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An Analysis of Geographical Concepts and Characteristics of Maps in Selected Textbooks

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AN ABSTRACT OF THE THESIS OF Helen Elizabeth Wittke for the
Master of Arts in Teaching in Social Science presented
May 12, 1970.

Title: An Analysis of Geographical Concepts and Character-
istics of Maps in Selected Textbooks.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

Charles M. White, Chairman

Dale C. Jolly

Walton Manning

The purpose of this thesis was to examine the extent to which geography is integrated into history courses. This was done through analyses of the maps in eighth and tenth grade history books. Every map in each book was tabulated according to its purpose, characteristics, and cartographic techniques. The statistics which were gathered from these tabulations were then used as a basis for percentages of the maps devoted to various purposes. In addition to this, twenty-five maps were analyzed in detail, with an examination not only of the map, but of the accompanying text, and the method in which the map was integrated into the written portion of

the book.

Through these analyses, it was discovered that maps are very poorly utilized in these textbooks. Many maps were used which were not in an appropriate scale for the subject they were to portray. Also, it was common to see a map which appeared to be useful for illustrating one idea, applied in an entirely different manner. Often maps were not incorporated with the text, or located in appropriate sections of the book. Most books had some maps which were excellent, and used advantageously; these same books also misused maps. There was a great deal of inconsistency in the quality of maps, and how they were used.

The conclusion drawn is a recommendation that more studies be done in this field, in an endeavor to further analyze the problem as it exists now, so that it can be corrected.

TO THE OFFICE OF GRADUATE STUDIES:

The members of the Committee approve the thesis
of Helen Elizabeth Wittke presented May 12, 1970.

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AN ANALYSIS OF GEOGRAPHICAL CONCEPTS
AND CHARACTERISTICS OF MAPS
IN SELECTED TEXTBOOKS

by
HELEN ELIZABETH WITTKE

A thesis submitted in partial fulfillment of the
requirements for the degree of

MASTER OF ARTS IN TEACHING
in
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Portland State University
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CHAPTER I

GEOGRAPHICAL CONCEPTS

It is the purpose of this thesis to discover to what degree geography is incorporated into the teaching of history. The basic research was done through the analysis of maps in eighth and tenth grade history books. However, in order to establish the basic criteria, it was first necessary to examine the basic geographical concepts. This is done in chapter one, where each of the six basic geographical concepts is defined and described. These six concepts -- location, regionalism, spatial interaction, spatial distribution, internal coherence, and theme of change -- serve as the foundation for individual map analyses in chapter two, and in chapter four are related to the statistical findings of chapter three. Thus, they are basic to an understanding of this thesis, and the conclusions which are drawn from it.

Each concept is discussed individually, so that it can be thoroughly understood. The inter-relatedness of the concepts becomes apparent in the discussion of each, and in their application in chapter two.

I. LOCATION

The concept of location -- which includes the site

and situation of a place -- is very basic in geography. It serves as the focal point for geographical discussions and analyses. Therefore, it is necessary to have a thorough understanding of this concept before it is possible to discuss its relationship to maps and to history.

Site is the specific location of a place. In studying a city, it would involve knowing if the city is on a river, or in an oasis. Is it at the base of a mountain, or in the middle of a plain? What is its climate, and what kind of soil does it have? In studying a region, the same basic questions would need to be answered. Maps are an essential tool in establishing the facts of site, and through maps the physical location of places can be visualized, in order to gain a realistic image. When the information as to a place's specific location is known, a more thorough understanding of its functions is possible.

Whereas site refers to the specific location of a place, situation refers to its areal location in relationship to its surroundings. After identifying a city's site, the next step is using the knowledge to gain perspective about its situation. For example, in studying Chicago, the first step would be an analysis of its site. This could be done most efficiently and quickly through an examination of maps. A visual image of Chicago on the southwest shore of Lake Michigan, having lakes and rivers within its environs, and located on the fringe of pasture and woodlands, can be

gained through map studies. With this image established, the next step would be to examine its situation in relationship to the Great Plains, the Great Lakes, and as a pivotal railroad depot between the industrial and agricultural United States.

This same concept can be applied very appropriately, as well as usefully, to history. A study of the establishment of Chicago on Lake Michigan, and its development as a major urban center, would naturally involve the history of the city. As the study became more involved, it would expand from an historical study of a specific place, to an understanding of it in terms of its relative location. The history of railroads, the cattle industry, Chicago's relation to the Des Plaines River, and the development of the Great Plains as a grain-producing region cannot be excluded from a thorough study of Chicago. In a text, the study would be only half done if considerations were not made of site and situation.

Maps are a very useful tool in explaining the site and situation of particular places. By using maps instead of relying solely on verbal descriptions, more meaningful visual images are created. Through a wide variety of maps, both site and situation can be thoroughly explored. In examining the site of Chicago -- to continue the example -- it would be necessary to have a large scale map of the city. This would cartographically represent physical features

such as relief, rivers, and lakes. The central business district would be labelled, along with surrounding suburban areas. In conjunction with this, an historic map showing Chicago in 1850 should be used, showing the site of the city at that time. On the basis of these two maps, many comparisons could be made. These would include population increase and spread, shift or growth of the central business district, evidences of various types of industry and agriculture, and placement of transportation routes. If continuity were important to the study, a series of maps showing Chicago's development for the past century could be used. With the aid of thorough and accurate maps, textbooks become reference books, as maps assume the role of primary source and reference material.

Chicago's situation should be shown in relationship to historic concepts which are being examined. If Chicago were being studied in the light of its development as a railroad center, maps should show the historical development of railroads during different periods. When examining Chicago as a shipping center, the city can be shown in spatial relationship to the Great Plains and the various grain regions, in relationship to the cattle trails, or in relation to the meat-consuming public. These maps demonstrating situation would be of a smaller scale than those showing site, since the internal structure of Chicago is not the focal point, but rather its relationship with its surroundings. Because of

the various functions of Chicago, a map, or series of maps, which portray the city's place in the transportation network of the United States, would require one of the entire country, and perhaps one with parts of Canada. Since Chicago has been consistently important as a shipping center, the series of maps should not be limited to railroad studies, but should also stress its importance as a part of the highway system, water transport system, and as a center of air transportation.

As the basic geographic concept of location is understood, it becomes inseparable from a study of history. The site and situation of a place are important aspects of its background, as well as influential in its place in the modern world. An understanding of a place's location serves not only as basic knowledge in itself, but also as a foundation on which to add an understanding of other geographical concepts.

II. REGIONALISM

Regionalism is fundamental to an understanding of places. Whenever a geographer -- or anyone else -- is studying or examining an area, an element of regionalism is present. The region can be vast -- the whole world -- or minute -- one city block in the inner core of a large city. The extent of the region is dependent upon the purpose and definition of the examiner.

Basically, regions may be defined in one of two ways -- formally, or functionally. A formal region is one with established, defined, accepted boundaries. Political boundaries comprise formal regions, whether in terms of a city, or a continent, and certain geographic features can also be defined as formal regions. A watershed is definable, with the help of accurate exploration and description. The region to be used in the discussion of spatial distribution (see p. 12), the state of Oregon, is a formal region. However, the region used in the discussion of Chicago (Location), as it related to railroad and cattle industries, was functional. A function region deals with the movement of resources, and attempts to define the region according to certain criteria based on the study of that movement. For example, the coal region which uses Pittsburgh as its urban center is a functional region, although the boundaries of this region are difficult to define. One person may use the percentage of total coal mined which is shipped to Pittsburgh for industry, as his criterion. Another equally qualified person might base his definition on transportation routes, use for coal shipment, and the number of runs made in a certain time period. Each would arrive at a different definition of the regional border. They would agree as to the basic function of the area, but unlike a formal region which is generally accepted by all, the boundaries of a functional region will vary with each

individual who attempts to define it.

It should be understood that a specific place can function within several different regions. For example, Manchester, England, is within several formal regions -- Lancashire, England, Great Britain, Europe -- while at the same time it is within several functional regions. It might be included within the region of the Pennine Mountains, the moist continental climatic region, a coal mining region, a textile manufacturing region, a variety of transportation regions, a dialectical region, or an ethnic region. These regions might or might not be inter-related. They might occupy the same general area, or they might vary quite distinctly in boundary and area. Their importance depends on the examiner, and the study which is being made.

Regionalism correlates well with historical studies. Quite often, a specific place or area has been within a variety of both formal and functional regions throughout its history. In continuing with the example of Manchester, a study of its regions before and after the Industrial Revolution is very revealing, and brings many questions to the mind of the researcher. Was the functional region of the textile industry greater or smaller than the coal mining region which later developed? Did its function as a town, and therefore its importance within the earlier region, shift with the change in industries? Did the regions of which Manchester was a part change as Manchester's functions

changed? If Manchester's role within various regions -- past and present -- is understood, its present status might be more easily comprehended.

Maps are a basic tool in the study of regionalism. With the aid of a physical relief map, formal geographic regions, such as a watershed or river delta, can be agreed upon. For a definitive definition of the formal region, the map would have to be large scale, and very detailed. A basic political map shows formal political regions. An overlay showing physical features, placed over a map depicting political regions, will allow a student to study the relationships between the regions. This could in turn lead to an interesting study of the many forces which influence the location of political boundaries.

As in studying formal regions, a map is also required when examining functional regions. By the use of symbols, and accurate plotting of details on a large scale map, functional regions can be defined. The importance of Pittsburgh as a center for the coal mining industry, and the regions which it serves, can be established by plotting boundaries on a map. There will not be total agreement on its boundaries because of the different criteria which may be used, and with a map, it would be possible to illustrate each boundary, as the person describes it. By the use of maps, the various regions of which Manchester is a part could be shown. Relationships among these regions -- both in

boundary and function -- can then be examined. Without accurate and descriptive maps, relationships among the functional regions would be very difficult to understand.

Regions vary immensely, both in kind, and in time. In order to be defined as a region, there must exist some common bond within a certain area. Whether this is formal or functional is dependent on the purpose, and person. But in any geographical study, one is working with a region; it is necessary to define the subject, and to limit it to the relevant area.

III. SPATIAL INTERACTION

This concept often reveals the degree of mobility which a particular location has. Movement of any kind can be included in spatial interaction. In scientific terms, it could refer to the circulation of air. In a more cultural sense, it can include trade, transportation, migration, interdependence, or communication. These ideas are all studies in terms of movement. Thus, when considering the concept of spatial interaction, the basic factors are circulation and accessibility. Circulation refers to over-coming distance in any mode. Accessibility refers to the ease with which circulation can be accomplished. Without accessibility and circulation -- spatial interaction -- isolation is often the result.

New York City serves as a good example of a central

place with a highly developed circulation system, enhanced by ease of accessibility. Because of its vast harbor, and location on the East Coast, it is easily accessible by water. Its proximity to Europe has made it a central depot for tourists and businessmen. It has become a major distributing point for goods, people, and ideas. It has a vast area of circulation, aided by access to the site. In the state of New York, competition among various forms of transportation has been instrumental in influencing the routes used. The Erie Canal, as a major route to the interior of the United States, gave way to the more rapid railway transport, which in turn has had to compete with the better accessibility of the St. Lawrence Seaway.

A change in transportation modes can seriously affect a site's circulation and accessibility. A prime example of this is the Suez Canal. Previous to the building of the canal, trade between Europe and Asia was slow and tedious. The main trade routes did not pass through this desert area. However, with the building of the canal, the shipping route was changed, and trade increased. Suddenly, this desert area between the Red and Mediterranean Seas increased in importance because of its centrality of position. It is thus evident that historical studies are tied in closely with an understanding of spatial interaction. By using maps, the reasons for choosing the site of the Suez Canal become clear. In addition, the development of a plan for a canal, the

history of the actual canal, and its role in modern transportation and politics must all be combined in a comprehensive examination of the Suez Canal. To understand the need for the canal, earlier trade routes between Europe and Asia are plotted and drawn on maps. By use of scale, distances of various routes can be compared, and more concrete facts would emphasize the need for the canal. For a thorough and honest understanding of the canal's history, the geographical concept of spatial interaction must be considered.

Maps can be one way of visually explaining spatial interaction. A transportation map of roads, railroads, and airports would quickly give some basic knowledge about the accessibility of a place. A global map showing destination and frequency of flights would give some idea of circulation. Climatic maps showing air circulation give another aspect of spatial interaction, this time dealing with the climate of an area. An export map, showing eventual destination of various local products would also illustrate circulation. A map of Europe showing the spread and diffusion of the different language sources would be an integral part of the study of any of the Western languages.

Thus, maps showing circulation and accessibility are indispensable to a good history course. Since spatial interaction shows movement through space, and history is a study of movement through time, the two must be examined together, so that a full understanding of each can be gained. It would

be an injustice to knowledge to study one without the other.

IV. SPATIAL DISTRIBUTION

Spatial distribution deals with the distribution of various phenomena within a region. It involves both cultural and natural geographic features, and a study of them can reveal a great deal about an area. Because they are so enlightening, an inquiry into spatial distribution is a basic part of geographical study.

