acre of Land in Farms, by Counties of the United States: 1939-1964*
#33 - Corn Yield per Acre, by Counties of the United States: 1964*
#34 - Percent Change in Corn Yield per Acre, by Counties of the United States: 1939-1964*
#55 - Standard Metropolitan Statistical Areas, Area Defined by Office of Management and Budget: January 1, 1974
#56 - Median Family Income for 1969, by Counties of the United States: 1970
#57 - Per Capita Money Income for 1969, by Counties of the United States
#58 - Families Below the Low-Income Level in 1969, by Counties of the United States
#64 - Median Gross Rent by Counties of the United States: 1970
#65 - Median Value of Owner-Occupied Housing Units Counties of the United States: 1970
#69 - Percent of Children 5 to 17 Years Old Below the Poverty Level in 1969, by Counties of the United States
#70 - Number of Children 5 to 17 Years Old Below the Poverty Level in 1969, by Counties of the United States

Rand McNally Map of Manufacturing. Chicago, Rand McNally, 1967 69x50 cm. 1:7,500,000.

Choropleth map color coded in crisp, light yellow and tans. The information is from the 1967 U. S. Census of Manufacturing and shows total value added by manufacture by counties. Insets: Hawaii and Alaska. Reprint from the Commercial Marketing Atlas.

Rand McNally Trading Areas. Chicago, Rand McNally, 1967 69x50 cm. 1:7,500,000

494 basic trading areas indicated by separate colors and number keyed to alphabetical list at the foot of the page. 50 major trading areas are set off from the other areas. Insets: Hawaii and Alaska.

Energy

Principal Electric Facilities. Washington, U. S. Federal Power Commission, Bureau of Power, Govt. Printing Office, 1974. 8 maps each 109x74 cm 1:2,000,000 approx.

Black and white map crammed with lines. Generating stations and transmission lines are classified by operating voltages. Separate maps for each of the 8 regions with each having a plant list with capacity organized by states. Insets of metropolitan areas.

Major Extra High Voltage Transmission Lines, December 31, 1975. Washington, U. S. Federal Power Commission, Bureau of Power, Govt. Printing Office, 1976. 76x60 cm. 1:7,000,000.

Major Natural Gas Pipelines as of December 31, 1975. Washington, U. S. Federal Power Commission, Bureau of Power, Govt. Printing Office, 1976. 28x45 cm. 1:11,000,000.

Generalized map showing pipelines and fields with a list of gas companies.

Oil and Gas Production [United States] with Basic Geologic Systems. Denver, Petromotion, 1973. 97x64 cm. 1:50,000,000.

Color coded for oil production, gas production and geologic features such as basement rock out crop and anticlinal uplifts.

Geology

Geologic Map of the United States (exclusive of Alaska and Hawaii). Reston, U. S. Geological Survey, 1974. 2 sheets. 1:2,500,000.

United States Geological Highway Map Series. Tulsa, American Association of Petroleum Geologists, 1966-. 91x70 cm. 1:1,875,000.

Series of generalized geologic maps printed on a highway base with text, illustrations, and explanatory notes. The rock types are differentiated by bold, high intensity colors. Includes simplified columnar charts of ages and rock types for geological divisions. On verso: Tectonic map; Physiographic map; Geological history of the area summarized with many sketch maps; Cross-sections brightly colored to illustrate the subsurface geology. Individual sheet for Hawaii and Alaska on verso.

Geology, 1966. Washington, U. S. Geological Survey, 1970. National Atlas sheet #74.

Geology SEE ALSO North America-Geology.

Geology/Glacial

Glacial Map of the United States East of the Rocky Mountains. Boulder, Geological Society of America, 1959. 89x205 cm. on 2 sheets 94x107 cm. 1:1,175,000.

Areas in contrasting colors show depositional features, limits of continental glaciation, moraines, etc.

Glacial. SEE ALSO North America-Geology/Glacial.

Geology/Tectonics

Tectonic Map of the Gulf Coast Region United States. Tulsa, American Association of Petroleum Geologists, 1971. 190x102 cm. 1:1,000,000.

Highly legible and uncomplicated map showing structure, faults, uplift, salt features, and intrusive rocks. A colored isopleth map with pastel oranges and greens representing various ages. Includes area from Western Florida to Mexico/Texas border.

Tectonic Features, 1968. Washington, U. S. Geological Survey, 1970. National Atlas sheet #69.

Map of Alaska and text on tectonic maps of the United States.

Tectonic Features, 1967. Washington, U. S. Geological Survey, 1970. National Atlas sheet #70.

Map of conterminous U. S. with inset of Hawaii. Shows location of major adjustments of the earth's crust.

Tectonics. SEE ALSO North America-Geology/Tectonics.

Historical

Battlefields of the Civil War, 1863. Washington, National Geographic Society, 1974. 75x58 cm. 1:2,598,000.

Based on a map upon which General Grant marked his proposed lines of operation. Shows: battles, forts, towns and water features with a multitude of descriptive notes. Inset: Major Offensives Union and Confederate. Verso: detailed maps of the principal battle areas; also map of the war in the southwest.

Territorial Growth, 1970. Washington, U. S. Geological Survey, 1970. National Atlas sheet #142.

Fourteen maps on one sheet showing territorial growth from 1775 to 1920; and United States and outlying areas: 1970.

Hydrography

Bathymetric Maps Eastern Continental Margin, U. S. A. Tulsa, Association of American Petroleum Geologists, 1970. 3 sheets 109x152 cm. and 81x175 cm. 1:1,000,000.

Covers area of Atlantic Ocean north of Cape Hatteras south to Brownsville, Texas, Gulf of Mexico. Attractive light blue gradation with contour intervals in fathoms. Underwater features such as canyons, banks and sea mounts are highly legible and named in bold type.

Hydrography. SEE ALSO North America-Hydrography and World-Oceans.

Hydrology

United States Water Resources Development. Washington, U. S. Geological Survey for the U. S. Water Resources Council, 1969. 144x121 cm. 1:3,168,000.

Locates and names dams, reservoirs, and aqueducts with the responsible agency. Also shows navigation and flood protection features with water shed areas. Projects licensed by by the Federal Power Commission are indicated with a separate listing. Distinctive map with cream base and bold blues for reservoirs. Some shading for relief with compatible colors illustrating other features. Insets: Major drainage areas: Hawaii; Alaska.

Surface Water, 1966. Washington, U. S. Geological Survey, 1970. National Atlas Sheet #117.

Hydrologic Investigation Atlases. Washington, U. S. Geological Survey. Various dates and scales.

Series of state and local maps concerned with flood areas, drainage, and availability of ground water.

Landforms

Classes of Land-Surface Form in the Forty-eight States, U. S. A. Washington, Edwin Hammond, Association of American Geographers, 1964. 65x94 cm. (Annals Map supplement No. 4) 1:5,000,000.

Classes by color coding with an inset of principal subdivisions. Also smaller version sheet #61 of the National Atlas.

Physiography and Physiographic Divisions, 1970. Washington, U. S. Geological Survey, 1970. National Atlas sheet #59.

Magnetic Declination

Magnetic Declination in the United States-Epoch 1975. O. Reston, U. S. Geological Survey prepared in cooperation with the National Oceanic and Atmospheric Administration, 1975. 83x110 cm (Map I-911) 1:5,000,000.

Isopleth map printed on both sides of the sheet.

Mineral Resources

United States Mineral Resources Maps. Washington, U. S. Geological Survey. (MR series) 1:5,600,000 and 1:3,168,000.

Series of nationwide and some individual state maps depicting the locations of various mineral deposits.

Population/Human Geography

United States Census Maps Washington, U. S. Bureau of the Census, Geography Division. Govt. Printing Office. 106x76 cm. GE-50 series maps. 1:5,000,000.

For annotation see United States-Economics.

The series maps on Population/Human Geography are:

#1 - Population Distribution, Urban and Rural, in the United States: 1960*

#2 - Standard Metropolitan Statistical Areas of the United States and Puerto Rico: 1953*

#4 - Housing Built Before and After 1950 in Standard Metropolitan Statistical Areas of the United States: 1960*

#5 - Housing Owned and Rented in Standard Metropolitan Statistical Areas of the United States: 1960*

#7 - Older Americans in the United States, by Counties: 1960*

#10 - Youths of 16 and 17 Years of Age in School, by Counties of the United States: 1960*

#14 - American Indians in the United States: 1960*

#15 - Japanese and Chinese in the United States: 1960*

#16 - Negro Population as Percent of Total Population, by Counties of the United States: 1960*

#28 - Housing Construction Authorized in Permit Issuing Places, by Selected Standard Metropolitan Statistical Areas of the United States: 1964-1967*

#37 - Year of Maximum Population by Counties of the United States: 1970

#38 - Population Density by Counties of the United States: 1970

#44 - Net Migration by Counties of the United States: 1960-1970

#45 - Population Distribution, Urban and Rural, in the United States: 1970

#47 - Number of Negro Persons, by Counties of the United States: 1970*

#50 - Number of Chinese, by Counties of the United States: 1970

#51 - Number of Japanese, by Counties of the United States: 1970

#52 - Number of Persons of Spanish Origin, by Counties of the United States: 1970

#53 - Number of Filipinos, by Counties of the United States: 1970

#54 - Percent Change in the Negro Population, by Counties of the United States: 1960-1970

#59 - Number of Owner-Occupied Housing Units, by Counties of the United States: 1970

#60 - Number of Renter-Occupied Housing Units, by Counties of the United States: 1970

#61 - Spanish Population as a Percent of Total Population, by Counties of the United States: 1970

#63 - Ratio of Workers Working in County to Workers Residing in County in the United States: 1970

#66 - Owner-Occupied Housing Units as a Percent of All Occupied Housing Units, by Counties of the United States: 1970

#67 - Number of Workers Commuting In and Percent of Workers Commuting Out, by County: 1970

United States Census Maps Washington, U. S. Bureau of the Census, Geography Division, Govt. Printing Office. GE-70 series maps. 1:7,500,000.

Slightly smaller series of census maps begun with the 1970 census. To date only 2 sheets have been published:

#1 - Population Distribution, Urban and Rural, in the United States: 1970

#2 - Distribution of Older Americans in 1970 Related to Year of Maximum County Population

Population Trends, 1974. Washington, U. S. Geological Survey, 1974. National Atlas sheet #418.

Four maps showing: population trends 1940-70; percent change in total population, 1960-70; population density, 1970; and percent of population urban, 1970.

Public Lands

Federal Lands, 1968. Washington, U. S. Geological Survey, 1970. National Atlas sheet #272.

Map Showing Indian Reservations Under Federal Jurisdiction (Except Alaska). Washington, Office of Indian Affairs, Division of Forestry, 1971. 34x18 cm. 1:9,000,000.

On verso: "Probable location of Indian tribes north of Mexico about 1500 A. D." and "Culture areas and approximate location of American Indian tribes today."

National Forests and Other Lands Administered by the Forest Service. Washington, U. S. Environmental Science Services Administration, 1969. 32x51 cm. 1:10,000,000.

General locational map with map of Forest and range experiment stations and Forest Products Laboratory, Lists of National Forests, National Grasslands, state and private forestry areas, land utilization projects, and brief text on verso.

National Parks of the Midwest. Washington, U. S. National Park Service, Govt. Printing Office, 1968. 24x30 cm on sheet 47x50 cm. 1:7,500,000.