Spatial distribution can be examined in three ways, and to be thorough, all three ways should be used. Density is involved with the frequency with which a certain phenomenon occurs within a certain area. In studying a specific area, density does not concern itself with where or how, but with how much. Dispersion is the term used to describe the location of the phenomenon in the area being studied. Is it concentrated in one area, or is it scattered throughout? Finally, pattern concerns itself with the actual visible design of the spread of the phenomenon. It is more pictorial, whereas the density and dispersion could be expressed in graphs and charts, as well as in maps. In applying spatial distribution, statistics and visual images used together present a whole picture to the student.

A very specific -- if rather narrow -- example of spatial distribution would be the study of one-room schools within the state of Oregon. The first step in establishing

their spatial distribution within the region would be to gather the necessary statistics. These may be assembled by the use of governmental information, but more likely would have to be done by individual field geography. Correspondence, combined with personal verification would probably provide most of the statistics. When the material was accumulated, both graphs and maps could be used to show the results. Density includes not only the actual number of one-room schools, but could be combined with a number of other components -- for instance a comparison in numbers of one-room schools to the number of other types of school structures in the state, or with the number of one-room schools in other states. Dispersion and pattern can be seen most effectively through the use of an accurate map, with each one-room school represented on it. It could quickly be seen whether one-room schools were scattered fairly evenly throughout the state, or if they were concentrated in specific areas. An interesting comparison could be made with the general dispersion of the population, and the dispersion of the one-room schools. Finally, a visual examination of the map would help to reveal any pattern which might exist. In turn, this study has a natural historical dimension. The establishment of schools in the United States, their development on the frontiers, and the reasons for the evolution of the one-room schools to the modern school system, are all based on westward expansion, population growth, and changing goals

and values of the American people.

Thus, spatial distribution not only gives a person insight into the characteristics of a particular region, but also can serve as a good basis for comparisons. Relationships among various features can be examined both in spatial distribution and function. Although these features may have the same general spatial distribution, this does not automatically mean that they are related. The study of the spatial distribution of one-room schools in Oregon in relationship to natural geography, population distribution, and history might be revealing and educational. If each of these were plotted and shown on a map, the visual image created would be more meaningful, and lead to a better understanding of spatial distribution and the inter-relatedness of various phenomena. Why are the one-room schools located where they are? Were there ever any in areas which now do not have them, and if so, what happened to them? Were these schools all built at about the same time? Does Oregon have more or fewer one-room schools than other states? Why? Is the location of one-room schools related to physical geography, population dispersal, or other phenomena?

The importance of maps in studying spatial distribution is apparent. If limited to a verbal description, the visual image is often complex and confusing. However, by effective use of maps, spatial distribution gains meaning and importance. Maps are important to a clear comprehension of

spatial distribution, and this comprehension will help lead to an understanding of a region's geography. In order to have a complete understanding of a region, or a particular feature within a region, physical and cultural features must be examined. In turn, this will aid in an understanding of the region as a whole, and lead to the study of the presence of various relationships among the phenomena not only as they exist today, but as they have existed in the past.

V. INTERNAL COHERENCE

Like spatial distribution, internal coherence also deals with phenomena within a region. However, where spatial distribution deals with density, dispersion, and pattern of one feature, internal coherence deals with the relationship of the various features within a region; it attempts to bring order to the presence of a wide variety of phenomena within an area, and thus tie them into a more cohesive whole. In doing this, geographers are involved not only in geographic features, but in any features which are present within the area, and how these various features interact, and are interdependent.

The organization within an area is very important to its function as a unit. In trying to understand how an area functions as a whole, it is necessary to find and understand the various phenomena that exist within the area, and then attempt to see how these different facets relate to

each other, to create some kind of order. Man plays a dominant role in organizing the various phenomena, and the variety in the results of different methods of organizing his spatial environment.

The manner in which man organizes his life is in itself directly involved with history. At certain periods of time, man has had varying methods of living, and thus the internal coherence of any place is related directly to the history of that place, and to the history of the men who inhabit the place. The internal coherence of an area -- or the lack of it -- reflects the leadership in the area, and the goals of the inhabitants.

Tanzania has had a difficult problem to solve, involving this geographical concept. Several tribes of Tanzania base their way of life on the raising of livestock. There is a natural vegetative cover in their region, but due to over-grazing of the cattle, the vegetation becomes minimal, which results in water run-off and erosion. As the grazing increases, the amount of water absorbed in the soil decreases, and the amount which runs off the surface of the land increases in volume and momentum. This leads to an increased destructive force. The results of this situation are drought, and famine. Because of the deaths which occur during the famine, the number of cattle decreases. Vegetation is allowed to grow, and as the land and people recover from the drought and famine, the cycle starts again. The

internal relationship of the various phenomena is apparent, although it is not beneficial. Attempts on behalf of the government of Tanzania to alter this cycle, and create a favorable balance among the phenomena, involves change in tribal culture, and effective land use. Achieving a balanced and beneficial internal coherence requires cooperation and effort on the part of a wide variety of people.

A study of the variety of activities within a region can be blended into a related whole which leads to a deeper understanding of the country's geography. For example, the relationship between physical geography, transportation, natural resources, and industries, is basic to a country's cultural geography, and physical appearance. The influence of soils and climate on agriculture, and an overall picture of trade relationships within a region are fundamental to a comprehension of how and why a country functions the way it does. As understanding of the interplay of these various factors develops, so will an understanding of its geography and history as a whole.

Maps can serve as a basic tool in the furthering of this understanding. Within a chosen region, maps can be used to express topography, climate, land use, population distribution, languages, religions, races, natural resources, and the other phenomena which are elemental to a region's internal coherence. Through maps, these patterns, features, and their relationships to one another, can be understood

more clearly, and when combined with necessary reference material, a region will gain more meaning and reason to individuals.

VI. THEME OF CHANGE

Geography is not a static science. It is based on an examination of the condition of life now, why it has become that way, and what it might be like in the future. Those with a limited understanding of geography immediately associate it only with the physical features of the earth, and consider these to be static. However, this is not true. Even the physical features change, although often too slowly for man to observe. Rivers change their courses as they age, and denudation changes the character of the landscape. But in addition to these natural changes in the earth's surface, man is a vital, and much more rapid catalyst in the changing of the earth. With the building of a dam, a river system is changed. With the discovery of a valuable mineral, an uninhabited area becomes a rapidly growing town. With the simple addition of a house or road, our physical environment is changed. Any geographer who ignores this theme of change is not doing a thorough job.

Change shows movement, and is continuous. It can be limited to a small area -- a specific site -- or a large area with ripples of reaction spreading large distances. The change can be due to mechanical innovations, or to natural

evolution. Whatever the cause, this is an obvious link between the study of geography and history. In order to understand, or even recognize change, one must be aware of what has gone before. History is an inevitable ingredient in the study of change.

A vivid example of change brought by man to his physical environment is reclamation of land in the Netherlands. The history of the area is basic to an understanding of its modern geography. The geographic location of the Netherlands would have to be studied in terms of maps showing its topography, and especially emphasizing elevation. The changes in the country's geography throughout its history could best be studied through maps. When physical geography has undergone changes such as this, it is difficult to realize how the country appeared in the past. With the use of a series of historical maps, these changes could be visualized. In addition to this series of maps, a study of the history of dikes and polders in the country would help explain some of the geographic features of the land. A map with specific locations of these features, and a corresponding history of the development of each, would create a complete picture of the country as it exists today. Modern aerial maps of the Netherlands, combined with modern land use maps, would establish the condition in the country today. Through background knowledge gained in these exercises, it might be possible for a student to construct a map of the Netherlands as it

could appear in the future.

This theme of change is not limited to topographical features. It includes cultural features added to the land by man. It also includes man's impact on an area through time. For instance, the westward movement in the United States had a continuous impact on the land and its people. The various gathering points of the wagon trains created towns geared to meeting the needs of the pioneers. With the advent of the railroad, some of these towns flourished into cities, while others dwindled away. The search for gold and other minerals often created boom towns, which became ghost towns when their resource veins ran out. The reasons for locating a town in a particular place might have been excellent in 1840. However, with changes in the way man lives, these reasons may become obsolete, or be replaced by more modern concepts. All of these would influence the growth or decline of a town. Maps showing the location of important towns at different periods in history would point out the changes which take place in our culture.

Thus, it becomes evident that change is very important as a factor in understanding geography. And this concept of change also shows that the academic fields of history and geography must be studied together, in order to gain a thorough and realistic understanding of either field.

CHAPTER II

INDIVIDUAL MAP ANALYSES

The six basic geographical concepts discussed in chapter one must be used and applied in thorough historical studies. The two disciplines, geography and history, are closely related, and without integrating the data from each, it is difficult to explain and comprehend fully what was and is happening. Just as these two fields should depend on each other in the more advanced academic fields, they should be inter-related in textbooks for students in public schools. Since geography is rarely taught as a separate subject, and the social sciences are now dominated by history teachers, it is the responsibility of these history teachers to see that students receive adequate understanding of basic geographical concepts.

Textbooks should also assume some responsibility in relating geography to history. In the following chapter, I have attempted to discover if eighth grade United States history textbooks and tenth grade world history textbooks do relate these six basic geographical concepts to history. This was done by an examination of every map in each of twenty-three books. Chapter two of this thesis includes first a chart, which is a rating of twenty-five selected maps.

Each of the maps is rated 1, 2, 3, or 4, according to how applicable it is to teaching the understanding of basic geographical concepts -- location, regionalism, spatial interaction, spatial distribution, internal coherence, and theme of change -- and how well the map and text are coordinated towards this goal. The chart is followed by a prose description of the twenty-five maps, and a slide of each map is included in the appendix of this thesis. The maps are analyzed in terms of which geographic concepts could be stressed, according to the purpose of the map, and whether they are emphasized, or ignored. Consideration is also given to accompanying text, and how the map, text, geography and history are interwoven to give the student a complete picture of the particular point in history being studied.

The third chapter of this paper concerns itself with the data collected from the maps of these twenty-three selected textbooks. Through a data sheet which was completed for each map in each text, certain statistics and conclusions are drawn as to the importance given to maps, and to geographical concepts, in the textbook. Using maps as an indicator of the emphasis given to geography, and consequently to the basic geographic concepts, the data gathered on these charts are interpreted and analyzed.

Thus, the first chapter, in which the explanation of the six basic geographical concepts was given, serves as the standard by which the maps and texts are examined.

TABLE I
GEOGRAPHICAL CONCEPTS:
RATING OF TWENTY-FIVE
SELECTED MAPS

- 1 - poor
2 - fair
3 - good
4 - excellent

Title of Map	Location	Regionalism	Spatial Interaction	Spatial Distribution	Internal Coherence	Theme of Change
The Dominion of Canada Today	1		3		1	
Dams Built in the 1930's	4					3
American Industry, 1860	3	4		4	3	
Texas and the Mexican Cession	1					3
Plan of the City of Washington	4			4		
Where 132 Million Americans Lived in 1940				2		
The Panama Canal and Trade Routes	3		4			3
Panama Canal ¹	1		2			
Natural Vegetation, Soil Types, Climate, Rainfall	1	2			3	
The Louisiana Purchase	2		1			
Early Railroads in the United States	1		1	1		
Post Roads in 1774; 1804			2	2		
Settlers Cross the Appalachians	1		1	1		
Main Languages of Contemporary India		3		2	4	
Physical Features of India	1			1		
The Low Countries under Philip II	2					1
Unification of Germany	1				3	2
The Moslem World Today		1				
England and the Industrial Revolution	2	2		3	4	3
Ancient Palestine	1	1				
Resources Map of North and Middle America	1	2		1	1	
Growth of European Russia			2			
Industry and Empires in the 19th Century	1		1	1		
Early Migrations into Japan			1		1	1
Eastern Europe	3		2			

¹This map is included in the analysis of the previous map.

Title of Map: The Dominion of Canada Today
From Story of the American Nation, Casner, Gabriel, Biller,
Hartley, p. 593.

The dominating factor of this map is transportation routes; railroads and the Alaskan Highway are shown in some detail (Figure 1). The Rocky Mountains and some water features are sketched in on the background, but otherwise no physical features are shown. Political divisions are labeled and so are water bodies, but the Rocky Mountains are not specifically named. This map could be used to show concepts of spatial interaction, as seen through transportation routes, and the internal relationship among transportation, physical geography, and the location of cities. Location could be studied in reference to the relative location of Canada to the United States, and to the Arctic Circle. Both physical and cultural regions are discussed in the text, but they are not shown on this map.

The map is well-located in a brief chapter on Canada, its development, and its relationship with the United States. The map is referred to in the text, and also in an explanatory note on the following page. However, the map does not seem to coordinate with the references, or the text. The first impression the reader gets of the map is that routes and types of transportation are going to be emphasized. But this is not so. In the text it says, ". . . several separate British provinces north of the United States joined to become the Dominion of Canada (see map on page 593)."

The text therefore dutifully refers you to the map; but instead of reinforcing the concept of spatial interaction which the map emphasizes, the text uses the map to show political regions. Even in showing these political divisions, no consideration is given to the various times at which they joined the Dominion of Canada.

As mentioned earlier, reference is also made to the map in an explanatory note on the following page. The picture is of a train crossing a canyon in the Rockies, and the student is asked to locate the part of Canada in which the picture is taken. This is a rather elementary question for eighth graders. On top of that the most specific answer possible would be "western". Another amazing fact is that the Rocky Mountains are not even labeled on the map, but are referred to in the caption under the picture. Is a student learning when he is requested to assume that the only mountains in Canada are the Rockies?

A last comment on this map, and its use in the book, has to do with the explanatory note under the map. The note reads:

The Dominion of Canada Today. In what direction is Canada from the United States? Notice that most Canadian cities and railroads are located near the United States.

The last sentence implies rather strongly that Canada is dependent on the United States. This is unfair and dishonest, as it does not present the whole picture. No clear

reference is made to the geography of Canada, which certainly influences some of the settlement patterns. In the text, a brief reference is made to the woodlands towards the north; "And north of the forest lies a region of Arctic grasslands called the tundra." (p. 594) No further explanation is made of the topography. Although the Arctic Circle has been included on the map, it is left entirely up to the teacher to explain and clarify these implications and partial explanations made in the book.

Several geographic concepts could have been taught in conjunction with this map. A study of spatial interaction and location starting with a discussion of the transportation routes shown, would lead to an examination of the relationship between Canada and the United States. Since this is a United States history book, Canada could justifiably be discussed only in reference to this relationship. The authors should have eliminated unrelated generalities, and limited themselves to the concepts and ideas which are important in this context.

Title of Map: Dams Built in the 1930's
From The Free and the Brave, Graff, p. 639.

This is a gray, shaded map, which is quite effective in showing physical relief in the United States. Major rivers are shown in blue, with the dams in bright pink, which highlights the point of the map. Also shown on the map is the dust bowl, and the general area which was included in the

Tennessee Valley Authority project (Figure 2). The map is well located in the text, although it is not referred to specifically in the writing.

In the text the purposes of the TVA are explained, as well as its results. However, the concept of change could be stressed a great deal more when discussing the results of the TVA on the residents of the area. General comments are made, saying that it improved their lives and their farming methods, but no details are investigated. In other words, using the TVA for the focus of attention, more geographical concepts could have been brought out. The concept of change, although illustrated well on the map, should be explained more thoroughly in the text. Location of the various places is shown very well on the map, although some would debate the location of the dust bowl.

The following two paragraphs are also very general. Dams built in the West -- Bonneville, Hoover, Grand Coulee -- are mentioned, but it is merely stated that they ". . . had a beneficial influence on the lives of the people." A very brief paragraph is written on the dust bowl. However, the text assumes that the reader knows what the dust bowl is, and where it is. Roosevelt's project of planting a belt of trees in the area is merely mentioned in passing.

In summary, the map is good, emphasizing the relative data very clearly. However, the accompanying text is far below the standards set by the map. Comments are vague,

giving the impression that these subjects are unimportant in the historical development of the United States. On the contrary, students can become motivated in studying such subjects. With such a map, some time should be devoted to a discussion of these areas of growth in the United States. As a result, the concept of change would gain much more meaning, and discussions of location, spatial interaction, and internal coherence would be more stimulating. However, the author presents these brief paragraphs in a rather uninteresting manner, and one result is likely to be apathy on the part of the students.

Title of Map: American Industry, 1860
From Discovering American History, Kownslar, Frizzle, p. 458.

This map is a good example showing functional regions, and spatial distribution (Figure 3). It is a map of the United States, showing its industries, and mining regions, as they were in 1860. The mining regions are shaded, but do not eliminate the symbols of industries on the map. Thus it is possible to see the relationship of one to the other. Spatial distribution can be better understood as the student sees the dispersion of various industries, and their density in various parts of the country. Principal manufacturing cities are also shown, although their names are not given. Thus site and situation are well represented. This results in a clear visual image for the student as he studies industries which were present at that time.

The map is located in a chapter concerned with background knowledge for a study of the Civil War. In the pages preceding this map was a discussion of population growth, with a map showing the distribution of slavery, and after the industry map is a discussion and map of agricultural products of 1860. Since the map of agricultural products of 1860 is in the same scale, and is on the page facing the one on industry in 1860, the two are well located for purposes of comparison. This kind of comparison is an exciting motivational device for students.

Instead of expository paragraphs discussing industrial America in 1860, there are a series of questions. This is in keeping with the purpose and design of this particular book. The questions are thought-provoking, and not simple feed-back questions. The questions encourage comparison of the agriculture and industry maps, as well as the one showing distribution of slaves. For example:

When you compare these [agricultural and industrial] maps with your information about the slave population, what hypotheses can you make? (p. 458)

What products do you think are the greatest source of revenue for the North? For the South? (p. 459)

Thus, although there is no actual discussion of the material, the student is required to think and reason.

This is a good map: one which is very useful in the classroom. The scale is appropriate for the subject, and the key is complete. Political boundaries are drawn as they were in 1860, and while showing a variety of features, it is

not cluttered and confusing. It is the focus of attention, and the main source of information on the topic being discussed. Because of this, the student is forced to use and interpret the map.

Title of Map: Texas and the Mexican Cession
From Discovering American History, Kownslar, Frizzle, p. 287.

This map is designed to show territories added to the southwestern United States, from Texas to California. Because of its purpose, it does not include physical features, other than a few rivers. Rather, the political setting is shown, with countries and territories well labeled. (Figure 4) However, there are two errors in the use of rivers which relate directly to the political setting. First, the Gila River should be shown as the southern boundary of the Mexican Cession. Instead, this river is placed too far north, and is included in the cession. Secondly, in the text the Nueces River is referred to as the river which Mexico considered to be the southern boundary of Texas; yet this river does not appear on the map at all. Relevant textual references should appear on the map. Also, the Sacramento River should be drawn correctly, rather than extending northward into the Oregon Country, and never reaching the San Francisco Bay. Another error has been made in the location of the Alamo, which should be adjacent to San Antonio. Errors such as these cast doubts on the quality of the entire map, as well as other maps in the book. Small errors which are not

relevant to the point of the map are less noticeable, but high standards of accuracy should be maintained throughout cartographic representations.

When discussing the causes leading to Texan Independence in the text, the authors open the door for good discussions of cultures, and what can happen when they clash. Population distribution, regionalism, and interdependence, all geographic concepts which students should master, would relate to an appropriate map. Studies could also be made of the presence of slavery, and the attempt to have Roman Catholicism dominate the area. These problems are mentioned briefly in the text, and could serve as good backgrounds for making these concepts more meaningful. Unfortunately this book does not include the necessary maps and charts. By including more specific information about the presence of slaves in the Republic of Texas, and how this affected their relationship with Mexico, the importance of spatial distribution -- as opposed to a superficial examination of it -- would gain meaning. The same would be true if a deeper discussion of the Mexican influence in the area, not only of Roman Catholicism, but also of their land use customs, were discussed in the same way. However, at least these subjects are mentioned, thus opening the door for individual work on the part of the students. Since this particular book was written with the idea of having students think for themselves, and really get involved in history, this map and its use is

in keeping with the goals of the authors.

Title of Map: Plan of the City of Washington
From Land of the Free, Caughey, Franklin, May, p. 192.

This is a copy of Pierre L'Enfant's plan for Washington, D. C., as drawn before its construction (Figure 5). The map could serve many useful purposes, among them an increased understanding of location, spatial distribution, and internal coherence. The map is complete with scale, north arrow, river depths, and the names of major streets and buildings. In addition to this, the text on the remainder of the page discusses the planning of the city, who was in charge, and some details such as why the Capitol and White House are located two miles apart. Thus, although the map is not referred to specifically in the written work, they do complement each other.

The advantageous part of this map is the many uses that could be made of it. In a discussion of location, both site and situation would become important. Its immediate site could be discussed with this map, and then by adding a map of the states at that time, its situation in relationship to the other states could be discussed. The location of even more specific places -- the Capitol, President's House, the plotting of streets -- would all gain meaning and insight. Internal coherence and spatial distribution would also gain new meaning when related to the reasoning behind the planning of the city.

Another meaningful discussion could be based on the markings of the river depths. Why was this important on a map of a city? What historical significance would this have? Did the river and its depth have anything to do with choosing Washington, D. C.'s site? What about the swamps in the area? All these questions are appropriate, and would arouse interest among the students.

This map is a good addition to the book -- there should be more of them. It is well-correlated with the written material, and because it is an original plan for Washington, D. C., it would attract more interest than a map of the city as it is today. Also, because of its age, this map is very helpful in correlating historical and geographical studies.

Title of Map: Where 132 Million Americans lived in 1940
From Land of the Free, Caughey, Franklin, May, p. 581

This map is meant to show spatial distribution. The country is divided into four geographic regions, with the population for each region given. In addition to this, the ten largest cities of the United States are listed, and keyed on the map. A color key indicates settled areas, and there is a designation of where the center of population was in 1940 (Figure 6). Thus, all three parts of spatial distribution, dispersion, density, and pattern, could be studied in the use of this map.

Basic problems do exist, however. There is no dividing line between northeast, midwest, south, or west. Perhaps

this is justifiable in light of the difficulties of defining the regions. However, since a definite population of each area is given, some boundary indications based on the figures should be possible. Density could be discussed only in terms of the location of the majority of the cities, since this is not a symbolized map. In other words, there is no way of knowing the relationship between the population of Oregon and California, since a system such as a scattergram was not used. The study of dispersion is shown only in a generalized way. The indicated center of population would aid some in a discussion of dispersion. A study of pattern would apply to an examination of the location of the ten largest cities in the United States at that time.

Regarding the written context of the book, this map is ignored. Bound in the middle of the chapter on the second World War, no mention is made of it, and the subject matter is relevant only in that they are both based on the same time period.

This map is not as good as it potentially could be. But it is good in that it introduces a subject and concept which is often left out altogether: the spatial distribution of the population of a country. Taken as is, the map would be useful. If combined with some appropriate research, it would become valuable. It could be important to a discussion of change, when combined with maps showing the movement of the center of population throughout the country's

history. An innovative teacher could make excellent use of this map; a combination of good teacher, good context, and appropriate research would make it very valuable.

Title of Maps: The Panama Canal and Trade Routes; Panama Canal
From West's Story of Our Country, Gardner, pp. 458 and 459.

The full-page, color map of North and South America is designed to show the major water routes used by ships before and after the building of the Panama Canal (Figure 7). The visual image comes through well, with green arrows indicating routes used after the canal's construction, and red arrows indicating the longer passage used previously. However, although latitude and longitude are on the map, there is no scale. Since the canal was built specifically to save time and distance, a scale is requisite to make the map truly meaningful. Students are impressed by, and interested in comparative figures which can be presented in examples of this type. If a scale were presented with the map, it could provide valuable practice in the use of this geographic tool.

The geographical concept of the importance of the canal relative to spatial interaction is apparent on the map. The importance of the location of the canal is stressed. Theme of change is implied with the change in the route, and the resultant effects on various ports and trades.

There is no reference to the Panama Canal and its

construction on the surrounding pages. The topic is covered ten pages earlier, with the help of another small map (Figure 8). This smaller map is in shades of gray and blue, and is very poorly done. It was put here to point out the fact that when passing from the Atlantic to the Pacific Ocean, through the canal, ships travel from west to east, instead of the assumed east to west. This is interesting and could serve both as a motivational device, and as an interesting lesson in the cardinal directions, though, of course, this is not really the most important feature of the canal.

A definite problem with this map is that the land is blue, and the water bodies are gray. Therefore, it takes some time to become oriented, and feel like you are familiar with what is being shown. The various features are well labeled, and there is a directional arrow, which is helpful. Since this is a large scale map, which spans barely one degree each of latitude and longitude, it is very difficult to get your bearings. However, if the coloring were reversed it would be helpful. Even more important, if this map and the previously-mentioned trade routes map were on facing pages, they would complement each other beautifully. The large scale map of the canal shows explicit detail, including the presence of large lakes around the canal. The continental map shows the large, over-all purpose for the canal, and its location in relationship to surrounding land masses. Thus, concepts of spatial interaction dominate both maps,

with site being emphasized in the large-scale map, and situation being emphasized in the small-scale map.

When considering that two maps, plus a fairly complete dialogue on the building of the Panama Canal, are all present in this book, it becomes even more amazing and discouraging that the information was not used more effectively. Instead of a well-coordinated, interesting experience, there are fragmented, scattered bits of knowledge which, instead of complementing each other in a well-developed unit, are lost in a maze of other information.

Title of Maps: Natural Regions, Soil Types, Climate, Rain-fall
From West's Story of Our Country, Gardner, p. 46.