Locational map with inset maps, illustrations, and text on verso.

National Parks of the Northeast. Washington, U. S. National Park Service, Govt. Printing Office, 1968. 21x28 cm. on sheet 47x60 cm. 1:7,500,000.

National Parks of the Southeast. Washington, U. S. National Park Service, Govt. Printing Office, 1968. 21x28 cm. on sheet 47x60 cm. 1:7, 500, 000.

National Parks of the Southwest. Washington, U. S. National Park Service, Govt. Printing Office, 1968. 26x28 cm. on sheet 47x60 cm. 1:7, 500, 000.

National Parks of the West. Washington, U. S. National Park Service, Govt. Printing Office, 1968. 30x18 cm. on sheet 47x50 cm. 1:7, 500, 000.

Religion

Ranking Christian Denominations by Counties of the United States: 1971. Glenmary Research Center for National Council of Churches of Christ in U. S. A., 1974. 104x76 cm. 1:10, 000, 000. Text accompanies.

Percent of church membership shown on this choropleth map of contrasting bright colors.

Percent of Population Unchurched by Counties of the United States: 1971. Glenmary Research Center for the U. S. Catholic Conference, 1974. 66x99 cm 1:10, 000, 000.

Catholic Percent of Total Population by Counties of the United States: 1971. Glenmary Research for the U. S. Catholic Conference, 1973. 66x99 cm. 1:5, 100, 000.

Transportation

United States of America Federal Aid Highways. Washington, U. S. Govt. Printing Office, 1970. 162x106 cm. 1:3, 168, 000

Simplified map showing national interstate highway system, defense highways, Federal-aid primary highway system and the US numbered highway system.

Railroad Map of the United States, with Portions of Southern Canada and Northern Mexico. New York, American Map Company, 197? 162x111 cm. (No. 717). 1:2, 851, 335 approx.

White base map with swarms of black lines with railroads initials and the towns with stations. State boundaries are thicker width than railroad lines and no physical information is shown. List of Railroad abbreviations. Insets: Boston Area; New York-New Jersey; Chicago; Pittsburgh.

Aeronatutical Charts U. S. National Ocean Survey.

Sectional and VFR Terminal Area Charts for Conterminous U. S. and Hawaiian Islands and Alaska.

Sectional Charts 55 sheets 1:500,000

Terminal Area Charts 22 sheets 1:250,000.

Aeronautical Information such as visual and radio aids to navigation, restricted areas and obstructions are printed over a topographic base which has shaded relief, towns, drainage feature and cultural information. Charts are revised semi-annually except several Alaskan sections and the Puerto Rico-Virgin Islands Local which are revised annually.

World Aeronautical Charts for Conterminous U. S. and and Hawaii Islands and Alaska. 1:1,000,000 27 sheets.

SEE World-Aeronautical annotation.

Vegetation

Potential Natural Vegetation of the Conterminous United States. New York, A. W. Küchler, American Geographic Society, 1975. 2nd Edition. 154x99 cm. 1:3,168,000.

Visually appealing map with vegetation color coded by region and species type with light pastel shades. The common and Latin name are given with key numbers to an explanatory text. Basic map has state boundaries and a few major cities in clear but unobstrusive type.

Potential Natural Vegetation of Alaska and Hawaii, 1966. Washington, U. S. Geological Survey, 1970. National Atlas Sheet #90.

Topographic Series

Karta Mira-World Map. Moscow, co-publication of many countries, 1964-. 1:2,500,000. 9 sheets for U. S.

SEE World-Topographic Series annotation.

The World. Washington, U. S. Geological Series/U. S. Defense Mapping Agency. (Series 1301). 1:1,000,000

SEE World-Topographic Series annotation.

[Topographic Maps of the Eastern and Western United States at the scale 1:250,000]. Washington, U. S. Geological Survey, 1947-. sheets 61x90 cm. or smaller (AMSV501 and V502).

Topographic set of 468 sheets with various issues of numerous sheets. Originally published by U. S. Army Map

Service. A medium scale series depicting physical features and cultural information on the regional basis. Each map covers 3 degrees of longitude by 1 degree of latitude. Useful for regional planning purposes. Contour interval can range from 50 feet in flat areas to 200 feet in the mountains.

State of . . . . Washington, U. S. Geological Survey. 1:500, 000.

Large topographic maps at a medium scale are available for each state with the exceptions of combinations of states in New England. Relief is by contours and physical features such as rivers, lakes, swamps, sand dunes and salt flats are shown. Built-up areas, national parks, forests, Indian reservations and Wildlife areas are also shown. Some states have shaded relief editions at the same scale.

[National Parks and Monuments]. Washington, U. S. Geological Survey. Scale and date varies.

Detailed topographic maps available for 42 National parks and monuments. Information includes camp sites, trails and scenic sites.

Sectional

Appalachian Region, as designated by the Regional Commission. Washington, U. S. Geological Survey, 1967. 66x79 cm. 1:2, 500, 000

Close-Up: U. S. A. - . . . . Washington, National Geographic Society.

Regional series of reference map with more detail than the older N. G. S. regional series. Extensive place names with historical and scenic notes. Verso: Text and illustrations about the states covered. Interesting and "handy" set. Titles published to date:

Alaska, 1975
California-Nevada, 1974
Florida, 1973
Wisconsin, Michigan and Great Lakes, 1973
Illinois, Indiana, Ohio, and Kentucky, 1977
Maine Canadian Maritimes
Mid-Atlantic States, 1976
North Central States, 1974
Northwest, 1973
South Central States, 1974
Southeast, 1975
Western New England, 1975

[United States Sectional Reference Maps]. Washington, U. S. Geological Survey, 1970. National Atlas sheets:

6-7 - Northeastern States, 1972
8-9 - Middle Atlantic States, 1972
10-11 - Southeastern States, 1972
12-13 - Florida, 1972
14-15 - Southern Mississippi Valley States, 1972
16-17 - Central Mississippi Valley States, 1972
18-19 - Northern Great Lakes States, 1972
20-21 - Northern Plains States, 1972
22-23 - Central Plains States, 1973
24-25 - Southern Plains States, 1973
26-27 - Southern Texas, 1973
28-29 - Arizona and New Mexico, 1973
30-31 - Southern California, 1973
32-33 - Central Pacific States, 1972
34-35 - Northwestern States, 1973
36 - Hawaiian Islands, 1972
37 - Southeastern Alaska, 1972
38-39 - Central Alaska, 1973
40-41 - Northern Alaska, 1973
42-43 - Southwestern Alaska, 1973
44-45 - Aleutian Islands, 1973

FLORIDA

Florida maps are listed in detail to provide an example of the variety of "local" maps that are available to a map library for its own state, counties and municipalities. The selections were made from maps in the University of Florida Map Library. The University of Florida is located in Gainesville, Alachua County, Florida.

General

State of Florida. Washington, U. S. Geological Survey, 1971. 109x158 cm. 1:5,000,000.

Large topographic map with 50 foot contour intervals resulting in extensive swamp symbols but very little relief depicted in South Florida. Built-up areas, Indian reservations, national parks and forests are all shown by color on the white base. County boundaries are drawn thick and in green so they are quite prominent. The roads are classified, and there are numerous place names. Panhandle Florida is drawn separately as an inset at the same scale.

Close-up: U. S. A., Florida. Washington, National Geographic Society, 1973. 58x90 cm. 1:1,331,000.

Typical N. G. S. map with a multitude of place names that are printed in clean modern type and are surprisingly legible. Tourist notes on the face of the map with descriptive notes on the verso. Parks, Indian reservations, wildlife refuges and scenic areas are shown in color. Swamps, reefs and depth curves are all indicated. Bahamas are shown and a map of Puerto Rico is included on the verso.

Standard Map of Florida. Chicago, Rand McNally. 53x70 cm. 1:1,204,000.

Utilitarian map with county boundaries in thick visible brown against a beige land base and blue ocean base. Extensive place names which occasionally are too small and indistinct. No roads are given, but railroads are initialed for the System and canals are named. Insets of: Northwestern Part of Florida, same scale as Main Map; Tampa Bay and vicinity; Miami and vicinity; and Jacksonville and vicinity. List of Florida Railroads and town index are included.

Sectional Map of Florida. Tallahassee, Florida. Department of Agriculture, 1903-1963 (irregular) 118x118 cm. 1:650,000 approx.

Land survey maps of Florida with principal Meridian and Base line, Number of Townships and Ranges, and Sections. Overlained with boundaries of Congressional Districts, Water Management Districts, Flood Control Districts, National Parks, Forests and Military Reservations, State Parks, and Railroads color keyed by names. An extremely cluttered map with information useful to local map users. Insets: Tampa Bay area; Miami area. Tables: Population... by Counties 1890 to 1960. Population of Principal Cities of Florida 1970 and Physical Facts. Formation of Counties and Changes in Their Boundaries by Years. Index to the numerous place names on the map.

Thematic

Administrative Divisions

Florida County Subdivisions-Census County Divisions and Places. Washington, U. S. Bureau of the Census, 1970. G. P.O. 105x83 cm. 1:760,000.

One of a series of census division base maps available for individual states. SEE United States-Administrative Divisions annotation.

Alachua County, Florida Precinct Map Gainesville, Alachua County Board of Commissioners, 1967. 62x56 cm. 1:130,000 approx.

Official voting precinct map for the county amended through 1965.

Gainesville Zip Code 326-Number. Gainesville, Alachua County Assessor, 1967. 122x74 cm. 1:15,500 approx. Ozalid.

Zip Code County-Town Florida. New York, American Map Company, 197? 22x28 cm. (8 1/2 x 11 inches) (Map No. 4208) 1:3,000,000.

Notebook size map with 3 digit zip codes and cities over 1,000. Index to counties and places on verso. Also shows sectional centers and zoned cities.

Base/Outline

Florida. Washington, U. S. Geological Survey, 1968. 76x53 cm. 1:1,000,000.

One of a series of state base maps published by U. S. G. S. SEE United States-Base/Outline.

Cleartype County-Town Florida. New York, American Map Company, Inc. [197?]. 53x39 cm. (No. 408) 1:1,400,000.

Black and white base map with county and town names. Index to county and towns includes 1970 population figures. Also published in 8 1/2x11 inches size (6508)

Cleartype County Outline Florida. New York, American Map Company, Inc. [197?]. 26x19 cm. (No. 208) 1:2,900,000.

Black and white base map with counties named but no towns or physical features. Index to counties.

[Florida County Maps] St. Petersburg, Fla., Florida Almanac, 1972. 67 maps. 21x28 cm. or smaller. No scale.

Black and white base maps with generalized towns and major roads drawn at a small handy size. Inset: locational state/county map.

Alachua County. Gainesville, North Central Florida Health Planning Council, 1975. 28x22 cm. 1"=250,000 approx.

Black and white outline map with census divisions and towns drawn by the local "Regional Planning Council."

Alachua County. Gainesville, North Central Florida Regional Planning Council, 1973. 34x37 cm. 1"=380,000 approx.

Geology

Florida Map Series. Tallahassee, Florida Bureau of Geology, 1953-.

A series of 73 maps published by the state of Florida concerned primarily with geology and hydrogeology/hydrology. The majority of the maps are for the entire state at the scale of 1:2,000,000 and are 53x43 cm. Information is frequently shown by bright, contrasting colors. Some maps are for a specific area and are drawn at a larger scale. The geology oriented maps are listed below, for the hydrogeology see later subject heading.

#2*-Land-Pebble Phosphate District, Compiled by J. B. Cathcart and E. L. M. Ward, U. S. Geological Survey. Maps showing mined-out areas and property ownership as of March, 1953, in the land-pebble phosphate district, Polk and Hillsborough counties, Florida. In two sheets, one 36x44 .

Orthophosphate in Florida Streams; 1969. Compiled by Matthew I. Kaufman. Prepared by the U. S. Geological Survey in cooperation with the Bureau of Geology, Florida Department of Natural Resources. Size: 18x22 inches. Scale approximately 30 miles to 1 inch.

#41 - Bouguer Anomaly Map of South Florida; 1971. Compiled by Woodson R. Oglesby and Mahlon M. Ball. Prepared by the Florida Department of Natural Resources, Division of Interior Resources, Bureau of Geology in cooperation with the Rosentiel School of Marine and Atmospheric Science, University of Miami, Miami, Florida. Size: 23x26 inches. Scale approximately 8 miles to 1 inch.

#52 - Bouguer Anomaly Map of Northwest Florida and Adjacent Shelf. Compiled by Susan Chakiand and Woodson R. Oglesby. Size: 23x32 inches.

#57 - Bouguer Anomaly Map of the Florida Peninsula and Adjoining Continental Shelves; 1973. Compiled by W. R. Oglesby, M. M Ball and Susan J. Chaki. Prepared by the Florida Department of Natural Resources, Bureau of Geology. Size: 24x36 inches. Scale approximately 16 miles to 1 inch.

Geology

United States Geological Highway Map Series. Sheet #9, Southeastern Region.

SEE United States-Geology annotation.

Hydrographic

[United States Nautical Charts, Atlantic and Gulf Coasts]. Washington, U. S. National Ocean Survey.

Florida portion of the extensive collection of navigation charts available for the United States coastal and territorial waters. Scales vary with detail and size: General charts 1:150,000-600,000 for offshore navigation by instruments; Coast charts 1:50,000-1:150,000 for just offshore navigation of bays, shoreline, skoals, etc.; Harbor charts 1:50,000 for anchorages; Intracoastal Waterways charts 1:40,000. These large charts vary in detail but can show everything from depths, buoys, bottom and obstacles to navigation to shipwrecks and bombing target areas. Are up-dated frequently. Some inland

water areas such as Lake Okeechobee and the St. John's River are also charted. In state with a coast these charts should be obtained as useful for commercial and pleasure boaters.

Bathymetric charts. SEE United States-Hydrography

Hydrology

Hydrologic Unit Map-1974 State of Florida. Washington, U. S. Geological Survey, 1975. 110x156 cm. 1:500,000.

SEE United States-Hydrology annotation.

Flood-Prone Area Maps Florida. Washington, U. S. Geological Survey in cooperation with the U. S. Department of Housing and Urban Development, Federal Insurance Administration, 1973. 55x70 cm. 1:24,000.

The flood-prone areas are the designated areas where there is, on the average about 1 chance in 100 that they will be inundated in any year. The boundaries are drawn on black and white reproductions of the topographic quadrangles at the scale of 1:24,000. These maps are available for most of the United States for flood-prone areas and are particularly useful in Florida for low lying coastal or river areas.

[Florida] Map Series. Tallahassee, Florida. Bureau of Geology, 1953-. SEE Florida-Geology annotation.

Hydrologic Maps:

#1 - Piezometric Map

#4 - Piezometric map with the area of artesian flow of the Floridan aquifer

#5 - Hydrologic map showing features of the Floridan aquifer in Seminole County, Florida

#7 - Generalized water-table contours in southern Florida

#9 - Quality of water from the Floridan aquifer Hillsborough County, Florida

#10 - Quality of water from the Floridan aquifer in the Econfina Creek Basin area, Florida, 1962

#11 - Fluoride content of water from the Floridan aquifer of Northwest Florida, 1962

#12* Chloride concentration in water from the upper part of the Floridan aquifer in Florida

#13 - Hardness of water from the upper part of the Floridan aquifer in Florida

#14 - Dissolved solids in water from the upper part of the Floridan aquifer in Florida

#15 - Sulfate concentration in water from the upper part of the Floridan aquifer in Florida
#16 - Principal aquifers in Florida
#17 - Quality of water from the Floridan aquifer in Brevard County, Florida, 1963
#19 - Folio of South Florida basin, a preliminary study; 1966
#20 - Chloride content of ground water in Pinellas County, Florida, in 1950 and 1963; 1966
#21 - Availability of Ground Water in Orange County, Florida; 1966
#22 - Runoff in Florida; 1966
#23 - Fluoride content of water from the Florida aquifer in Northwestern Florida; 1966
#24 - Availability and quality of surface water in Orange County, Florida; 1966
#25 - Temperature and chemical characteristics of the St. John's River near Cocoa, Florida; 1967
#26 - Ground water features in Escambia and Santa Rosa Counties, Florida; 1967
#27 - Chemical character of water in the Floridan aquifer in southern Peace River Basin
#28 - Drainage Basins in Florida; 1967
#29 - Water in Broward County, Florida; 1968
#30 - Surface Drainage Characteristics in Volusia County, Florida; 1968
#31 - Seasonal Variation of Streamflow in Florida; 1969
#32 - The Difference Between Rainfall and Potential Evaporation in Florida; 1969
#34 - Average Flow of Major Streams in Florida; 1969
#35 - Color of Water in Florida Streams and Canals; 1969
#36 - Estimated Water Use in Florida; 1965
#37 - The pH of Water in Florida Streams and Canals; 1970
#38 - Hydrologic Setting of Deer Point Lake near Panama City, Florida; 1970
#39 - Hydrologic Factors affecting the Utilization of Land for Sanitary Landfills in Northern Hillsborough County, Florida; 1970
#40 - Annual and Seasonal Rainfall in Florida; 1971
#42 - Depth of Base of Potable Water in the Floridan Aquifer; 1971
#43 - Temperature of Florida Streams; 1971
#44 - Ground Water in Lake County, Florida; 1971
#45* - Streamflow Variation and Distribution in the Big Cypress Watershed During Wet and Dry Periods; 1972

#46 - Guide to Users of Ground Water in Bay County, Florida; 1972
#47 - Sea-Water Intrusion in the Upper Part of The Floridan Aquifer in Coastal Pasco County, Florida, 1969, 1972
#48 - A Hydrologic Description of Lake Thonotosassa near Tampa, Florida; 1972
#49 - A Hydrologic Description of Lake Magdalene near Tampa, Florida; 1972
#51 - The Chemical Type of Water in Florida Streams; 1972
#53 - The Shallow Aquifer of Southwest Florida; 1972
#54 - A Hydrologic Description of Lake Minnehaha at Clermont, Florida; 1972
#55 - Quantity and Quality of Surface Water in Marion County, Florida; 1973
#56 - Top of the Floridan Artesian Aquifer; 1973
#58 - Specific Conductance of Water in Florida Streams and Canals
#59 - Encroaching Salt Water in N. E. Palm Beach Co.
#60 - Hydrology of Lake Tarpon near Tarpon Springs
#61 - The Anclote and Pithlachascotee River's as Water-Supply Sources
#62 - Water-Level Fluctuations of Lakes in Fla.
#63 - An Index to Springs of Fla.
#64 - Low Streamflow in Florida - Magnitude and Frequency
#65 - The Observation-Well Network of the U. S. Geological Survey in Florida
#66 - Surface Water Features of Florida
#67 - Ground-Water Withdrawals in the Upper Peace and Upper Alfia River Basins
#68 - Recharge Areas of the Floridan Aquifer in Seminole County and Vicinity
#69 - Hydrology of the Oklawana Lakes Area of Florida
#70 - Estimated Yields of Fresh-Water Wells in Florida
#71 - Terraces and Shorelines of Florida
#72 - River Basin and Hydrologic Unit Map of Florida
#83 - Potentiometric Surface and Areas of Artesian Flow of Florida Aquifer

Land Use

Alachua County Preliminary Land Use Plan. Gainesville, North Central Florida Regional Planning Council, 1972 85x87 cm. 1:80,000.

Generalized map of existing land use in the county, color keyed by major uses. On verso: corridor development, spot development and compact development; plus text information.

Alachua County Proposed Comprehensive Plan 1995. Gainesville, North Central Regional Planning Council, 1975. 50x58 cm. 1:126,726.

Comprehensive Plan 1995, Unincorporated Gainesville Urban Area, Alachua County. Gainesville, North Central Regional Planning Council, 1976. 75x51 cm. 1:38,880.

Zoning Districts, Gainesville Urban Area. Gainesville, Department of Community Development, 1976. 107x198 cm 1:14,400. Ozalid.

Detailed zoning map of land uses by sub-classifications of Residential, Planned Unit Development, Business, Industrial and Public.

Photo Maps

State of Florida. Minneapolis, Mark Hurd Aerial Surveys, 1973. 55x70 cm. 1:24,000.

Experimental production of aerial photographs flown with the coordinates and scale of the topographic quadrangles and then printed on paper in a similar format. There are no cultural or physical features labeled since the "photomaps" are to be used in conjunction with the topographic quadrangles. Up-dates many of the topographic maps.

Florida Satellite Image Mosaic. Washington, U. S. Geological Survey/National Aeronautics and Space Administration, 1973. 102x150 cm. 1:500,000.

False color imagery mosaic shows vegetation in reds, cleared areas in white and open water in shades of blue. Images were recorded by ERTS-1 (Earth Resources Technology Satellite) from an altitude of 920 km. (570) miles in space. The detail is surprising as even irrigation/drainage features are visible. This map is an example of the new materials being produced by satellite imagery.

Population

Florida's 1985 Population. Tampa, Trend Publications. 1976. 58x66 cm.

Florida's growth markets are indicated by proportional circles for 1,000 population. Marginal table gives population by country for 1975, est. 1980, est. 1985, the gains 1975-1985, and percentage increase 1975-85.

1976 Kiplinger Forecast of Florida's Growth During the Next Ten Years - by Localities. Washington, Kiplinger Washington Editors, 1976. 42x54 cm.

Counties colored keyed in blue/green shades to show growth potential. Chart shows estimated population for all Florida counties in 1976, 1981, and 1986.

Florida Metropolitan Map Series. Washington, U. S. Bureau of the Census, 1970. 61x46 cm. 151 maps.

Florida portion of series of census maps produced for all the Standard Metropolitan Statistical Areas. These are the enlarged base maps for plotting data. ozalid copies. Information shown includes named streets, internal administrative boundaries including wards, congressional districts, census tracts and enumeration districts.

Florida County Census Maps. Washington, U. S. Bureau of the Census, 1970. 69x51 cm. 1:168,900. Ozalid 81 maps.

Florida portion of series of census maps produced for all the counties excluding SMSA's. These are on county highway maps in Florida and show: census county divisions, enumeration districts, census tracts and congressional districts.

[Florida Place Maps]. Washington, U. S. Bureau of the Census, 1970. 350 maps.

Florida portion of series of census maps produced for larger towns (places) that are not SMSA's. Numerous maps for the state which show census tracts, enumeration districts, and congressional districts.

Gainesville Urban Area, Expansion of the Urban Fringe. Gainesville, North Central Florida Regional Planning Council, 1975. 50x31 cm. 1:63,363.