This series of four small maps showing various aspects of the physical environment of the northeastern United States could be quite useful (Figure 9). However, because of the way they are done, they do not achieve their greatest potential. Each map is in full color, and has a key. The first map shows latitude and longitude, but the others do not. This is a mistake, especially since climate is closely related to latitude, and two maps without latitude and longitude deal with various aspects of climate. Beyond this, the maps have been simplified a great deal. The lines drawn are smooth and flowing, and in one case there is a simple line which turns a direct right angle. This indicates that the regions have been generalized a great deal, and are not

true representations. Since the maps deal with detail, they should be representative and specific.

The terms used in the key are also general, and appear to be rather simplified for an eighth grader. For example, on the rainfall map there are three categories: very heavy rainfall, heavy rainfall, and moderate rainfall. These classifications are poor for several reasons: most eighth graders understand better the meaning of 40"/year; if they do not understand this, they should learn it; the terms are relatively meaningless. To one person, heavy rainfall means 80"/year, while to another it means 40"/year. They are very non-descriptive terms, and render the map useless, other than for very broad generalizations. The terms used on the climate map also use general descriptions such as moderately cold winters, hot and rainy summers. In order to really understand a region, it is necessary to be more specific than this.

These maps are located in a three-page section devoted to understanding maps. The importance of scale is stressed, but no scale is shown for the four maps. Latitude and Longitude are discussed in some detail. And there is some discussion of the four maps. Here some attempt is made to show how these various aspects relate to each other, and thus the concepts of internal coherence and regionalism are brought out. The student is asked, "If you were an early colonist looking at these maps, [which area would you move

into] and expect to make a living from farming? Why?"

(p. 45) Here the student is required to synthesize the data, and come up with an appropriate generalization of the whole.

This section of text and maps is based on some sound ideas, but it needs to be upgraded, so that it is more scientific. If it were more scientific, accurate, and descriptive, hopefully it would result in the students adopting a more scientific method. It would be more challenging to the individual, as well as more realistic, and relevant.

Title of Map: The Louisiana Purchase
From One Nation Indivisible, Heller, Potter, p. 176.

This map shows the North American continent, with light shading to indicate the Rocky Mountains, and major river systems drawn on in black. The territory included in the Louisiana Purchase is shaded in, and the route which Lewis and Clark used in exploration is also shown (Figure 10). The concept of location is a basic one to this map, for it shows the situation of the added territory in relationship to the rest of the continent. Theme of change is inherently part of most maps of the Louisiana Purchase, as they show the change in the United States. However, neither of these concepts are brought out specifically in the map.

On the map itself, there is a confusion which tends to limit the usefulness of the map -- both generally, and regarding the concepts mentioned. Political boundaries are ill-defined, and incomplete. Although it is generally

accepted that the boundaries of the purchase were uncertain, this map fails to give a clear idea of the general extent of the territory. The shaded area is to show the territory purchased, but at the same time there are fragmented political boundaries which do not coincide with the shaded area. A line extends inland from the Pacific Ocean across northern Canada, but stops abruptly. The same fragmentation occurs with a boundary of the New England states. The Louisiana Purchase itself is intermittently enclosed with this same symbol. Spanish Territory is clearly labeled and indicated, but the British and American territories -- not to mention other holdings which are not shown -- are confusing. If this was done because the boundaries were debatable, this should be indicated. A note to the teacher (this is in the teacher's edition) indicates that the exact boundaries of the purchase were not clear. However, there is no indication of this to the student, and there is no indication of this reason for other border confusions.

In the written description of the Louisiana Purchase, no mention is made of the map, even in reference to the location of the added territory. An allusion is made to the change it caused in the country as it more than doubled its size, and some reference is made to the transportation in the newly acquired territory, which could lead to a discussion and understanding of spatial interaction. No mention is made of the actual physical geography of the region, which

should have been included, as it would be important as background knowledge for the future study of the westward movement.

Title of Map: Early Railroads in the United States
From Story of Our Land and People, Moon, Cline, p. 357.

This small-scale map of the United States shows the present political boundaries of the continental states, with early railroads superimposed on the map (Figure 11). This automatically raises the question as to whether the map is attempting to emphasize an historical development or a current political situation. A larger scale map, with the political boundaries drawn as they were at that time, as well as major physical features, would make the routes of the various railroads more meaningful. Another missing link is the absence of a date on the map. There is no indication as to whether the railroads on it were built by 1850 or 1900.

The text surrounding this map discusses the development of railroads from the first steam locomotive to the Civil War. The emphasis is upon the first short-run railroads in the East, and the organization of the New York Central Railroad system. This is followed by a discussion of the problems involved in building a railroad to the Pacific coast, and why this was not accomplished until after the Civil War.

In attempting to correlate the map and the text, it is

quickly discovered that the only thing that they share in common is the subject of railroads. Overlooking the fallacies mentioned above in reference to the map, it covers a much greater length of time than the text. It is small scale, and therefore shows only the completed, large railroad lines, instead of the small, fragmented ones mentioned in the reading. Even more amazing is the fact that the map includes -- even appears to emphasize -- the railroads built from the Mississippi to the Pacific. Six major lines are shown -- not one of which is mentioned in the text at this particular point.

The obvious conclusion is that the map was chosen at random, among early railroad maps, rather than specifically to coordinate with the text at this point. The map should be eliminated. It would be much more valuable to have a large-scale one of the eastern United States, showing the fragmented lines, and the resulting problems of circulation and accessibility. Then, when discussing post-Civil War railroad development, a map such as the one described in the first paragraph of this analysis would be more appropriate. Then the pertinent concepts of spatial interaction and spatial distribution could be taught effectively.

Title of Maps: Post Roads in 1774; Post Roads in 1804
From Living in Our America, Quillen, Krug, p. 400.

These two maps show the increase in post roads in the eastern United States in a thirty year span. They are plain

gray maps, with the roads in black, and cities at the junctions, as the only additions to the basic map. There are no physical features at all, and the border between the United States and Canada has not been put on (Figure 12). Possible concepts which could be taught through these maps are spatial distribution, spatial interaction, and the theme of change. However, the effectiveness with which they can be taught is limited by the text.

The theme of change is the most obvious, and most effectively shown concept which could be demonstrated here; the purpose of the map is to show this, as can be seen in the title. The explanatory note states, "The increase in number of post roads in thirty years gives you a good idea of how fast our country was growing in the period which followed the war." The comparison of the post roads of 1774, which were almost entirely limited to coastal towns, with the many inland roads which later developed, is interesting and informative.

Spatial distribution can be visualized through the map, but if a teacher wanted to expand and deepen real understanding, he would have to use other sources. One other source -- which the book should have included -- is a map showing physical features. By comparing the two, the reasons for the location of various roads might become more comprehensible. An overhead transparency, with a base showing physical features, and an overlay of each of the post road

maps, could prove very revealing and educational. Spatial interaction would also become an integral part of such a lesson.

The context of the book does nothing to promote these concepts. First, it does not explain what a post road is, or how it is different from any other road. Since it is specifically designated as a post road, this term should be explained. Second, it is not located in an appropriate section of the book. It is in a section on transportation, but in a later period. The surrounding text is discussing roads and railroads from 1850 onward, often in areas west of those shown on the maps. These maps belong in a chapter two hundred pages earlier, entitled, "Over the Mountain Barrier" (p. 224).

In conclusion, it is evident that these maps could be useful and effective. However, their limited structure, and poor location, make them inappropriate. The simple placement of them in the earlier chapter would increase their value. As they are now, it would take a well-prepared teacher, with creative ability, who has thoroughly examined the entire book, to put these maps to good use at the right time.

Title of Map: Settlers Cross the Appalachians
From This is America's Story, Wilder, Ludlum, Brown, p. 309.

This is a fairly large-scale map of the eastern half of the United States. The focus of attention on the map is the arrows, which show routes and directions used by

people to cross the Appalachians (Figure 13). In the context of the book, the map is referred to in describing routes which the settlers used -- especially in reference to rivers. The map could be useful in discussing modes of transportation, accessibility and circulation, as well as population dispersal. However, none of these topics are brought out in the text. Instead, the questions in the note under the map are simple observation questions: "What was the dividing line between the Old Northwest and the Old Southwest? What settlements shown here were in the Old Northwest? In the Old Southwest?" The only suggestion for looking for settlement patterns is in a note to the teacher (this is in the teacher's edition), mentioning that most settlements were located along bodies of water. Thus, the authors have not utilized the map to its fullest extent, in reference to historical events.

In drawing the arrows indicating routes used, wide, general lines are used. The width of the arrow in itself is confusing, since sometimes a wider arrow can indicate a more heavily traveled route. Also, although wide arrows are adequate for showing very general movements, they are not good for showing specific routes. These arrows often go directly across mountains, without indicating that the settlers took advantage of valleys and rivers to ease their trip. In other words, the site is not shown in relationship to the situation. Because of the use of this general technique, accuracy

is lost.

Another problem with this map is that there are some details put on it which are not explained, and therefore seem irrelevant. For instance, the Natchez Trace, and the Western Reserve. When the Western Reserve is explained in the text some ten pages later, no reference is made to the map. According to the index, the Natchez Trace is not mentioned in the book at all. If features such as these are put on a map, they should be explained somewhere within the text.

The combination of geographical factors of a mountain barrier, and the cultural factors of the spirit of independence of the settlers is brought out in the text in a section describing the governing of the new territories. The idea of accessibility could be stressed more, however. Pattern of settlement is brought out in a discussion of the system of dividing land into townships and sections. But none of these factors were adequately shown on the map.

In using this map, a teacher could combine geographical concepts and historical development. The map lends itself to this, and the text at least suggests some relationship between the two. This is evident because it was considered necessary to indicate mountain ranges and river systems. However, because of generalities of the map, and omissions in the text, it would require some special effort on the part of the teacher to make this map an effective learning device.

Title of Map: Main Languages of Contemporary India
From Our Widening World, Ewing, p. 203.

The dispersion of the twelve major languages of modern India is the only subject of this map. All other features -- both physical and cultural -- have been excluded. Because of the resulting impact of this simplicity, this map is very eye-catching (Figure 14). It should be noted, though, that complete lack of physical features makes definition of the regions difficult. It is in black and white, and of a relatively large scale. However, the scale is not represented on the map, and it could add interest to it. With the help of a scale, India's size could be compared with the United States, or some other region with which the students were familiar, and thus give them an even greater understanding of the complexities which result from the presence of so many languages within a political region of this size.

In addition to the clarity of the map, the corresponding text is illuminating and helpful. There is a section entitled "Language Problems" which starts on the same page as the map, and includes a specific reference to the map. It brings out the concept of regionalism in connection with the languages, and elaborates by relating other types of regions which are affected by the language region. Thus, internal coherence is brought into the discussion. The strong loyalties of the people of each language group is discussed, along with the results this has on political

national unity, and a national language. This important aspect of language diversity is also basic to attempts of the national government to unify the people through educational, agricultural, and industrial projects.

One criticism of the map is that the area where Dravidian languages are spoken is shaded, but there is no explanation in the text about this. Some historical reference is made to the Dravidians forty pages earlier, but there is no mention of them in this section. Because the area is shaded in, it is the focus of attention; one immediately assumes that there is some special significance to this area, which will be discussed. However, the only explanation of the shading is a note, which could be considered a key to the map: "Shading represents areas where the four Dravidian languages are spoken." The reader could assume they are very closely related dialects, such as varieties of English spoken throughout the United States, or that they merely came from a common historical background, such as Germanic or Romance languages. Another problem with this shading is that the reader might assume there are two major language groups -- Dravidian, and the "other." These questions and doubts could minimize the true purpose of the map, and instead result in a meander to a minor point, and the ignoring of the major concepts.

Overall, however, this map is effective, and could be very useful in the classroom. Major geographical concepts

such as regionalism, spatial distribution, and internal coherence are all discussed in the text, and visualized by the map.

Title of Map: Physical Features of India
From Our Widening World, Ewing, p. 145.

In spite of its title, this black and white map does not show physical features other than rivers. This is because the features are not drawn in. Rather, they are written in. There are no symbols to show topographical features (Figure 15). Rivers are drawn on and labeled, and an occasional "plus" (+) indicates a particular mountain. Because the map is not in color, students become lost in a maze of words, instead of becoming involved in a topographical pattern.

Even the written word can be confusing. Mt. Everest is labeled, and symbolized with a plus. However, in western India a plus is labeled, "Site of Mohenjo-Daro," with a slightly different type of lettering. Are they both mountains? If so, why the variation in wording and lettering? This would confuse the student, as he may attach some significance to these differences, and an explanation would be required of the teacher. It is nice to have places mentioned in the text located on a map, but this particular archaeological feature does not belong on a physical features map. Another problem is the labeling of the high hills of southern India. One is called the Western Ghats. The other is

labeled Eastern Ghats, but just under those words, is the word Carnatic. Since the word is the same type face, it poses the question of whether the "Carnatic" is part of the Eastern Ghats, or if it is some other series of high hills.