Shows development of urban area for 1938, 1949, 1961, 1968, 1974.

Corporate and Population Growth, Gainesville, Florida. Gainesville, Department of Community Development, 1967. 22x28 cm. 1:63,363.

Growth from 1853 to 1967 is shown by grey shaded patterns and statistical tables.

Public Lands

State of Florida. Tallahassee, Florida Resources and Environmental Analysis Center, 197? 109x158 cm. 1:500,000. Ozalid.

Shows state owned lands by acreage but does not name or classify them. No county names and only major cities named.

State and Federal Outdoor Recreation Areas in Florida August, 1971. Tallahassee, Department of Natural Resources, 1972. 44x44 cm. 1:2,000,000.

Generalized locational map is colored and number keyed to marginal index. Includes: state parks, forests, canoe trails, aquatic preserves, wildlife management areas, etc.

Florida National Forest Maps. U. S. Forest Service, Southern Region, 1973.

Florida has 3 national forests for which maps are drawn mainly for recreational purposes. Similar and more detailed maps are available for all national forests. Information provided includes roads, trails, lakes, camping facilities, recreational areas and ranger headquarters. Charts include listing of facilities for camp sites, fishing and boating, horseback riding, drinking water and sanitary facilities.

Withlacoochee State Forest. Tallahassee, Florida. Division of Forestry, 1971. 58x73 cm. 1:168,900.

Typical of the state forest and land management maps. Black and white generalized location map with township-range arranged in county highway map format.

Cary State Forest Stand Description Map. Tallahassee, Florida, Division of Forestry, 1968. 53x42 cm. 1:15,840.

Characteristic of detailed stand maps used for field work by foresters. Gives road information and in addition, fence sites, fire breaks and buildings. Must use accompanying list of stand numbers for precise information as to the character of the stand.

Recreation

Levy County Recreation Facilities and Official County Map. Bronson, Levy County Chamber of Commerce. 61x45 cm.

An example of the recreational guides available at the local level. Specific details as to fishing, boating and hunting are indicated in addition to general road and track information. Charts of Public and Private Facilities.

A Guide to the Magic Kingdom of Walt Disney World. Walt Disney Productions, 1976. 99x80 cm.

Pictorial map in simulated three dimension which serves as a locational device for the rides, exhibits and public facilities in Disney World. Artistically drawn colorful buildings. Marginal list of all the buildings.

Fishing Chart Homosassa River to Steinhatchee. Gainesville, Gainesville Offshore Fishing Club, 197? 72x57 cm.

A composite of "good fishing" areas in the Gulf of Mexico off shore of Florida. Compass courses are given plus depths, buoy markers and type of fish to be caught. Three insets of the northern portion of the area covered. Various fishing maps of this nature for shoreline areas are available.

Lake Seminole, Fishing and Boating Map. Canton, Permaguide, 1975. 43x53.

One of the many lake depth charts available for fresh water fishermen. These are also useful for divers and boaters. Gives some contour lines, buoys, soundings and submarine cables, tree stumps and other hazards.

The Enchanting Islands, Sanibel and Captiva. Sanibel-Captiva Chamber of Commerce, 197? 77x63 cm. 1:26,000.

A tourist map showing roads, motels, shelling and fishing areas, and beaches. Text on verso and an index to streets and businesses.

Soils

[Florida County Soil Survey Maps]. Washington, U. S. Dept. of Agriculture. 1899 to date. 1:20,000 or 1:15,840.

Isopleth maps with contrasting colors differentiating soil types. Additional information as to agriculture and climate. Nationwide series available for most of Florida counties at different dates.

Transportation

Official Florida 1976 Bicentennial Road Map. Tallahassee, Department of Transportation, 1976. 76x68 cm. 1:220,000. Annual.

Detailed road map of Florida with insets of major cities and index to counties and towns. On verso: Public Recreation Areas, Florida's Bicentennial Attractions, historical text, and Official Highway Mileages.

[General Highway Map for Individual Florida Counties]. Tallahassee, Department of Transportation, 197? 69x46 cm. 1:168,900.

Highway maps drawn in same black and white format for each of the 67 counties. Detailed road information, city locations and township and range are indicated. Buildings, swamps, and other cultural features are usually shown. Up-dated frequently but older editions are useful for historical studies.

Transit Technical Study-1972, Tallahassee-Leon County. Tallahassee-Leon County Planning Department, 1973. 60x91 cm.

Summary of present and future needs of public transportation in the county and city. Many small maps for Route Coverage, Corridor Demands-1995, Projected Growth, etc.

Proposed Transportation Master Plan for 2,000,000 Population - 1985 Estimate Metropolitan Dade County. Tallahassee, Florida Department of Transportation and Metropolitan Dade County Planning Dept., 1969. 71x76 cm.

One of many transportation studies produced by the state to illustrate various master plans for development. It is one of the more colorful maps with bright reds and yellows.

Florida Aeronautical Chart. Tallahassee, Florida Department of Transportation, 1976. 81x73 cm. 1:1,000,000 approx.

Provides flight information for airplane pilots giving: airport size, approaches, facilities such as radio frequencies and radar. Shows cultural features including man made obstructions. Insets of: Tampa-St. Petersburg-Clearwater; Miami. On verso: Directory of Public Airports, Florida Air Mileage Chart and illustrations. Most states have a similar general aeronautical chart which is up-dated yearly.

Aeronautical Charts. U. S. National Ocean Survey
SEE United States-Transportation

Cross-Florida Barge Canal Project. Jacksonville, U. S. Corps of Engineers, 1968. 50x33 cm. 1:290,000.

Proposed route and physical profile.

Vegetation

General Map of Natural Vegetation of Florida. Gainesville, John Henry Davis, University of Florida, Agricultural Experiment Station, 1967. 60x70 cm. 1:1,500,000.

Bright colored distribution map of forest and wet land vegetation in Florida. Contrast is great and types are easily discernible.

Florida Vegetation and Land Use for Energetic Subsystem Classification. Gainesville, University of Florida Center for Wetlands. 1976. varies. 109x57 cm. and smaller.

Set of 12 maps showing ecological evolution of southern half of Floridan peninsula from 1900 to 1970. Land use and vegetation differentiated by contrasting colors.

Topographic Series

Topographic Quadrangles, Florida. Washington. U. S. Geological Survey. 55x70 cm. 1:24,000.

A national series of large scale maps produced to provide detailed physical and cultural information for a specific area. The relief is illustrated by contour intervals and color coded symbols represent man made or natural features. The areas covered on the quadrangle map are 7. 5'x7. 5' degrees of latitude and longitude or 15'x15' degrees on the older series at the scale of 1:63,363. Over 500 sheets are available covering all of Florida providing specific details for road builders, hikers, hunters, real estate agents, reserarchers, etc. In areas where applicable Township and Range land survey system is given and usually the Universe Transverse Mercator Grid references are provided.

United States Topographic Series 1:250,000.

SEE United States-Topographic Series.

Gainesville Urban Area Topographic Maps. Gainesville, North Central Florida Regional Planning Council, 1975. 1:1200 and 1:2400. Ozalid.

Detailed maps in black and white providing survey and land information at large scale. Individual houses are drawn to scale, drainage systems are depicted and drainage basins numbered. Flood areas are illustrated on many of the maps. Gainesville is at the scale of 1:1200 while the urban fringe area is at 1:2400. Extremely useful for house builders, population studies, etc.

Miscellaneous Florida

City of Gainesville. Gainesville, Chamber of Commerce, 1976. 50x60 cm.

Shows street names, public buildings, sub-divisions and local places of interest. Margin index to streets with Alachua County map on verso. One of the many free maps provided by the city clerk, local banks and the Chamber of Commerce. These are available for every city, town and most villages in the state and a complete up-to-date state wide collection can be obtained.

University of Florida Campus Map. Gainesville, University of Florida, 1977. 30x37 cm.

Detailed map of campus with representations of buildings which are numbered to a margin index. Text information on verso.

SOUTH AMERICA

General

South America. Edinburgh, John Bartholomew and Son Ltd., 1975. 86x61 cm. (Bartholomew World Travel Series) 1:10,000,000.

Visually appealing combination of soothing colors and coherent information. Layout is well proportioned with easily discernible place names and international borders. The internal boundaries while included are less legible. Relief is shown by subtle altitude tints. One of the best of the many continental maps available for South America. This map is from a reliable publisher and is updated frequently.

Daily Telegraph Map of South America. London, Geographia, Ltd., 1974. 94x73 cm. 1:10,000,000. Legend in English, German, French.

Generalized political map with individual countries emphasized by contrasting colors. Insets of economy and land utilization.

Imperial Map of South America. Chicago, Rand McNally, 197?. 71x104 cm. 1:8,000,000.

Utilitarian map with brightly colored countries in contrasting hues that are visual at a distance.

South America. Washington, U. S. Central Intelligence Agency, 1972. Base (501433); Shaded Relief (501432).

Thematic

Ethnography. Ethno-linguistic Distribution of South American Indians. Washington, Cestmir Loukotka comp., Annals of the Association of American Geographers, 1967. 110x70 cm. (Map Supplement #8) 1:8,500,000.

Indian tribes subdivided within 3 basic groups and differentiated by light colors. The type is clear cut and the total appearance is legible.

Geology. Carte Geologique de L'Amerique Du Sud; Geological Map of South America. Boulder, Geological Society of America, 1964. 105x81 cm. 2 sheets, 1:15,000,000. Legend in French, Spanish and Portuguese.

Generalized geologic map with rock ages and basic groups indicated by bright but harmonious colors.

Geologicy/Tectonics. Tectonic Map of South America. UNESCO. In preparation.

Topographic Series

The World. New York, American Geographical Society/ Washington, Defense Mapping Agency. (Series 1106) 1:5,000,000.

SEE World-Topographic Series annotation.

Karta Mira-World Map. Moscow, co-publication of many countries, 1964-. 1:2,500,000.

SEE World-Topographic Series annotation.

The World. New York, American Geographical Society/ Washington, U.S. Defense Mapping Agency. (Series 1301) 1:1,000,000. 107 sheets.

SEE World-Topographic Series annotation.

Argentina

Mapa de la Republica Argentina. Buenos Aires, Argentine. Republic. Instituto Geografico Militar, 1973. 87x54 cm. 1:5,000,000.

A generalized administrative map with each state differentiated by light contrasting colors. Towns are graded and there is limited hill shading.

Mapa Fisico Politico de la Republica Argentina. Buenos Aires, Argentine Republic. Instituto Geografico Militar, 1969. 2 sheets 84x107 cm total 169x104 cm. 1:2,500,000.

Relief is indicated by conventional altitude tints and shading. Political boundaries are shown although internal boundaries are imperceptible frequently because of the altitude tints.

Bolivia

Mapa Communicaciones de la Republica de Bolivia. La Paz, Bolivia. Instituto Geografico Militar, 1969. 56x52 cm. 1:3,000,000.

Although cluttered with airplane flight information and poor type array, this is one of the few maps available for Bolivia. Despite the overshadowing black lines the departmental boundaries, names and towns are legible. Some physical features such as salt flats, swamps and rivers are depicted. The map is in Spanish but the use of standard symbols presents no difficulties in interpreting it.

Bolivia. Washington, U. S. Central Intelligence Agency, 1971. 52x70 cm. Shaded Relief (78499) 1:3, 260, 000.