When using words instead of symbols, a great deal of accuracy is lost. Are the various mountain ranges located exactly where the letters are? Is the elevation of each mountain range identical? Why is the Khyber Pass, which is shown, so important, when it is not even in a mountain range? It is written some distance from Hindu Kush, which the text describes as a very high mountain range. In addition to these problems, no political borders of India were drawn in, leaving doubt as to exactly where the country is.

The map is located in a section describing the physical geography of India. The site and situation of various places are discussed, and some idea of spatial distribution can be gained. However, the actual correlation between the written word and the visual image is negligible. There is a discussion of the large river valleys, which form a plain; the student cannot visualize this from the map given. Regionalism is implied in a discussion of this river valley region. However, the same problem still applies. The authors do explain what is meant by "ghat," although there is no explanation of why it might be so named. "Carnatic" is also explained, and although the same type set used for Eastern Ghat is used for Carnatic, one is a series of high hills,

while the other is a plain. The resulting confusion is frustrating, and needless.

A note at the top of the map indicates it is to be used in conjunction with a map on pp. 154-155. This map is in full color, and shows topographical features. However, it has no written labels, and is in an entirely different scale, over twice as small (Figures 16 and 17). Since there is no boundary indicated on the map on page 144, it is difficult to correlate it to the second map.

In conclusion, the first map is useless as it is. Although in an appropriate scale, the cartography is very poor, and does not fulfill the purpose of the map at all. It is possible to correlate this map to the second, but it is difficult, since the second one is of all of Asia. If the first map were done correctly, it would be very useful, and a great help to the teacher. It should use the color and topographic symbols of the second map in combination with the scale and labeling of the first. If done thus, it would truly be an instructional aid. As it is, it should not have been used in the book.

Title of Map: The Low Countries Under Philip II
From World History and Cultures, Habberton, Roth, Spears,
p. 298.

In examining this map, one finds that it represents a strictly political concept: showing what portion of the Low Countries was under Spanish domination (Figure 18).

This would be satisfactory if the text did not open up the subject of geography. The first sentence in the section for which this map is designed, states, "The map on this page will help you to understand the geographic background of the Dutch revolt." This leads the student to expect geographic information from the map. However, the only geographical concept which could justifiably be attributed to this map would be that of location. It does give the political situation of the Low Countries. It illustrates no other geographical concepts, therefore making the statement in the book somewhat misleading.

Another disparity between the text and map is in reference to Antwerp. This city is referred to as the leading port for European trade and finance of this period. However, on the map, Antwerp is not located on any body of water. There is no scale -- which is another drawback of this map -- but Antwerp must be about twenty miles from water. This creates a rather large credibility gap for the student.

There is yet another reference in the text which is not supported by the map. On the same page it is stated,

The Dutch resisted Spain with great courage. They were aided by the low, semi-flooded nature of their country, and by a clever and astute leader, William of Orange, who is also called William the Silent.

It then continues discussing the leader, and never again refers to the geographic nature of the country. The door is practically closed on one of the most interesting stories

of how man has dealt with his geographical environment. According to the book's index, it is never again brought up. At this point, where the subject has been introduced, the areal location -- site and situation -- should be dealt with, so that the students could discover how and why the geography aided the Dutch in gaining their independence.

Title of Map: Unification of Germany
From World History and Cultures, Habberton, Roth, Spears,
p. 327.

Although this map is basically political, there are some geographical concepts which are illustrated by the material portrayed, and add to its overall use. The concept of change is implicit in this kind of map, which shows Germany and its added territories from 1865 to 1871. A good teacher will also discuss regionalism, internal coherence, and location in connection with this map.

The map itself is in shaded orange, with different designs and shades to designate the territories as they were added (Figure 19). Places and political bodies are labeled only as they are pertinent to the map, which helps minimize confusion. One area which could be clarified by use of a different symbol is the distinction between the area ruled by the king of Prussia in 1865, and the states annexed in 1866. The two tones of orange are very similar, and it is difficult to distinguish between them. Surrounding countries are labeled, but are colored gray, which helps focus atten-

tion on the changes made in Germany. In spite of the attention paid to a good color combination on the map, there was evidently some confusion in its accuracy; there is a major error in the placement of the Boden See, and the flow of the Rhine River from that source. Inaccuracies such as this, while not pertinent to the purpose of the map, are misleading, and should be eliminated from textbooks.

Internal coherence is brought out nicely in the context of the book. For example, it states:

Most of the German states belonged to the Zollverein, a customs union which promoted free trade among its members. The Zollverein united the states economically, making it easier for the middle-class leaders of the nationalist movement to promote political unification. The Prussian government was modern and efficient. Prussia's schools were among the best in the world. All these factors favored Prussia as a leader in unifying the German states. (pp. 325-327)

Incredibly, this map does not illustrate this concept; the Zollverein is not shown.

Location and regionalism are not discussed. Although the formal political regions are shown on the map, and discussed in terms of their relationship to Germany, there is no discussion as to why any particular area was added as a unit. There is a good opportunity to discuss the Alsace-Lorraine region, as the book mentions that the people of this area wished to be a part of France, not Germany. However, this is over-looked. No reference is made to the site or situation of the various places discussed, why Bismarck thought they should be part of a unified Germany, or why they

were waged for in any particular sequence. For instance, why did Bismarck choose to make his first attack on two small dominions, Holstein and Schleswig, rather than some other area? Was it because of their geographic isolation in relation to Prussia and other European powers? Or was it simply because they were predominantly German people, although they were ruled by the Danish king? These questions could help students to understand history as it happened, and that leaders do have reasons for the actions they take, and their sequential order.

This map is appropriate for its purpose, and although not referred to directly in the text, it does blend in, and would be useful in the classroom. As with so many maps, its many possibilities are not exploited. A resourceful teacher could, however, make good use of it.

Title of Map: The Moslem World Today
 From The History of Our World, Boak, Slosson, Anderson,
 Bartlett, p. 759.

The regionalism shown on this map is cultural. The region which the Moslems dominate is, according to the title, the focal point of this map. However, due to the colors used, the Arab bloc becomes the focal point. A dark green is used to show Arab bloc countries, while a light green is used to show other countries which are part of the Moslem world (Figure 20). The eye is naturally drawn to the darker color. In addition to this, the key is incomplete. Due to

the title, it is assumed that the key would indicate the Moslem countries; to the contrary, the one color shown in the key is that used for the Arab bloc. The lighter green is not represented on the key at all. Finally, the map does not show a large enough area. The southern boundary of Sudan is off the map, as is the eastern border of West Pakistan. This leaves a great deal of doubt as to exactly how far the Moslem region does extend. In fact, since the title of the map is "The Moslem World Today," it should include a much larger portion of the world than it does.

Obviously, the map must be improved, so that it does not confuse the students. The title of the map suggests one purpose, while it is difficult to see where the purpose is carried out in the actual map. Either the title of the map should be changed, or the color symbols should be changed. The key should be complete, and clear. And the map should include the entire area which is being discussed. These are all basic to good cartography, and their absence here makes this map more confusing than illuminating.

The text does not help explain the map. It is located in a section which discusses the Moslem world, but the discussion is political, with emphasis on the importance of oil in these countries, and in turn the world's interest in them. The Arab League is discussed three pages after the map, but there is no mention of the Arab bloc. Are they the same? Consistency is important in clarifying issues

which tend to be naturally complex.

The quality of this map, and its lack of relatedness to the text, leave a great deal to be desired. A map is needed for this section, because often a student's knowledge of the area is hazy and incomplete. An accurate, clear map of the region, with good emphasis and backing in the written portion, would enhance the student's knowledge of the area. Because it would be less confusing and frustrating, it would prove to be more interesting.

Title of Maps: England and the Industrial Revolution:
Before (1700), After (1900)
From The History of Our World, Boak, Slosson, Anderson,
Bartlett, p. 506.

These maps are very effective in showing internal coherence. Included in the keys are population spread, coal fields, and industrial areas (Figure 21). The inter-relationships of these three features is visible on the map. In addition to internal coherence, concepts of spatial distribution, location, change, and regionalism can be discussed. The explanatory note supplements the investigation of these concepts. It emphasizes the growth in the number of urban centers, and related industrial centers. The questions in the explanatory note add to the relevance of the map.

The map is located in a chapter on the Industrial Revolution, but the map is not referred to specifically. The map would be better located if it were four pages earlier, where the text discusses the growth of towns and cities,

and population, and covers the reasons for the growth of towns in certain locations, such as near a particular power source. This would be useful in a discussion of internal coherence.

Another use for this map and the related text would be as a background for awareness of population increase. It shows a large population increase in these two hundred years. With the use of statistics, a teacher could relate this growth to an average, and to the present population growth. The theme of change as shown through this study would then relate to other changes -- urban growth, industrial growth, and changes in the desires and needs of the people.

This map is a very effective one. It is applicable to a variety of subjects, while at the same time it maintains some simplicity, and does not get lost in a maze of confusing, unrelated ideas. This would be a valuable source to a teacher who realized its potential.

Title of Map: Ancient Palestine
From Our World History, Black, p. 38.

At the outset, this map is confusing. Its title implies that Ancient Palestine should be on the map. However, no key or label indicates where Ancient Palestine is (Figure 22). In an explanatory note under the map, the title reads, "The kingdoms of Israel and Judah," both of which are labeled on the map. It is possible to assume that the purple area on the map -- which includes Israel and Judah -- is Ancient

Palestine. However, one would then expect to see all of Ancient Palestine. But the purple extends to one corner and two sides of the map, leaving a great deal of doubt as to exactly how large Ancient Palestine really was.

Phoenicia is also located on the map, and, in conjunction with the text, a good discussion could cover the concepts of change, and spatial interaction. It is mentioned that Phoenicians were the first great traders in this area, and as such they played an important role in the exchange of ideas and cultures. A map which shows a larger area of the eastern Mediterranean would be more useful in understanding Phoenicia's location in relationship with the countries it dealt with. However, this does not seem to be the purpose of this map.

Philistine is located on the map, also. In the text, Philistine is only mentioned passively as an invader of Palestine, which resulted in the uniting of the Hebrews. Because of this statement, the map is again confusing because there is no way of knowing if the map is showing Philistine before or after its invasion of Palestine. Also, the term Philistine is confusing because it is actually the people, while Philistia is their country. Therefore, the student does not know if this is the area where Philistines lived, or if this is a political region known as Philistia, but misnamed on this map.

Finally, this map appears to do more harm than good.

Because it is so confusing and ambiguous, the students would ignore it, or become completely confused by it. The only door left open for the teacher is to use an outside source to clarify the issue.

Title of Map: Resources Map of North and Middle America
From Our World through the Ages, Platt, Drummond, p. 417.

Resource maps can be very enlightening and helpful in a discussion of history and geography. Several geographical concepts such as site and situation, regionalism -- in fact every major geographical concept -- can be discussed using a good resource map as a primary tool. Therefore, it is very important that a resource map be well done, and specific. This particular map meets few, if any, of the requirements. It is too small a scale (one inch is 800 miles) for the detail that it should show. Rather than clarifying the matter, the symbols are equally vague and confusing. First, the same symbol is used for more than one resource. Silver, gold, antimony, zinc, copper, and other minerals all have the same symbol, drawn in the same size. They are differentiated only by minute printing underneath the symbol, signifying which mineral it is. Also, the symbols are completely out of proportion to the map scale. They are large -- one symbol might cover an entire state. In Oregon and Washington, four symbols are drawn and labeled -- fish, apples, hydro-electric plant, and sawmills. There is no indication at all of the presence of an industrial area existing in the

Northwest, and other than the TVA, it is the only indication of any hydro-electric power source on the entire map. Quebec, which has great power resources, has not even been included (Figure 23).

This map is located well in relationship to the written text. There is approximately three-eighths of a page of writing which covers "The Industrial and Agricultural Revolutions Spread in the Americas." Obviously, the writing can only be -- and is -- very general. One paragraph is devoted to the United States, one to Canada, and one to Latin America. One major resource in Canada -- asbestos -- is mentioned, but is not even shown on the map.

This book does continue later to bring out some geographical concepts which relate to the Industrial Revolution. Some emphasis is put on movements of people, and the development of cities and industrial areas. However, due to the very nature of the map, no correlation to it is possible. It would have been better to have left the map out entirely, or to put in one of a much larger scale, which would show specific instances of site and situation, interdependence, or change. Since this is a world history book, a specific example could be used, and then generalized to other situations.

Title of Map: Growth of European Russia
From Living World History, Wallbank, Shrier, p. 365.

Shaded colors are used quite effectively to promote the purpose of this map. With a background of gray and white, the size of Russia is shown at four different times, each addition being in a different tone of blue. Since this is a political map, no physical features are shown, but surrounding countries and empires are clearly labeled (Figure 24). This gives some idea of Russia's political situation at its height of power in 1796, although it does not indicate from whom Russia took over the additional territories. Also, there is no indication on the map of regional unity or spatial interaction. A map showing ethnic patterns of the region, or a physical map showing various trade and transportation routes would no doubt help the student to understand more thoroughly Russia's political situation at these various times.

In the reading, which should be associated with the map, one might expect to discover what controls Russia had over her new territories. Did she superimpose Russian dominance on the native peoples, or did she attempt to integrate the new areas with Russia, and eventually assimilate the new people into her culture? If this were discussed, an examination of the spatial distribution of various culture groups would add a great deal of meaning to the impact which political expansion can have. Instead, the reading which should be related to the map does not elaborate on the meaning

of the map, or even fully explain it. In one sentence ("During the 15th and 16th centuries two famous Russian rulers -- Ivan the Great and Ivan the Terrible -- extended the power of Russia and centralized its government"), the entire growth of Russia from 1462 to 1676 is covered. According to the map, it was during this time that Russia gained a great deal of territory.

Concepts of circulation and accessibility are only vaguely referred to in a discussion of Russia's need for a port on the Baltic and Black Seas. These concepts could be made much clearer with discussions of Russia's latitude, closeness to the Arctic Circle, and river transportation.

In conclusion, it appears that this map is quite limited. It has been used by the authors to show how much territory Russia gained in a period of three centuries. The period of time which this one small map covers necessitates it being a very general map. It would have been more effective had the time been limited perhaps to the period of Peter the Great and Catherine the Great's reigns. It was during this time that Russia gained her "windows on Europe." Spatial interaction could then be discussed in relation to the justification of political expansion, and the wars which result from it. As is, it teaches none of these concepts well, and is useful only as a general introduction to Russian expansion.

Title of Map: Industry and Empires in the 19th Century
From The Pageant of World History, Leinwand, pp. 390-391.

This two-page map is used as an introductory map to a new unit entitled, "The Meeting of Democracy, Industry, and Empire." It is a world map in gray, white, and blue, and shows physical relief in some detail. There is a key, and latitude and longitude are drawn in, although there is no indication of the equator, or any degrees. Areas shaded in blue are under foreign control, and the one symbol is to indicate industrial centers. Since the title says, ". . . in the 19th Century," there is some question as to whether these two symbols are representative of 1800, or 1899, or both.

Concepts of spatial distribution and location can be taught in connection with this map. The location of the places under foreign control could be examined in terms of relative location to other countries and continents. Using the world as the region being studied, the spatial distribution of the industrial centers would serve as a good basis for understanding dispersion. Spatial interaction would also be pertinent, as the spread of the Industrial Revolution was examined.

However, upon examining the map itself, it is quickly discovered that some of these ideas -- although theoretically possible -- are not practical when applied to the map. Spatial distribution as shown by the dispersal of industrial centers is on one hand the most effective use of this map,

while on the other hand it is impossible. The map is placed in such a way that the place where the two pages meet absorbs Great Britain, and most of France (Figures 25, 26, and 27). Since the Industrial Revolution originated in Great Britain, and spread from there, the map is deceiving. The symbol for industrial center is used only three times -- in Great Britain, France, and the United States. Since the first two countries are absorbed in the crease of the book, the one in the United States stands out, thus reinforcing students' mistaken notion that the United States is and has always been the leader in everything.

The location of areas under foreign control, as shown by shading, can be useful for a very general discussion. However, since there is no indication as to who controls what, this map would be useful only briefly, or as background reference material. Throughout this sixty-page chapter, there are only four more maps. The largest of these covers a fourth of a page, and they are all involved with the spreading empires, in Africa, the United Kingdom, Canada, and Australia. This does not give a complete picture of empires as they existed at this time. There is no map of industrial centers, and not even a discussion of its spread from one area to another. Thus the only basis for discussion of the spatial distribution and spread of the Industrial Revolution is the misleading map used as an introduction to the unit.

It would have been more effective to have a one-page

map, with England as the focal point, and arrows showing time and direction of the spread of the Industrial Revolution. Some discussion of this should accompany the map. Then, a color-keyed, full-page map of the world could have been used to show empires. This would lead to a better understanding of which countries dominated the largest portion of the world, and their relative locations. It is important to know not only this, but to understand why these particular areas were controlled by the various powers.

Title of Map: Early Migrations into Japan
From The Human Achievement, Petrovich, Curtin, p. 662.

This is a very general map, which is dominated by mainland China. All geographical features have been removed, leaving simple land masses and water bodies. Arrows have been superimposed to show general source areas of the early migrations to Japan (Figure 28). A rather basic question about this map is, how early? There is no indication at all whether these migrations were the first ones to Japan, or if they were made in 1500 A.D. The map leaves this in doubt. It is a very general map, which does not tell when the people migrated, or exactly where they came from.

The text does not aid in explaining the map. There is no reference to it in the text, and although the map is located in a section where the history of Japan is discussed, Japan has a very long history. A section entitled "Early

Japanese History" (p. 661), talks about three sources of the Japanese people. Since their reference points are Manchuria, Mongolia, and Malaysia, and none of these are on the map, either this is not the correct "early," or the authors made little effort to correlate written work with maps.

A good map showing the origin of the Japanese people could be useful, as well as interesting. Specific geographical concepts such as spatial interaction, theme of change, and internal coherence could be discussed. But a map which shows migrations must be accurate and informative in order to create interest. This one should label the specific sources of people, and put dates on each arrow. If Manchuria was their original home, that region should be labeled as such -- not as "Asia." Even more important is the type of people they were. In conjunction with a good, accurate map, there should be descriptive text about the people, where they were from, and their culture, so that a better understanding could be gained of the modern Japanese people, and of how they have developed through the ages.

This map could be a useful addition to the book, but if it were a choice of leaving it in as is, or removing it from the book, it would be more advantageous for it to be removed from the book, and for the teacher to construct her own. Maps are supposed to aid instruction, but this map is a hindrance, and confuses the matter.

Title of Map: Eastern Europe
 From Story of Nations, Rogers, Adams, Brown, p. 500.

Both political and physical features are depicted on this map, in shaded orange, black, and white. The mountains are in lighter orange, with no indication of altitude. The only rivers on the map are the main streams of the Danube, Vistula, and Oder, with no indication that these are part of river systems. The Dardanelles and Bosphorus are labeled, along with the Black, Adriatic, and Baltic seas. No mention is made of the Mediterranean. Politically, the countries of Eastern Europe are labeled, and some of the surrounding countries are also labeled (Figure 29).

Since the majority of the page opposite the map is entitled, "Eastern Europe: Geographic Setting," one assumes there will be a discussion of the geography of Eastern Europe. Instead, it is more of a description of the placement of the countries in the area, and their difficult position between communist East and democratic West, a point not depicted on the map. Some mention is made of site and situation, and accessibility. However, it could hardly be called a "geographic setting." The most "geographical" statement refers to the mountainous character of the region, which

. . . would seem to make them [East European countries] difficult to invade. Actually, however, there are several passes through the mountains which have for centuries permitted entry to wandering tribes, foreign armies, and peaceful merchants alike. (p. 501)

This is followed by the mention of the resultant variety in peoples, languages, and customs which prevail in the region. However, there is no indication of the location of these passes. A brief reference is made to the narrow straits of the Bosphorus and Dardenelles -- not as routes from Black Sea to Mediterranean, but as easily surmountable barriers between Eastern Europe and Asia.

In looking at this map and the accompanying text, one quickly gets the feeling that this general survey is so general that not much is learned. There are tremendous possibilities, however, if it were handled differently. A more descriptive map in terms of physical features could be very helpful in a discussion of spatial interaction, and theme of changes. Since the political boundaries are drawn in broad white lines, they dominate the map. According to the title of this section of the text, this map should deal with a geographic -- not political -- setting. Thus the political boundaries should be presented in a more subtle manner. The author has tried to present both, and has failed to present a complete picture of either.

CHAPTER III

STATISTICAL ANALYSES

This chapter contains statistics arrived at through detailed analyses of maps in textbooks. A total of twenty-three eighth grade United States history books and tenth grade world history books was used. Every map in each book was listed and tallied, according to twenty-three categories which will be defined here. The tally marks were then totaled for each book, and the concluding statistics comprise the bulk of this chapter. In chapter four, conclusions which can be drawn from these statistics are explained.

Maps could receive tally marks in several columns. The reasons for this can best be understood by reading the following definitions of the categories, and then examining the examples of the tally sheets. The only difference between the examples and the real tally sheets, is that each book required two or three pages to list its maps. Also, there was another column in which to make notes and comments about the maps.

The first tabulation given contains general statistics about the number of maps in the texts. This is followed by tabulations broken down into the specific categories. A concluding page contains a table summarizing the statistics.

The twenty-three texts examined are referred to only by number in the tabulations. These numbers correlate to the texts as listed in the table in the appendix.

DEFINITIONS OF CATEGORIES USED IN MAP ANALYSES

1. Political: This category is limited strictly to current political divisions. Consideration was made of the date of publication of the book, but the limitations had to be strictly enforced in order to avoid confusion with the historical category. An example would be a map showing the current political divisions in south-east Asia.
2. Physical Geography: A map which falls into this category must go beyond a simple labeling of rivers and oceans. It must show, through colors, or symbols, or both, topographical features such as elevation, mountains, plains, swamps, and/or other features.
3. Labeled Physical Geography: This includes physical features which are not shown symbolically, but are labeled with the written word. This happens quite regularly with a feature such as the Sahara Desert.
4. Historical: These maps show the world as it has appeared in the past. The theme need not be simply political, but could also show geographical, economic, or any other condition in an historical setting. For instance, a map showing the trails which were used in the west.

ward expansion of the United States, would be counted not only as a transportation map, but also as an historical map.

5. **Economic:** Economic maps include those which show some kind of economic area, or activity which supports an area's economy. It can include natural resources, trade areas, or industrial and commercial areas. It does not include specific transportation, as these are listed in another category. Thus, only if the transportation route is definitely labeled trade route, is it tallied in this category as well as in transportation.
6. **Cultural:** This category is limited to human aspects or characteristics, such as language, race, religion, or other cultural features. A map showing the Moslem world would be included here, as would one showing language distribution in India.
7. **Transportation:** As mentioned earlier, this category refers to transportation routes, systems, or types. Early routes of railroads, or present great circle airline routes, would both fall in this category. If a trade route is being shown, it would count both in transportation and economic categories.
8. **Climatic:** This is a narrow topic, limited strictly to climatic characteristics as shown on maps. Some of these might be rainfall, air currents, or average

temperatures. An example of a climatic map is one showing the monsoons in India.

9. General Introduction: This category includes maps used at the beginning of a chapter or unit, to introduce the student to the topic to be studied. The size of these maps varies from quite small, to two pages. But no matter what the size, they are usually quite general.
10. Atlas: An atlas section is included in several books, either as an appendix, introduction, or in the center of the book. They are usually in color, and cover several pages. Two-page maps of large areas were included in this category only if they were part of an atlas section; if they were scattered throughout the book, they were not included.
11. Cartogram: These are hand-drawings, based on pictures, paintings, or prose, which are not exact duplications of a real place. For example, a drawing of a typical manor house of the feudal era is often included in world history books.
12. Black and White: The first of the color categories, this one includes maps which use only black, white, or grays; no other colors can be present.
13. Shaded Color: These maps are done with a single color, such as blue, dominating the map. Various features are shown in different shades of the blue. Included in this category are maps which have no more than two

colors -- such as blue and green -- in various shades, and combined with white, black, or grays.

14. Color: Maps which use three or more colors are included in this category.
15. Size: The size recorded for each map is based on the portion of the page which the map covers. In other words, a map might cover two pages, a half a page, or an eighth of a page.
16. Key: If a map had any kind of key, it was included in this category. This means not only a specific legend, but sometimes there would be a sentence at the bottom of the map which served as a key. For example, "The blue area indicates land held by the Masai."
17. Scale: If a map had the scale in which it was drawn indicated on it, it was included in this category.
18. Latitude and Longitude: Maps which indicated the latitude or longitude in any way are included in this category. Sometimes this would mean the standard meridian and parallel lines. At other times it might be limited to just the equator, or partial lines at the edge of the map, which did not cross the entire map.
19. Directional Arrow, or Orientation Symbol: Any indication of direction -- usually in the form of a north arrow -- was included in this category.
20. Question: If there is a question in the text which refers to a map, then that map received a tally mark in this

category. The question might be in a chapter or unit review, but it must refer to a specific map. A general referral to the maps within the chapter was not included.

21. Explanatory Note: This is a note, apart from the main text, which discusses the map. It might refer specifically to the map, or discuss it in general; but if the note is located under, beside, or above the map, and obviously was intended to accompany the map, that map received a tally mark in this category.
22. Context: Sometimes an author will refer specifically to a map in the text of the book. It might be part of the prose ("As the map on this page shows, the Panama Canal dramatically shortened"), or it might do it in a note-type fashion ("The Panama Canal shortened the shipping route by several thousand miles. See map, page 356."). But if the map is referred to in any way within the text, it was included in this category.
23. Location: This refers to the location of the map within the text. This category was severely limited to maps located on the exact page on which they are referred to in the text. A map which received a tally mark in this category was referred to specifically in the text on the same page.