Characteristic reliable C. I. A. map. Shaded relief map with subtle tonal variations representing the terrain. This visually appealing map has limited place names and although moderate in size is legible. Informative but generalized marginal maps can include: Economic Activity; Population; Ethnic groups, and Vegetation. Frequently updated with a new serial number and/or base map published separately.

Brazil

Brazil. Curitiba, Parana, Sociedade Commercial e Representacoes Graficas, 1976. 122x104 cm. 1:4, 500, 000.

Relief shown by contours and traditional altitude tints which on this map are bold and have a tendency to over emphasize the reds and oranges. State names are in pale colors which are less readable in the higher altitudes because of the dark colors. Insets include: Ilhas Oceanicas Brasilieras, 5 insets; Brasil-Divisao Regional; Tipos de Clima; Vegetacao original and Relero. Also Distrito Federal de Brasilia.

Republica Federativa do Brasil, Politico-Rodovario. Sao Paulo, Mapograf Editora Dept. Cartografico, 1975. 157x156 cm. 1:3, 000, 000.

One of the more attractive of the many maps of this type published for Brazil. The internal divisions are shown by harmonious coloring with clear and sharp lettering. There are several insets of cultural and physical features.

Brazil. Washington, U. S. Central Intelligence Agency, 1973. 39x45 cm. Base (501168); Shaded Relief (501167) 1:11, 800, 000.

SEE Bolivia annotation.

Chile

Mapa de Chile. Santiago, Instituto Geografico Militar de Chile, 1975. 3 maps on 1 sheet 65x55 cm. 1:3, 000, 000.

Chile shown divided into 3 equal parts on 1 sheet. A generalized political map with individual states emphasized by contrasting colors. Place names are fairly legible as are symbols for water features, salt flats, glaciers, mines, and coastal features.

Chile. Washington, U. S. Central Intelligence Agency, 1972. 56x31 cm. Base (500815); Shaded Relief (500814) 1:8, 500, 000.

SEE Bolivia annotation.

Colombia

Republica de Colombia Mapa Fisico y Politico. Bogota, Colombia, Instituto Geografico. Agustin Codazzi, 1971. 138x99 cm. 1:1, 500, 000.

An administrative map with each department differentiated by light contrasting colors. Has multitude of town and physical place names with roads indicated in red but not overpowering. Relief shown by contours and spot heights. Insets of: San Andres, Providencia y Sta. Catalina, Malpelo and "Situacion de los Territorios Insulares de Colombia."

Republica de Colombia: Mapa Vial. Bogota, Colombia. Instituto Geografico. Augustin Codazzi, 1975. 98x65 cm. 1:1, 500, 000.

Highway map with relief shaded in green with fine detail. Roads are prominent but not overwhelming while named states have almost imperceivable boundaries. On verso are route maps and diagrams of relief profiles.

Colombia. Washington, U. S. Central Intelligence Agency, 1970. 53x69 cm. Shaded Relief (77845) 1:4, 000, 000.

SEE Bolivia annotation.

Ecuador

Ecuador. Quito, Ecuador. Instituto Geografico Militar, 1974. 86x113 cm. 1:1, 000, 000

Visually appealing combination of soothing colors and well proportioned layout. Place names and boundaries are easily discernible with internal divisions in bold print and with borders in purple. Relief is by shading, contours, and altitude tints, with relief profiles (cross-sections). Insets: Archipielago de Colon (Islas Galapagos). Shows limits "Protocolo de Rio de Janeiro 1942."

Ecuador. Washington, U. S. Central Intelligence Agency, 1973. 35x58 cm. Shaded Relief (501177) 1:2, 500, 000.

SEE Bolivia annotation.

French Guinea

Carte de Guayane Francaise. Paris, Institut Geographique Nacional, 1973. 2 sheets 96x69 cm. 1:5, 000, 000.

Variation of typical I. G. N. map. Relief by shading with green vegetation tint and crammed with rivers. Numerous place names along the coast with roads and public services indicated. Territories are shown and there is an inset of Administrative Divisions.

French Guinea. Washington, U. S. Central Intelligence Agency, 1972. Shaded Relief (500460).
SEE Bolivia annotation

Guyana

Guyana. Georgetown, Guyana Lands Dept. Cartographic Division, 1971. 86x57 cm. 1:1,000,000.
Based on Great Britain Directorate of Overseas Survey map #17c and has similar functional and traditional style. Shows Agricultural and Riverain Regions. Relief is by hachures.

Guyana. Washington, U. S. Central Intelligence Agency, 1973. 37x31 cm. Shaded Relief (500987) 1:2,500,000.
SEE Bolivia annotation

Paraguay

Paraguay. Asuncion, Paraguay. Instituto Geografico Militar, 1969. 4 sheets 96x105 cm. 1:1,000,000.
Clear legible map. The departments are shown by contrasting colors with large, bold type. Mountain ranges shown by unsophisticated hill shading. River features, roads and town are clearly indicated.

Paraguay. Washington, U. S. Central Intelligence Agency, 1969. 38x35 cm. Shaded Relief (59897) 1:3,000,000.
SEE Bolivia annotation.

Peru

Republica de Peru: Mapa Fisico, Politico. Lima, Peru. Instituto Geographico Militar, 1973. 210x149 cm on 4 sheets 112x78 cm.
Large well drawn map with relief by altitude tints and internal administrative divisions distinctly indicated.

Peru. Washington, U. S. Central Intelligence Agency, 1970. 54x67 cm. Shaded Relief (76868) 1:4,000,000.
SEE Bolivia annotation.

Surinam

Kaart Van Suriname; Map of Surinam; Mapa de Surinam. Paramaribo, H. Dahlberg; C. Kersten and Co., 1974. 68x52 cm. 1:1,000,000.
Generalized physical map with shaded relief and names of physical features. Colored by physical divisions of: Mountainous country; lowland, old and young coastal plain; and hilly

country. Includes swamps, towns, named rivers and Indian villages. Roads and mineral location are also indicated. Air routes shown in bold black lines are distracting.

Surinam. Washington, U. S. Central Intelligence Agency, 1968. 42x33 cm. Shaded Relief 1:2,000,000.

SEE Bolivia annotation.

Uruguay

Republica Oriental del Uruguay. Montevideo, Uruguay. Servicio Geografico Militar, 1974. 135x115 cm on 2 sheets 74x117 cm. 1:500,000.

Detailed place names and rivers shown with the departments indicated.

Uruguay. Washington, U. S. Central Intelligence Agency, 1974. 40x31 cm. Shaded Relief (50148) 1:490,000.

Venezuela

Mapa Fisco y Politico de la Republica de Venezuela. Caracas, Direccion de Cartographia Nacional, 1976. 75x92 cm. 1:2,000,000.

Well portioned, easy to read map on green background showing internal administrative divisions by name and boundaries. Numerous place names are included with subordinate roads. Includes "Zona en Reclamacion."

Venezuela. Washington, U. S. Central Intelligence Agency, 1972. 42x52 cm. Base (500416) 1:3,200,000.

UNIVERSE/SPACE

The Heavens. Washington, National Geographic Society, 1974. 88x59 cm.

Two hemispheres showing: 1. Constellations of the Northern sky; 2. Constellations of the Southern sky. Text on where to look for the planets. Illustrations of the Moon, Earth, Jupiter, Mars, and Saturn. Generalized attractive map with star diagrams on verso.

The Earth's Moon. Washington, National Geographic Society, 1969. 106x71 cm. 1:11,620,000.

Colored map of Near Side and Far Side of the Moon showing physical features, lunar flight landing sites and named craters. Text information as to period of moon orbit, etc. Selective index.

The Red Planet Mars. Washington, National Geographic Society, 1973. 3 colored maps 34 cm. in diameter on sheet 56x99 cm. 1:10,970,000.

Relief by shading and tints. Includes: diagrams of the solar system, the Moons of Mars. Maps of the North and South Polar areas with text and diagrams on verso.

GLOSSARY

ALTITUDE TINTS. The use of a color scheme to distinguish areas between contours. Also known as hypsometric tints and gradient tints.

BAR SCALE. A graphic scale on a line marked off in equal units by which distances on the map may be measured.

BASE MAP. Map used as a base for compilation or as a framework on which new detail or additional data is printed.

BATHYMETRIC CHART. A topographic map of the floor of the ocean.

CADASTRAL MAP. A large-scale map used for showing boundaries of land and subdivisions primarily for the purpose of describing and recording land ownership.

CARTO-BIBLIOGRAPHY. A systematic list of maps usually relating to a given region, subject, or person.

CHART. A special purpose map, generally designed for navigation, i. e., aeronautical and nautical charts.

CHOROPLETH MAP. A systematic representation in which color or shading is applied to areas bounded by statistical or administrative limits.

CONTOUR LINE. A line on a map, all points of which are at the same elevation above or below a specified datum, usually sea level.

CONTOUR INTERVAL. Prescribed difference in elevation between successive contour lines.

FORM LINES. Dashed lines resembling contours, but representing no actual elevations, used to show the shape of the terrain.

GEODESY. The science which deals with the determination of the size and shape of the earth (geoid) by such measurements as triangulation, leveling, and gravimetric observations.

GRID. A locational device on maps consisting of a systematic organization of lines and coordinates such as the U. T. M. Grid (Universal Transverse Mercator).

HACHURES. A method of portraying relief by indicating slope with lines that usually are made thicker and closer together where the gradient is steepest.

INSET MAP. A separate map, usually of a different scale than the main map, positioned within the borders of a larger map.

ISOLINE. A line of equal or constant value of a given quantity.

LARGE-SCALE MAP. Those maps with scales of 1:100,000 and larger on which considerable detail may be shown.

LEGEND. An explanation of, or key to, cartographic symbols used on a map, diagram, or model.

MAP DISTORTION. Alteration in shape, area, distance, or angles due to the transformation of the spherical earth to the planar surface of a map.

MAP PROJECTION. Mathematical coordinate transformation from a spherical surface to a planar surface.

MEDIUM-SCALE MAP. Those maps with scales between 1:1,000,000 and 1:100,000, showing moderate detail.

METES AND BOUNDS SURVEY. The description of the boundaries of tracts of land (e.g. properties) by giving the bearing and length of each successive boundary line, often keyed to an ownership list.

PHYSIOGRAPHIC MAP. A pictoral depiction of landforms by a system of symbols based on the simplified appearance of the physical features they represent, commonly as would be viewed from the air at an angle of approximately 45°.

RELIEF. The topography or physical shape of a portion of the earth's surface shown by differences in elevations or slope.

SCALE. The ratio of a given distance on a map or globe to its corresponding distance on the ground.

SHADED RELIEF. The representation of landforms by tonal differences to create a three dimensional appearance.

SMALL-SCALE MAP. Maps at scales of 1:1,000,000 and smaller showing areas in a highly generalized manner.

SYMBOL. Mark placed on maps, which by convention, usage, or reference to a legend is understood to represent a specific characteristic or feature of the environment.

THEMATIC MAP. A map designed to emphasize a single distribution of data and on which the base data serve only to help locate the distribution being mapped.

TOPOGRAPHIC MAP. Maps that display elevations and land forms by contour lines. Cultural features are frequently included. These are predominantly large scale maps.