TABLE II
EXAMPLE OF TALLY SHEET (PARTIAL)

Page	Political	Physical Geography	Labeled Physical Geography	Historical	Economic	Cultural	Transportation	Climatic	General Introduction	Atlas	Cartogram	Black and White	Shaded Color	Color	Size	Key	Scale	Latitude and Longitude	Directional Arrow	Question	Explanatory Note	Context	Location
70				-			-							-	1/4								
71				-			-							-	1/2						-		
72							-							-	1/2								
79				-										-	1/2								
81				-										-	1/2								
95				-										-	1/4								
96				-										-	1/4								
103				-										-	1/2								
119				-										-	1/2								
125				-										-	1/2								
130				-										-	1/2								
136				-										-	1/4								

TABLE III

GENERAL STATISTICS

Percentage of each book devoted to maps:

<u>Text Number</u>	<u>World History</u>	<u>Text Number</u>	<u>U. S. History</u>
1	15.1%	12	11.9%
2	13.5%	13	12.6%
3	14.2%	14	8.7%
4	13.9%	15	8.7%
5	9.6%	16	11.1%
6	12.1%	17	12.6%
7	11.1%	18	9.9%
8	14.2%	19	6.4%
9	15.0%	20	8.6%
10	16.4%	21	9.9%
11	11.8%	22	10.9%
		23	6.3%
Average	13.4%		9.8%

The average tenth grade world history book has 98 maps.

The average eighth grade U. S. history book has 65.67 maps.

There is a total of 1,079 maps in the eleven world history texts.

There is a total of 788 maps in the twelve United States history texts.

The following seven tabulations are based on total maps in each category. The total number of maps in each category, in each book, are listed and totaled. Then, using the total number of maps in all world or United States history books, the percentage of maps which contain that particular characteristic is arrived at. After these seven pages is a chart which lists the percentages in a comparative system.

TABLE IV

	<u>Text Number</u>	<u>Physical Geography</u>	<u>Labeled Physical Geography</u>	<u>Climatic</u>
World History Texts				
	1	14	3	0
	2	8	2	0
	3	9	8	0
	4	10	3	0
	5	4	3	0
	6	6	10	1
	7	4	1	0
	8	17	0	0
	9	19	2	4
	10	6	18	0
	11	17	2	0
		114	52	5
Percentage of Total Maps		10.6%	4.8%	0.5%

U. S. History Texts				
	12	36	0	0
	13	33	1	3
	14	2	0	0
	15	7	0	0
	16	25	1	0
	17	14	0	0
	18	31	0	1
	19	17	0	0
	20	12	0	1
	21	8	0	1
	22	34	0	0
	23	5	0	0
		224	2	6
Percentage of Total Maps		28.4%	0.3%	0.8%

TABLE V

World History Texts	Text Number	<u>Political</u>	<u>Economic</u>	<u>Cultural</u>	<u>Transportation</u>
	1	8	5	2	8
	2	8	6	3	4
	3	24	3	4	7
	4	10	3	3	2
	5	10	11	3	7
	6	10	0	6	4
	7	1	2	3	6
	8	18	1	7	5
	9	7	1	7	12
	10	10	1	1	4
	11	19	0	3	4
		125	33	42	63
Percentage of Total Maps		11.6%	3.1%	3.9%	5.8%

U. S.
History
Texts

	12	2	3	3	8
	13	12	5	2	9
	14	3	1	0	6
	15	6	3	1	2
	16	9	6	7	8
	17	9	4	3	5
	18	8	7	0	18
	19	2	3	8	2
	20	8	4	1	11
	21	1	8	3	13
	22	9	8	2	11
	23	0	1	0	7
		69	53	30	100
Percentage of Total Maps		8.8%	6.7%	3.8%	12.7%

TABLE VI

	<u>Text Number</u>	<u>Key</u>	<u>Scale</u>	<u>Latitude and Longitude</u>	<u>Orientation Symbol</u>
World History Texts					
	1	44	33	11	0
	2	75	1	17	0
	3	73	42	16	0
	4	35	0	78	0
	5	43	30	6	0
	6	47	7	9	6
	7	62	14	67	2
	8	49	30	26	0
	9	50	24	15	6
	10	62	8	7	0
	11	65	0	2	0
		605	189	254	14
Percentage of Total Maps		56.1%	17.5%	23.5%	1.3%

U. S. History Texts					
	12	32	74	27	0
	13	53	9	43	1
	14	14	7	3	0
	15	12	18	4	0
	16	33	37	7	2
	17	18	0	13	0
	18	61	54	11	0
	19	24	1	1	2
	20	11	10	3	0
	21	56	0	12	0
	22	34	21	18	6
	23	27	0	0	0
		375	231	142	11
Percentage of Total Maps		47.6%	29.3%	18.0%	1.4%

TABLE VII

	<u>Text Number</u>	<u>Question</u>	<u>Explanatory Note</u>	<u>Context</u>	<u>Location</u>
World History Texts					
	1	0	120	28	2
	2	5	0	0	0
	3	8	85	35	7
	4	4	7	4	0
	5	0	1	0	0
	6	77	6	59	3
	7	0	32	0	0
	8	0	67	18	4
	9	0	11	2	0
	10	41	1	6	4
	11	0	0	3	0
		135	330	155	20
Percentage of Total Maps		12.5%	30.6%	14.4%	1.9%

U. S. History Texts					
	12	17	84	18	4
	13	11	31	14	1
	14	3	22	0	0
	15	37	2	0	0
	16	8	81	52	16
	17	1	63	9	0
	18	1	72	65	30
	19	0	7	0	0
	20	0	30	18	2
	21	50	21	37	20
	22	0	7	20	10
	23	0	10	0	0
		128	430	233	83
Percentage of Total Maps		16.2%	54.6%	29.6%	10.5%

TABLE VIII

	<u>Text Number</u>	<u>Historical</u>	<u>Cartograms</u>	<u>General Introduction</u>	<u>Atlas</u>
World History Texts					
	1	105	2	0	0
	2	82	0	0	7
	3	75	3	7	13
	4	73	3	7	0
	5	48	0	0	0
	6	67	1	0	0
	7	78	7	1	12
	8	48	2	27	0
	9	93	1	0	7
	10	62	1	38	7
	11	75	0	21	0
		806	20	101	46
Percentage of Total Maps		74.7%	1.9%	9.4%	4.3%
<hr/>					
U. S. History Texts					
	12	82	3	0	0
	13	58	0	0	0
	14	28	4	0	0
	15	30	1	0	0
	16	74	0	0	5
	17	69	3	1	0
	18	64	0	0	3
	19	35	3	3	0
	20	44	0	0	0
	21	72	0	0	0
	22	58	3	1	5
	23	41	0	0	2
		655	17	5	15
Percentage of Total Maps		83.1%	2.2%	0.6%	1.9%

TABLE IX

	<u>Text Number</u>	<u>Black and White</u>	<u>Shaded Color</u>	<u>Color</u>
World History Texts				
	1	5	115	0
	2	0	0	106
	3	9	63	37
	4	6	79	0
	5	70	2	0
	6	8	61	15
	7	8	63	12
	8	97	0	9
	9	0	50	60
	10	0	104	7
	11	10	83	0
		213	620	246
Percentage of Total Maps		19.7%	57.5%	22.8%
<hr/>				
U. S. History Texts				
	12	1	49	37
	13	0	45	36
	14	1	4	30
	15	38	2	0
	16	0	75	9
	17	41	31	15
	18	0	73	4
	19	3	35	3
	20	33	10	13
	21	10	68	0
	22	1	70	10
	23	0	35	6
		128	497	163
Percentage of Total Maps		16.2%	63.1%	20.7%

TABLE X
SUMMARY OF PERCENTAGES
OF TOTAL MAPS IN
EACH CATEGORY

	World	United States
Physical Geography	10.6%	28.4%
Labeled Physical Geography	4.8%	.3%
Climatic	.5%	.8%
Political	11.6%	8.8%
Economic	3.1%	6.7%
Cultural	3.9%	3.8%
Transportation	5.8%	12.7%
Key	56.1%	47.6%
Scale	17.5%	29.3%
Latitude and Longitude	23.5%	18.0%
Orientation Symbol	1.3%	1.4%
Question	12.5%	16.2%
Explanatory Note	30.6%	54.6%
Context	14.4%	29.6%
Location	1.9%	10.5%
Historical	74.7%	83.1%
Cartograms	1.9%	2.2%
General Introduction	9.4%	.6%
Atlas	4.3%	1.9%
Black and White	19.7%	16.2%
Shaded Color	57.5%	63.1%
Color	22.8%	20.7%

CHAPTER IV

CONCLUSIONS

Several revealing conclusions can be drawn from the statistics in chapter three. The first and most obvious is that historical maps dominate the texts. In the world history books that were examined, 74.7% of the maps had an historical feature in them; 83.1% of the maps in the United States history books had an historical feature. Since these are basically historical texts, this is justifiable to a degree; but other elements should be incorporated also, so as to present a complete, balanced history. History is not an isolated science, but actually includes the elements of many other areas of study. History is closely related to economic development, physical geography, and cultural differences.

However, the eighth and tenth grade history books examined do not reveal the relationship through maps. In the world history books, with 74.7% of the maps historical, only 3.1% are economic, 5.8% transportation, 3.9% cultural, and 10.6% show physical geography.² In the United States history

²Although these figures total to 98.1% of the maps in the average text, in fact they make up a smaller percentage, since several maps usually contain more than one element.

books, with 83.1% dealing with history, 6.7% deal with economics, 12.7% with transportation, 3.8% with culture, and 28.4% with physical geography. For both cases, this means that simple historical maps, showing political entities, dominate the history course. Essentially, then, they are political histories. Yet even in political study, elements of physical geography, transportation, and some other cultural features must be examined. For example, the events which led to the separation of Pakistan and India, are based on religious differences. In spite of this, none of the books examined had a map showing this, although it could be shown quite effectively through the use of cultural and historical maps. Likewise, the history of Europe should not be limited to political maps, but should include other features which can be integrated with them, to create a complete picture of historical developments.

The average length of the world history books analyzed is 732 pages, with 98 maps. Using the average statistics just quoted, of these 98 maps, 73.2 would be historical, 3 would be economic, 5.7 would deal with transportation, 3.8 would be cultural, and 10.4 would illustrate physical geography. Out of 732 pages, this is not very many maps devoted to ideas other than political history.

Labeled physical geography was used little -- 0.3% -- in these United States history books. However, it was used on 4.8% of the world history maps. In addition to using this

ineffective technique of illustrating physical features with the written word, the world history books that were examined used a much smaller percentage of maps which showed physical features symbolically. Of the examined United States history text maps, 28.4% were physical geography; of the world history texts, only 10.6% were physical geography. The world history texts had 17.8% fewer maps which symbolically illustrated physical geography. The conclusion is that world history texts do not appear to emphasize physical geography as much as the United States history texts do.

Atlases were not used in a majority of these books. Five of the eleven world history books had them, and six of the United States history books had them; only 47.8% of the texts examined had atlases. With an atlas in each book, each child has a personal reference tool, which might serve as a motivating device. In addition, the teacher can use it to supplement other maps in the book. However, the quality of cartographic representation cannot be judged solely on the basis of the presence of an atlas. Atlases often attempt to show too large an area in too small a scale; in addition to this, many atlas maps contain too many features, and the map becomes a confusing maze. In the atlas category, although there is a smaller percentage of world history books with atlases -- 45.4%, as compared to 50% in the United States history texts -- a larger percentage of the maps -- 4.3% as compared to 1.9% -- are in the atlas sections. This indicates

that world history texts with atlases tend to have a larger atlas section. If the atlas section is accurate, and includes a variety of maps which represent different aspects of life, this can be advantageous. However, large scale, specific maps within the text are invaluable, and cannot be replaced by atlases.

The technical aspects of maps in these books was disappointing. Scale is a very important feature of maps, and a major concept of geography. Yet, only 17.5% of the world history maps examined, and 29.3% of the United States history maps have the scale represented on them. The scale in which a map is drawn is important, for it can misrepresent the point which is being made. By using an inappropriate scale for maps, a point might be over- or under-exaggerated. For instance, in a study of land use, a very large scale map would show that within city boundaries, there is still vacant and/or agricultural land; a small scale map might show the entire city as being densely populated. Thus, an appropriate scale for each map must be carefully decided, and, in order for the teacher to use the map effectively and accurately, the scale must be given on the map. Teachers should use scale repeatedly, to train students to examine a map for its content, and to help them gain a realistic idea of the relative size of places; however, with so few maps in texts showing scale, this is difficult to do.