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APPENDICES

APPENDIX I

QUESTIONNAIRE

Criteria for the Evaluation of Maps for Inclusion in
American University and College Libraries

DO NOT WRITE HERE

1. Name of Institution

2. Name of Respondent:
   Title:

3. Type of Map Collection: (Please circle appropriate letter)

   (a) Separate collection housed in Library w/fulltime person
   (b) Separate collection housed in Geography Dept. w/fulltime person
   (c) Separate collection housed in Library w/part-time person
   (d) Separate collection housed in Geography Dept. w/part-time person
   (e) Separate collection housed in other dept. w/full-time person
   (specify) _____
   (f) Separate collection housed in other dept. w/part-time person
   (specify) _____
   (g) Other (specify) _____

4. Who is the primary person responsible for the following activities involving maps: Please check.

TITLE	SELECTING	ORDERING
(a) Map Librarian		
(b) Map Clerk		
(c) Geography Faculty		
(d) Reference Librarian		
(e) Govt. Docs. Librarian		
(f) Acquisitions Librarian		
(g) Students		
(h) Others (specify)		
_____		

5. How many map sheets are in your Map Collection (not including atlases or aerial photographs) _____

6. Identify special areas, topics, or languages where you place special emphasis or acquire all the maps available: _____

_____

7. In the following questions your response to the selection criteria is sought. In answering the questions please assume that there are:

   a. unlimited budget
   b. unlimited availability
   c. unlimited space/storage
   d. appropriate language

With these assumptions in mind, on the next page please identify the criteria you use for map selection excluding the types of items listed in question #6.

DO NOT WRITE HERE

A. In the column of spaces to the left of the criteria rank the importance of each from first to last for the map selection process as a whole. (1 represents the most important, 9 the least important)

_____ a. Visual impression
_____ b. Symbolization (method of data representation)
_____ c. Scale
_____ d. Projections
_____ e. Date
_____ f. Presence of coordinates and/or grid system
_____ g. Size
_____ h. Special format (i.e. data base cartography)
_____ j. Reliability of source.

B. Circle the number to the right of each criterion which best describes the importance of the individual criterion for your process.
N.B. These tasks are to be considered mutually exclusive of each other.

	important				not applicable	unimportant			
a. Visual impression	1	2	3	4	5	6	7	8	9
b. Symbolization (method of data representation)	1	2	3	4	5	6	7	8	9
c. Scale	1	2	3	4	5	6	7	8	9
d. Projections	1	2	3	4	5	6	7	8	9
e. Date	1	2	3	4	5	6	7	8	9
f. Presence of coordinates and/or grid system	1	2	3	4	5	6	7	8	9
g. Size	1	2	3	4	5	6	7	8	9
h. Special format (i.e. data base cartography)	1	2	3	4	5	6	7	8	9
j. Reliability of source	1	2	3	4	5	6	7	8	9

C. Are there any criteria not mentioned above which you frequently use in selecting maps? If so, list and indicate which item in A above is of equal importance _____

_____

8. Within the criteria of Visual Impression, which of the graphic elements listed below are most important: (a) in selecting a map for acquisition (b) in selecting a map for the map user. In the two columns below please rank the graphic elements as to the importance of each from first to last (1-6).

Graphic Element	Map Acquisition	Map User
a. Clarity and Legibility	_____	_____
b. Color	_____	_____
c. Contrast	_____	_____
d. Figure-ground (focus immediately on main characteristics)	_____	_____
e. Balance (layout)	_____	_____
f. Lettering	_____	_____

QUESTION SEVEN -- VISUAL IMPRESSION

TABLE OF SA1 BY SB1

SA1 \ SB1	.	1	2	3	4	5	6	7	8	9	TOTAL
.	2	0	0	0	1	1	0	0	0	1	5
1	0	7	3	0	0	2	0	0	1	0	13
		7.00	3.00	0.00	0.00	2.00	0.00	0.00	1.00	0.00	13.00
		53.85	23.08	0.00	0.00	15.38	0.00	0.00	7.69	0.00	
		36.84	14.29	0.00	0.00	40.00	0.00	0.00	33.33	0.00	
2	0	3	2	0	2	0	0	0	0	0	7
		3.00	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	7.00
		42.86	28.57	0.00	28.57	0.00	0.00	0.00	0.00	0.00	
		15.79	9.52	0.00	11.11	0.00	0.00	0.00	0.00	0.00	
3	1	2	4	3	0	0	0	0	0	0	9
		2.00	4.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00
		22.22	44.44	33.33	0.00	0.00	0.00	0.00	0.00	0.00	
		10.53	19.05	15.00	0.00	0.00	0.00	0.00	0.00	0.00	
4	0	4	1	3	1	1	1	0	0	0	11
		4.00	1.00	3.00	1.00	1.00	1.00	0.00	0.00	0.00	11.00
		36.36	9.09	27.27	9.09	9.09	9.09	0.00	0.00	0.00	
		21.05	4.76	15.00	5.56	20.00	14.29	0.00	0.00	0.00	
5	2	0	5	8	1	0	1	0	0	0	15
		0.00	5.00	8.00	1.00	0.00	1.00	0.00	0.00	0.00	15.00
		0.00	33.33	53.33	6.67	0.00	6.67	0.00	0.00	0.00	
		0.00	23.81	40.00	5.56	0.00	14.29	0.00	0.00	0.00	
6	0	2	4	6	5	0	1	0	0	0	18
		2.00	4.00	6.00	5.00	0.00	1.00	0.00	0.00	0.00	18.00
		11.11	22.22	33.33	27.78	0.00	5.56	0.00	0.00	0.00	
		10.53	19.05	30.00	27.78	0.00	14.29	0.00	0.00	0.00	
7	0	0	1	0	1	1	1	1	0	0	5
		0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00	5.00
		0.00	20.00	0.00	20.00	20.00	20.00	20.00	0.00	0.00	
		0.00	4.76	0.00	5.56	20.00	14.29	50.00	0.00	0.00	
8	0	0	1	0	4	0	2	0	1	0	8
		0.00	1.00	0.00	4.00	0.00	2.00	0.00	1.00	0.00	8.00
		0.00	12.50	0.00	50.00	0.00	25.00	0.00	12.50	0.00	
		0.00	4.76	0.00	22.22	0.00	28.57	0.00	33.33	0.00	
9	2	1	0	0	4	1	1	1	1	5	14
		1.00	0.00	0.00	4.00	1.00	1.00	1.00	1.00	5.00	14.00
		7.14	0.00	0.00	28.57	7.14	7.14	7.14	7.14	35.71	
		5.26	0.00	0.00	22.22	20.00	14.29	50.00	33.33	100.00	
TOTAL		19	21	20	18	5	7	2	3	5	100
		19.00	21.00	20.00	18.00	5.00	7.00	2.00	3.00	5.00	100.00

QUESTION SEVEN -- SYMBOLIZATION

TABLE OF SA2 BY SB2

SA2 SB2

SA2 \ SB2	.	1	2	3	4	5	6	7	8	9	TOTAL
.	2	0	1	0	1	1	1	0	0	0	
1	0	14 13.86 82.35 56.00	3 2.97 17.65 12.50	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	17 16.83
2	1	2 1.98 25.00 8.00	5 4.95 62.50 20.83	1 0.99 12.50 5.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	8 7.92
3	0	4 3.96 25.00 16.00	5 4.95 31.25 20.83	2 1.98 12.50 10.00	3 2.97 18.75 18.75	1 0.99 6.25 20.00	0 0.00 0.00 0.00	1 0.99 6.25 50.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	16 15.84
4	2	1 0.99 5.26 4.00	5 4.95 26.32 20.83	7 6.93 36.84 35.00	5 4.95 26.32 31.25	0 0.00 0.00 0.00	1 0.99 5.26 16.67	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	19 18.81
5	0	2 1.98 14.29 8.00	4 3.96 28.57 16.67	3 2.97 21.43 15.00	2 1.98 14.29 12.50	3 2.97 21.43 60.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	14 13.86
6	0	1 0.99 8.33 4.00	2 1.98 16.67 8.33	3 2.97 25.00 15.00	3 2.97 25.00 18.75	0 0.00 0.00 0.00	3 2.97 25.00 50.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	12 11.88
7	0	1 0.99 12.50 4.00	0 0.00 0.00 0.00	2 1.98 25.00 10.00	1 0.99 12.50 6.25	1 0.99 12.50 20.00	1 0.99 12.50 16.67	1 0.99 12.50 50.00	0 0.00 0.00 0.00	1 0.99 12.50 50.00	8 7.92
8	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 1.98 33.33 10.00	1 0.99 16.67 6.25	0 0.00 0.00 0.00	1 0.99 16.67 16.67	0 0.00 0.00 0.00	1 0.99 16.67 100.00	1 0.99 16.67 50.00	6 5.94
9	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.99 100.00 6.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.99
TOTAL		25 24.75	24 23.76	20 19.80	16 15.84	5 4.95	6 5.94	2 1.98	1 0.99	2 1.98	101 100.00

QUESTION SEVEN -- SCALE

TABLE OF SA3 BY SB3

SA3 SB3

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	7	TOTAL
.	2	1	0	0	1	0	0	0	4
1	0	11 10.58 73.33 27.50	4 3.85 26.67 16.67	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	15 14.42
2	0	16 17.31 58.06 45.00	9 8.65 29.03 37.50	1 0.96 3.23 7.69	1 0.96 3.23 4.76	2 1.92 6.45 66.67	0 0.00 0.00 0.00	0 0.00 0.00 0.00	31 29.81
3	2	8 7.69 34.78 20.00	6 5.77 26.09 25.00	7 6.73 30.43 53.85	2 1.92 8.70 9.52	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	23 22.12
4	0	2 1.92 18.18 5.00	2 1.92 18.18 8.33	1 0.96 9.09 7.69	6 5.77 54.55 28.57	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	11 10.58
5	0	1 0.96 10.00 2.50	1 0.96 10.00 4.17	1 0.96 10.00 7.69	5 4.81 50.00 23.81	0 0.00 0.00 0.00	2 1.92 20.00 100.00	0 0.00 0.00 0.00	10 9.62
6	0	0 0.00 0.00 0.00	1 0.96 14.29 4.17	1 0.96 14.29 7.69	5 4.81 71.43 23.81	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	7 6.73
7	0	0 0.00 0.00 0.00	1 0.96 25.00 4.17	0 0.00 0.00 0.00	1 0.96 25.00 4.76	1 0.96 25.00 33.33	0 0.00 0.00 0.00	1 0.96 25.00 100.00	4 3.85
8	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.96 50.00 7.69	1 0.96 50.00 4.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 1.92
9	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.96 100.00 7.69	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.96
TOTAL		40 38.46	24 23.08	13 12.50	21 20.19	3 2.88	2 1.92	1 0.96	104 100.00

QUESTION SEVEN --PROJECTIONS

TABLE OF SA4 BY SB4

SA4 SB4

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	7	8	9	TOTAL
.	2	0	0	2	1	0	1	0	0	1	4
2	0	1 1.00 25.00 25.00	2 2.00 50.00 14.29	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 1.00 25.00 6.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	4 4.00
3	0	2 2.00 33.33 50.00	1 1.00 16.67 7.14	1 1.00 16.67 6.25	1 1.00 16.67 4.00	0 0.00 0.00 0.00	1 1.00 16.67 6.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	6 6.00
4	0	0 0.00 0.00 0.00	3 3.00 33.33 21.43	1 1.00 11.11 6.25	2 2.00 22.22 8.00	1 1.00 11.11 12.50	1 1.00 11.11 6.25	0 0.00 0.00 0.00	1 1.00 11.11 16.67	0 0.00 0.00 0.00	9 9.00
5	0	0 0.00 0.00 0.00	3 3.00 30.00 21.43	4 4.00 40.00 25.00	2 2.00 20.00 8.00	1 1.00 10.00 12.50	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	10 10.00
6	0	0 0.00 0.00 0.00	2 2.00 13.33 14.29	5 5.00 33.33 31.25	5 5.00 33.33 20.00	0 0.00 0.00 0.00	2 2.00 13.33 12.50	0 0.00 0.00 0.00	1 1.00 6.67 16.67	0 0.00 0.00 0.00	15 15.00
7	1	0 0.00 0.00 0.00	3 3.00 12.00 21.43	4 4.00 16.00 25.00	10 10.00 40.00 40.00	3 3.00 12.00 37.50	3 3.00 12.00 18.75	1 1.00 4.00 25.00	0 0.00 0.00 0.00	1 1.00 4.00 14.29	25 25.00
8	2	1 1.00 5.88 25.00	0 0.00 0.00 0.00	1 1.00 5.88 6.25	3 3.00 17.65 12.00	1 1.00 5.88 12.50	7 7.00 41.18 43.75	2 2.00 11.76 50.00	1 1.00 5.88 16.67	1 1.00 5.88 14.29	17 17.00
9	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 2.00 14.29 8.00	2 2.00 14.29 25.00	1 1.00 7.14 6.25	1 1.00 7.14 25.00	3 3.00 21.43 50.00	5 5.00 35.71 71.43	14 14.00
TOTAL		4 4.00	14 14.00	16 16.00	25 25.00	8 8.00	16 16.00	4 4.00	6 6.00	7 7.00	100 100.00

QUESTION SEVEN -- DATE

TABLE OF S45 BY S85

S45 S85

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	TOTAL
.	2	1	0	0	0	0	0	3
1	1	12 11.65 80.00 30.77	3 2.91 20.00 10.34	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	15 14.56
2	1	12 11.65 40.00 30.77	15 14.56 50.00 51.72	2 1.94 6.67 18.18	1 0.97 3.33 6.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	30 29.13
3	1	9 8.74 39.13 23.08	6 5.83 26.09 20.69	5 4.85 21.74 45.45	1 0.97 4.35 6.25	2 1.94 8.70 33.33	0 0.00 0.00 0.00	23 22.33
4	1	4 3.88 30.77 10.26	4 3.88 30.77 13.79	0 0.00 0.00 0.00	4 3.88 30.77 25.00	1 0.97 7.69 16.67	0 0.00 0.00 0.00	13 12.62
5	0	1 0.97 16.67 2.56	0 0.00 0.00 0.00	1 0.97 16.67 9.09	3 2.91 50.00 18.75	1 0.97 16.67 16.67	0 0.00 0.00 0.00	6 5.83
6	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	4 3.88 100.00 25.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	4 3.88
7	0	1 0.97 12.50 2.56	1 0.97 12.50 3.45	1 0.97 12.50 9.09	2 1.94 25.00 12.50	1 0.97 12.50 16.67	2 1.94 25.00 100.00	8 7.77
8	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.97 50.00 9.09	1 0.97 50.00 6.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 1.94
9	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.97 50.00 9.09	0 0.00 0.00 0.00	1 0.97 50.00 16.67	0 0.00 0.00 0.00	2 1.94
TOTAL		39 37.86	29 28.16	11 10.68	16 15.53	6 5.83	2 1.94	103 100.00

QUESTION SEVEN -- GRID SYSTEM

TABLE OF SA6 BY SB6

SA6 SB6

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	7	8	9	TOTAL
.	2	2	0	0	1	1	2	0	0	0	3.09
1	0	3 3.09 100.00 33.33	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	3 3.09
2	0	1 1.03 50.00 11.11	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 1.03 50.00 20.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 2.06
3	0	1 1.03 16.67 11.11	3 3.09 50.00 16.67	2 2.06 33.33 11.76	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	6 6.19
4	0	3 3.09 20.00 33.33	4 4.12 26.67 22.22	3 3.09 20.00 17.65	3 3.09 20.00 13.04	2 2.06 13.33 40.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	15 15.46
5	0	0 0.00 0.00 0.00	3 3.09 20.00 16.67	3 3.09 20.00 17.65	7 7.22 46.67 30.43	1 1.03 6.67 20.00	1 1.03 6.67 6.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	15 15.46
6	1	0 0.00 0.00 0.00	3 3.09 25.00 16.67	1 1.03 8.33 5.88	3 3.09 25.00 13.04	0 0.00 0.00 0.00	5 5.15 41.67 31.25	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	12 12.37
7	2	1 1.03 6.25 11.11	2 2.06 12.50 11.11	6 6.19 37.50 35.29	4 4.12 25.00 17.39	0 0.00 0.00 0.00	1 1.03 6.25 6.25	2 2.06 12.50 40.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	16 16.49
8	1	0 0.00 0.00 0.00	3 3.09 17.65 16.67	2 2.06 11.76 11.76	2 2.06 11.76 8.70	1 1.03 5.88 20.00	5 5.15 29.41 31.25	1 1.03 5.88 20.00	3 3.09 17.65 100.00	0 0.00 0.00 0.00	17 17.53
9	1	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	4 4.12 36.36 17.39	1 1.03 9.09 20.00	4 4.12 36.36 25.00	1 1.03 9.09 20.00	0 0.00 0.00 0.00	1 1.03 9.09 100.00	11 11.34
TOTAL		9 9.28	18 18.56	17 17.53	23 23.71	5 5.15	16 16.49	5 5.15	3 3.09	1 1.03	97 100.00

QUESTION SEVEN -- SIZE

TABLE OF SA7 BY SB7

SA7 \ SB7	.	1	2	3	4	5	6	7	8	9	TOTAL
.	2	0	0	0	0	2	0	0	0	2	6
	2.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	5.00	15.00
	33.33	0.00	0.00	0.00	0.00	33.33	0.00	0.00	0.00	33.33	
	100.00	0.00	0.00	0.00	0.00	16.67	0.00	0.00	0.00	22.22	
3	0	0	1	0	1	0	0	0	0	0	2
	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	2.00
	0.00	0.00	50.00	0.00	50.00	0.00	0.00	0.00	0.00	0.00	
	0.00	0.00	16.67	0.00	5.00	0.00	0.00	0.00	0.00	0.00	
4	0	0	1	1	0	0	0	0	0	1	3
	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	3.00
	0.00	0.00	33.33	33.33	0.00	0.00	0.00	0.00	0.00	33.33	
	0.00	0.00	16.67	7.69	0.00	0.00	0.00	0.00	0.00	11.11	
5	0	2	1	2	4	1	1	0	1	0	12
	2.00	2.00	1.00	2.00	4.00	1.00	1.00	0.00	1.00	0.00	12.00
	16.67	16.67	8.33	16.67	33.33	8.33	8.33	0.00	8.33	0.00	
	100.00	16.67	16.67	15.38	20.00	10.00	3.57	0.00	10.00	0.00	
6	1	0	1	0	4	1	6	0	0	0	12
	0.00	0.00	1.00	0.00	4.00	1.00	6.00	0.00	0.00	0.00	12.00
	0.00	0.00	8.33	0.00	33.33	8.33	50.00	0.00	0.00	0.00	
	0.00	0.00	16.67	0.00	20.00	10.00	21.43	0.00	0.00	0.00	
7	1	0	1	4	3	0	5	0	1	1	15
	0.00	0.00	1.00	4.00	3.00	0.00	5.00	0.00	1.00	1.00	15.00
	0.00	0.00	6.67	26.67	20.00	0.00	33.33	0.00	6.67	6.67	
	0.00	0.00	16.67	30.77	15.00	0.00	17.86	0.00	10.00	11.11	
8	1	0	1	3	6	3	5	1	4	2	25
	0.00	0.00	1.00	3.00	6.00	3.00	5.00	1.00	4.00	2.00	25.00
	0.00	0.00	4.00	12.00	24.00	12.00	20.00	4.00	16.00	8.00	
	0.00	0.00	16.67	23.08	30.00	30.00	17.86	50.00	40.00	22.22	
9	1	0	0	3	2	5	11	1	4	5	31
	0.00	0.00	0.00	3.00	2.00	5.00	11.00	1.00	4.00	5.00	31.00
	0.00	0.00	0.00	9.68	6.45	16.13	35.48	3.23	12.90	16.13	
	0.00	0.00	0.00	23.08	10.00	50.00	39.29	50.00	40.00	55.56	
TOTAL	2	6	13	20	10	28	2	10	9	100	
	2.00	6.00	13.00	20.00	10.00	28.00	2.00	10.00	9.00	100.00	

QUESTION SEVEN -- FORMAT

TABLE OF SA8 BY SB8

SA8 SB8

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	7	8	9	TOTAL
.	3	0	0	0	0	2	0	0	0	1	6
1	0	5	0	0	1	0	2	0	0	0	8
		4.95	0.00	0.00	0.99	0.00	1.98	0.00	0.00	0.00	7.92
		62.50	0.00	0.00	12.50	0.00	25.00	0.00	0.00	0.00	
		55.56	0.00	0.00	3.57	0.00	10.00	0.00	0.00	0.00	
2	0	2	1	0	0	0	0	0	0	0	3
		1.98	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.97
		66.67	33.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
		22.22	12.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3	0	0	0	0	1	0	0	0	0	0	1
		0.00	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.00	0.99
		0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
		0.00	0.00	0.00	3.57	0.00	0.00	0.00	0.00	0.00	
4	0	1	3	0	1	0	1	0	0	0	6
		0.99	2.97	0.00	0.99	0.00	0.99	0.00	0.00	0.00	5.94
		16.67	50.00	0.00	16.67	0.00	16.67	0.00	0.00	0.00	
		11.11	37.50	0.00	3.57	0.00	5.00	0.00	0.00	0.00	
5	1	0	0	2	4	2	1	0	0	0	9
		0.00	0.00	1.98	3.96	1.98	0.99	0.00	0.00	0.00	8.91
		0.00	0.00	22.22	44.44	22.22	11.11	0.00	0.00	0.00	
		0.00	0.00	13.33	14.29	20.00	5.00	0.00	0.00	0.00	
6	1	1	1	5	2	1	1	0	0	1	12
		0.99	0.99	4.95	1.98	0.99	0.99	0.00	0.00	0.99	11.88
		8.33	8.33	41.67	16.67	8.33	8.33	0.00	0.00	8.33	
		11.11	12.50	33.33	7.14	10.00	5.00	0.00	0.00	14.29	
7	0	0	1	1	6	0	3	2	1	1	15
		0.00	0.99	0.99	5.94	0.00	2.97	1.98	0.99	0.99	14.85
		0.00	6.67	6.67	40.00	0.00	20.00	13.33	6.67	6.67	
		0.00	12.50	6.67	21.43	0.00	15.00	100.00	50.00	14.29	
8	1	0	1	1	11	1	4	0	1	1	20
		0.00	0.99	0.99	10.89	0.99	3.96	0.00	0.99	0.99	19.80
		0.00	5.00	5.00	55.00	5.00	20.00	0.00	5.00	5.00	
		0.00	12.50	6.67	39.29	10.00	20.00	0.00	50.00	14.29	
9	0	0	1	6	2	6	8	0	0	4	27
		0.00	0.99	5.94	1.98	5.94	7.92	0.00	0.00	3.96	26.73
		0.00	3.70	22.22	7.41	22.22	29.63	0.00	0.00	14.81	
		0.00	12.50	40.00	7.14	60.00	40.00	0.00	0.00	57.14	
TOTAL		9	8	15	28	10	20	2	2	7	101
		8.91	7.92	14.85	27.72	9.90	19.80	1.98	1.98	6.93	100.00

QUESTION SEVEN -- RELIABILITY

TABLE OF SA9 BY SB9

SA9 SB9

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	7	TOTAL
.	2	2	0	0	0	0	0	0	2
1	1	30	5	0	0	0	0	0	35
		28.85	4.81	0.00	0.00	0.00	0.00	0.00	33.65
		85.71	14.29	0.00	0.00	0.00	0.00	0.00	
		53.57	18.52	0.00	0.00	0.00	0.00	0.00	
2	0	14	6	0	0	0	0	0	20
		13.46	5.77	0.00	0.00	0.00	0.00	0.00	19.23
		70.00	30.00	0.00	0.00	0.00	0.00	0.00	
		25.00	22.22	0.00	0.00	0.00	0.00	0.00	
3	0	7	7	2	1	0	0	0	17
		6.73	6.73	1.92	0.96	0.00	0.00	0.00	16.35
		41.18	41.18	11.76	5.88	0.00	0.00	0.00	
		12.50	25.93	22.22	14.29	0.00	0.00	0.00	
4	1	5	2	4	1	0	0	0	12
		4.81	1.92	3.85	0.96	0.00	0.00	0.00	11.54
		41.67	16.67	33.33	8.33	0.00	0.00	0.00	
		8.93	7.41	44.44	14.29	0.00	0.00	0.00	
5	0	0	3	2	3	1	0	0	9
		0.00	2.88	1.92	2.88	0.96	0.00	0.00	8.65
		0.00	33.33	22.22	33.33	11.11	0.00	0.00	
		0.00	11.11	22.22	42.86	33.33	0.00	0.00	
6	0	0	2	1	1	1	0	0	5
		0.00	1.92	0.96	0.96	0.96	0.00	0.00	4.81
		0.00	40.00	20.00	20.00	20.00	0.00	0.00	
		0.00	7.41	11.11	14.29	33.33	0.00	0.00	
7	0	0	2	0	1	0	0	1	4
		0.00	1.92	0.00	0.96	0.00	0.00	0.96	3.85
		0.00	50.00	0.00	25.00	0.00	0.00	25.00	
		0.00	7.41	0.00	14.29	0.00	0.00	100.00	
8	0	0	0	0	0	1	1	0	2
		0.00	0.00	0.00	0.00	0.96	0.96	0.00	1.92
		0.00	0.00	0.00	0.00	50.00	50.00	0.00	
		0.00	0.00	0.00	0.00	33.33	100.00	0.00	
TOTAL		56	27	9	7	3	1	1	104
		53.85	25.96	8.65	6.73	2.88	0.96	0.96	100.00

QUESTION EIGHT -- CLARITY AND LEGEND

TABLE OF EA1 BY EB1

EA1 EB1

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	4	TOTAL
.	8	2	1	0	11
1	2	77	9	0	88
		79.38	9.28	0.00	88.66
		89.53	10.47	0.00	
		93.90	64.29	0.00	
2	0	3	4	1	8
		3.09	4.12	1.03	8.25
		37.50	50.00	12.50	
		3.66	28.57	100.00	
3	0	2	1	0	3
		2.06	1.03	0.00	3.09
		66.67	33.33	0.00	
		2.44	7.14	0.00	
TOTAL		82	14	1	97
		84.54	14.43	1.03	100.00

QUESTION EIGHT -- CONTRAST

TABLE OF EA2 BY EB2

EA2 EB2

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	TOTAL
.	11	1	1	0	1	1	0	5
1	0	0 0.00 0.00 0.00	1 1.08 33.33 6.67	0 0.00 0.00 0.00	1 1.08 33.33 3.85	1 1.08 33.33 6.25	0 0.00 0.00 0.00	3 3.23
2	1	2 2.15 20.00 100.00	5 5.38 50.00 33.33	1 1.08 10.00 5.26	2 2.15 20.00 7.69	0 0.00 0.00 0.00	0 0.00 0.00 0.00	10 10.75
3	0	0 0.00 0.00 0.00	2 2.15 11.76 13.33	12 12.90 70.59 63.16	3 3.23 17.65 11.54	0 0.00 0.00 0.00	0 0.00 0.00 0.00	17 18.28
4	0	0 0.00 0.00 0.00	3 3.23 12.50 20.00	4 4.30 16.67 21.05	16 17.20 66.67 61.54	1 1.08 4.17 6.25	0 0.00 0.00 0.00	24 25.81
5	0	0 0.00 0.00 0.00	1 1.08 4.76 6.67	1 1.08 4.76 5.26	2 2.15 9.52 7.69	14 15.05 66.67 87.50	3 3.23 14.29 20.00	21 22.58
6	1	0 0.00 0.00 0.00	3 3.23 16.67 20.00	1 1.08 5.56 5.26	2 2.15 11.11 7.69	0 0.00 0.00 0.00	12 12.90 66.67 80.00	18 19.35
TOTAL		2 2.15	15 16.13	19 20.43	26 27.96	16 17.20	15 16.13	93 100.00

QUESTION EIGHT -- COLOR

TABLE OF EA3 BY EB3

EA3 EB3

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	2	3	4	5	6	TOTAL
.	11	0	2	0	2	0	.
2	0	7 7.53 43.75 70.00	4 4.30 25.00 12.50	2 2.15 12.50 9.52	1 1.08 6.25 8.33	2 2.15 12.50 11.11	16 17.20
3	0	0 0.00 0.00 0.00	19 20.43 82.61 59.38	3 3.23 13.04 14.29	0 0.00 0.00 0.00	1 1.08 4.55 5.56	23 24.73
4	1	1 1.08 5.26 10.00	3 3.23 15.79 9.38	14 15.05 73.68 66.67	1 1.08 5.26 8.33	0 0.00 0.00 0.00	19 20.43
5	1	1 1.08 5.88 10.00	3 3.23 17.65 9.38	2 2.15 11.76 9.52	7 7.53 41.18 58.33	4 4.30 23.53 22.22	17 18.28
6	0	1 1.08 5.56 10.00	3 3.23 16.67 9.38	0 0.00 0.00 0.00	3 3.23 16.67 25.00	11 11.83 61.11 61.11	18 19.35
TOTAL		10 10.75	32 34.41	21 22.58	12 12.90	18 19.35	93 100.00

QUESTION EIGHT -- FIGURE-GROUND

TABLE OF EA4 BY EB4

EA4 EB4

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	TOTAL
.	12	1	0	1	0	1	1	16
1	0	6	1	1	0	0	0	8
		6.52	1.09	1.09	0.00	0.00	0.00	8.70
		75.00	12.50	12.50	0.00	0.00	0.00	
		46.15	2.86	7.14	0.00	0.00	0.00	
2	0	5	27	3	1	1	1	38
		5.43	29.35	3.26	1.09	1.09	1.09	41.30
		13.16	71.05	7.89	2.63	2.63	2.63	
		38.46	77.14	21.43	8.33	10.00	12.50	
3	0	2	4	6	3	1	1	17
		2.17	4.35	6.52	3.26	1.09	1.09	18.48
		11.76	23.53	35.29	17.65	5.88	5.88	
		15.38	11.43	42.86	25.00	10.00	12.50	
4	1	0	0	0	8	0	2	10
		0.00	0.00	0.00	8.70	0.00	2.17	10.87
		0.00	0.00	0.00	80.00	0.00	20.00	
		0.00	0.00	0.00	66.67	0.00	25.00	
5	1	0	2	2	0	5	1	10
		0.00	2.17	2.17	0.00	5.43	1.09	10.87
		0.00	20.00	20.00	0.00	50.00	10.00	
		0.00	5.71	14.29	0.00	50.00	12.50	
6	0	0	1	2	0	3	3	9
		0.00	1.09	2.17	0.00	3.26	3.26	9.78
		0.00	11.11	22.22	0.00	33.33	33.33	
		0.00	2.86	14.29	0.00	30.00	37.50	
TOTAL		13	35	14	12	10	8	92
		14.13	38.04	15.22	13.04	10.87	8.70	100.00

QUESTION EIGHT -- BALANCE

TABLE OF EAS BY EBS

EAS / EBS FREQUENCY PERCENT ROW PCT COL PCT	.	1	2	3	4	5	6	TOTAL
.	11	0	0	1	2	0	1	15 16.13
1	0	1 1.08 50.00 100.00	1 1.08 50.00 10.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 2.15
2	0	0 0.00 0.00 0.00	6 6.45 42.86 60.00	2 2.15 14.29 15.38	2 2.15 14.29 13.33	2 2.15 14.29 6.45	2 2.15 14.29 8.70	14 15.05
3	2	0 0.00 0.00 0.00	3 3.23 15.00 30.00	9 9.68 45.00 69.23	2 2.15 10.00 13.33	4 4.30 20.00 12.90	2 2.15 10.00 8.70	20 21.51
4	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 2.15 9.52 15.38	9 9.68 42.86 60.00	7 7.53 33.33 22.58	3 3.23 14.29 13.04	21 22.58
5	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 2.15 9.09 13.33	18 19.35 81.82 58.06	2 2.15 9.09 8.70	22 23.66
6	0	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	14 15.05 100.00 60.87	14 15.05
TOTAL		1 1.08	10 10.75	13 13.98	15 16.13	31 33.33	23 24.73	93 100.00

QUESTION EIGHT -- LETTERING

TABLE OF EA6 BY EB6

EA6 EB6

FREQUENCY / PERCENT / ROW PCT / COL PCT	.	1	2	3	4	5	6	TOTAL
.	11 .	0 .	1 .	0 .	1 .	0 .	2 .	15 16.13
1	0 .	1 1.08 100.00 100.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 1.08
2	1 .	0 0.00 0.00 0.00	7 7.53 87.50 77.78	0 0.00 0.00 0.00	1 1.08 12.50 5.56	0 0.00 0.00 0.00	0 0.00 0.00 0.00	8 8.60
3	0 .	0 0.00 0.00 0.00	0 0.00 0.00 0.00	9 9.68 69.23 60.00	2 2.15 15.38 11.11	0 0.00 0.00 0.00	2 2.15 15.36 7.14	13 13.98
4	0 .	0 0.00 0.00 0.00	1 1.08 5.56 11.11	3 3.23 16.67 20.00	9 9.68 50.00 50.00	5 5.38 27.78 22.73	0 0.00 0.00 0.00	18 19.35
5	0 .	0 0.00 0.00 0.00	1 1.08 4.76 11.11	2 2.15 9.52 13.33	3 3.23 14.29 16.67	13 13.98 61.90 59.09	2 2.15 9.52 7.14	21 22.58
6	1 .	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 1.08 3.13 6.67	3 3.23 9.38 16.67	4 4.30 12.50 18.18	24 25.81 75.00 85.71	32 34.41
TOTAL	.	1 1.08	9 9.68	15 16.13	18 19.35	22 23.66	28 30.11	93 100.00