Keys are used more than scales on these maps. In the

world history books analyzed, 56.1% of the maps have keys, and 47.6% of the maps in the United States history texts have keys. In the tabulating of the maps, the evaluator was constantly aware of the lack of keys. Of the maps analyzed in detail in chapter two, 56% had keys, and 44% did not. Symbols and colors alike were used with no indication of what they meant. For example, the map of Ancient Palestine (Figure 22), used color with no key, and was a very confusing map. Likewise, the resource map of North and Middle America (Figure 23), had no key, and was covered with symbols. A key is necessary on almost every map, so that students can learn to use them, and can interpret the map without becoming frustrated over its lack of communicative skills.

Latitude and longitude are very helpful in understanding the relative location of places. For instance, if a student knows the latitude and longitude of the place where he lives, and maps indicate the latitude and longitude of places being studied, a relationship between the two can be established. Yet, only 23.5% of the world history maps, and 18.0% of the United States history maps indicated what the latitude and longitude were. The orientation symbol, or directional arrow, was used even less; 1.3% in the world history texts, and 1.4% in the United States history texts. These are especially necessary on maps when north is not at the "top" of the map. Both latitude and longitude, and the directional arrow are important in the location of places, and a good

cartographic representation should contain these ingredients.

The dominating factor in the color of the maps was that shaded color appears to be the most popular technique at this time. Of the 1079 world history maps, 57.5%, or 620, were in shaded colors. Only 19.7% (213) were black and white, and 22.8% (246) were in color. The shaded color maps were even more predominant in the 788 United States history maps; 63.1% (497) were shaded color, 16.2% (128) were black and white, and 20.7% (163) were in full color. This popular technique is acceptable, but there is a major drawback in that sometimes the colors are not distinctive enough, and thus the divisions are not clear.

The final four categories -- question, explanatory note, context, and location, are all related to how the map is used in the text. This is very important, because if the maps are not correlated to the text, they are often ignored by student and teacher alike. First, the location of the map in the book is very important. If it is not in the appropriate section, so that the map can be examined in conjunction with the reading, without having to turn pages, the map loses relevancy, and is not used. Although this category may have been limited too severely, the statistics still have some meaning. Only 1.9% of the analyzed world history text maps were referred to in the text on the same page as the map. In the United States history books, 10.5% of the maps were referred to in their paginal location. Thus, the great majority of maps were not referred to specifically on the

page where they were located. Many maps were several pages away from the related text. This is very disadvantageous in a classroom situation.

There were three ways in which a map could be used within a textbook: 1) referred to specifically in context, 2) have an explanatory paragraph, separate from the main text, which described or made use of the map, 3) referred to in a question in the chapter or unit review. The technique most used in both United States and world history books was the explanatory note. In the world history texts, 30.6% of the maps had an explanatory note; 54.6% of the maps in these United States texts had explanatory notes. A specific reference in the text was used with 14.0% of the world history maps, and with 29.6% of the United States history maps. Questions were used with only 12.5% of the world history maps, and 16.2% of the United States history maps. In all three instances, more maps in the United States history texts were referred to in one or more of these three ways. Evidently maps are not correlated to the text as closely in world history books as in United States history books. The correlation of maps to the text is very important to their use in the classroom, and their meaning to the students. If a map is merely chosen because of convenience, instead of appropriateness, and put in only in a sense of duty, instead of for its meaning, it is often useless.

In chapter two it was shown how maps could be used to

correlate history and geography. The basic geographical concepts can be incorporated into the maps and the text, and thus become an integral part of the students' social science courses. At times, the maps used in these textbooks were appropriate. This indicates an inconsistency in the selection of maps for school texts, and also creates a feeling of tokenism. The authors seem to feel that maps should be included, and yet they are not selective in their use of them. In order for this to be corrected, authors are going to have to be more demanding of themselves, and their publishers. The maps must be chosen with care, so that they accurately and effectively represent the points being discussed. The maps should be representative of good cartographic skills, so that they can be used to their utmost. When a good map has been carefully selected, it should then be incorporated directly into the text. It should be referred to specifically in the running commentary, and the student should not be bound by repetitive, mirror-type questions, but should be motivated to interpret the map, and use it to its fullest extent.

There should be a variety of maps, both in type and purpose. A map made several centuries ago can be motivating and useful; a good example is the one used in chapter two, of L'Enfant's plan of Washington, D. C. (Figure 5). There should also be effective topographical maps, used in relationship to transportation, economic, and cultural maps.

An isolated physical features map may be interesting for a moment, but when used in conjunction with other maps, it gains meaning. To limit maps to historical and political subjects is to limit the study of history. Instead, an assortment of maps which can be used to illustrate the six basic geographical concepts, and correlate these principles to historical studies, should be incorporated into textbooks. These ideas are an integral part of history, and cannot be left out.

Geography is very closely linked to history, and when the two are taught in an integrated fashion, each gains more meaning, and is more comprehensible. If maps are carefully chosen, they can serve as one of the major tools in correlating the two subjects, and helping the students to gain an understanding of the major geographical concepts. It is to the advantage of both students and subject matter to correct the faults of the textbooks used in schools. The use of maps in these books is poor, and often inexcusable; with a conscientious effort, it could become one of the best features of the books. More analyses such as this one need to be done, so that a clear understanding of the problem as it exists now can be gained. With this understanding, the problem could be attacked, and corrected.

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APPENDIX

TITLES OF FOLLOWING FIGURES

Slide

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- Figure 1: The Dominion of Canada Today
- Figure 2: Dams Built in the 1930's
- Figure 3: American Industry, 1860
- Figure 4: Texas and the Mexican Cession
- Figure 5: Plan of the City of Washington
- Figure 6: Where 132 Million Americans Lived in 1940
- Figure 7: The Panama Canal and Trade Routes
- Figure 8: Panama Canal
- Figure 9: Natural Regions, Soil Types, Climate, Rainfall
- Figure 10: The Louisiana Purchase
- Figure 11: Early Railroads in the United States
- Figure 12: Post Roads in 1774; Post Roads in 1804
- Figure 13: Settlers Cross the Appalachians
- Figure 14: Main Languages of Contemporary India
- Figure 15: Physical Features of India
- Figure 16: Asia
- Figure 17: Asia (cont.)
- Figure 18: The Low Countries Under Philip II
- Figure 19: Unification of Germany
- Figure 20: The Moslem World Today
- Figure 21: England and the Industrial Revolution: Before (1700); After (1900)

TITLES OF FOLLOWING FIGURES (cont.)

- Figure 22: Ancient Palestine
- Figure 23: Resources Map of North and Middle America
- Figure 24: Growth of European Russia
- Figure 25: Industry and Empires in the 19th Century
- Figure 26: Industry and Empires in the 19th Century (cont.)
- Figure 27: Industry and Empires in the 19th Century (cont.)
- Figure 28: Early Migrations into Japan
- Figure 29: Eastern Europe

THE DOMINION OF CANADA TODAY. In what direction is Canada from the United States? Notice that most Canadian cities and railroads are located near the United States.

Halifax is one of the important Atlantic ports.

The people who live in the region north of Lake Ontario and Lake Erie came into the Dominion of Canada as the province of Ontario. Some people in this area were also descendants of American loyalists. Others were Englishmen, Scots, or men from the British Isles. The principal cities of Ontario are Toronto (tuh-RAHN-toh) and Ottawa. Ottawa became the capital of the Dominion of Canada.

The Dominion of Canada spreads westward to the Pacific Ocean. After the establishment of the Dominion, Canada expanded westward, just as the United States did. British Columbia, the westernmost province, was once part of the Oregon

Country. This land, as you know, was held jointly for many years by Great Britain and the United States. In 1846, the United States agreed to give up the northern part of this region to Great Britain.

The first white people in British Columbia were fur traders. Now British Columbia is a lumbering, mining, and agricultural region. Its principal cities are Victoria and Vancouver (van-coo-ver), two seaports on the Pacific Ocean. Along the eastern boundary of British Columbia, the snow-capped Canadian Rockies offer some of the most beautiful mountain scenery in North America.

East of the mountains, a vast, flat ranching and farming country extends to the Great Lakes. This region has been settled since 1900.

Dams Built in the 1930's

Students may have visited
dams shown here and can
show them to the rest of the

Today the TVA alone affects the lives of over five million people,
and the other dams built during the depression
affect many, many more.

That it is today a model for river projects
like it throughout the world. A series of
dams on the Tennessee River created a
foot channel 630 miles long which was
quickly busy with water-borne traffic.

The TVA has done more than control
floods and generate electric power. It has
taught the farmers of the region better
ways of managing the land. It has built
recreational lakes, maintained wildlife
refuges, helped control malaria, and been
responsible for many other improvements.

Other dams. In the West the Bonneville
and the Grand Coulee dams were con-
structed on the Columbia River. The
Hoover Dam, authorized in Hoover's ad-

ministration, was built on the Colorado.
These, too, have had a beneficial influence
on the lives of the people affected by them.

Protection for the land. Land conserva-
tion was one of the chief activities of the
New Deal. For example, to deal with the
"dust bowl," the President ordered that a
shelter belt of trees be planted on the
Great Plains. The aim was to break the
stiff winds there, hold the soil tighter, and
draw moisture. Although there were many
jokes about the millions of little trees, they
stand today as mighty reminders of Roose-
velt's boldness.

Encouragement of working people. A ma-
jor group of neglected Americans was

What New Deal measures were concerned with conserving natural resources. (Besides the
TVA)

KEY

TEXTILES

CLOTHING

FLOUR AND MEAL

LUMBER

IRON AND STEEL

MINING

MINING REGIONS

PRINCIPAL MANUFACTURING CITIES

1. In what area of the United States is most industry concentrated? What area is the major producer of each of the crops shown?
2. What might explain these differences? (For help in answering this question, see Unit I, pages 50–54.)
3. When you compare these maps with your knowledge of the total population of the United States, what connections do you see?
4. When you compare these maps with your information about the slave population, what hypotheses can you make? Review what was said about hypotheses in “A Note to the Student.”

What were the major steps in the entrance of Texas into the United States? How did we acquire the area known as the Mexican Cession?

On what basis did Congress assume the right to annex Texas? Do we have any legal title to the area?

Why do you think Tyler and Polk were willing to risk war over Texas?

Why do you suppose Mexico was willing to fight for Texas? Why would Mexico refuse to give up Texas when it was threatened, as Spain gave up Florida?

What would you say were the most important factors in the United States' acquisition of Texas and the Mexican Cession?

How does this compare with earlier land acquisitions? How would you explain the similarities or differences?

Because of Major l'Enfant's far-sighted plan, the City of Washington today is one of the most beautiful in the world.

Jefferson had taken a personal interest in the planning of the Federal City. In his own home, Monticello, he had created an architectural gem. He submitted anonymously a plan for the Capitol, which did not win. He was successful in proposing the Negro astronomer and mathematician, Benjamin Banneker, as one of the three men to lay out the new city.

The head of this three-man commission was Pierre L'Enfant, an engineer who had immigrated from France during the Revolutionary War. The third member was a Quaker scientist and businessman, George Ellicott. L'Enfant, Banneker, and Ellicott drew up

Over this grid, the commission plotted diagonal avenues raying out from the Capitol and the President's house. At Jefferson's suggestion, the commission put these two avenues two miles apart — visible evidence of separation of the legislative and executive branches of the government.

The diagonal avenues, named after the states, were to be impressively wide. At their intersections, like the hub of a wheel, they were to widen into circles appropriate for state buildings. By six different approaches, there would be a view of the President's house, and, by six different approaches, a view of the Capitol.

in by 1944. All these men had to be recruited, trained, and equipped. Moreover, they had to be moved not just to Europe but to fighting fronts in many parts of the world.

To fight World War II, the United States had to build thousands of ships. Cargo vessels were needed to carry supplies to allies and to American forces overseas. Transports were needed to carry troops.

Warships of many kinds were required. Some had to fight submarines. Germany had many more submarines than in World War

One were developed during World War II. The most famous was the LST. The initials stood for Landing Ship Tank, but sailors who served on them said the letters really stood for Large Slow Target.

Tanks, trucks, and other vehicles were needed by the tens of thousands for the war. Automobile factories were changed over to make these vehicles. But the demands were so great that many new factories had to be built while the war was in progress.

*Where 132 Million
Americans lived in 1940*

- 1 New York, 2,455,000
- 2 Chicago, 2,192,000
- 3 Philadelphia, 1,031,000
- 4 Detroit, 1,023,000
- 5 Los Angeles, 1,504,000
- 6 Cleveland, 878,000
- 7 Baltimore, 859,000
- 8 St. Louis, 816,000
- 9 Boston, 771,000
- 10 Pittsburgh, 672,000

* center of population
■ settled area

NE	Northeast	36 million
MW	Midwest	40.1 million
S	South	41.6 million
W	West	14.4 million

Courtesy Panama Canal Official Photo

Panama Canal. Notice on the map (left) that the Atlantic entry to the canal is farther west than the Pacific entry. The Miraflores Locks (right), lower a ship to sea level as she passes through the canal on her way to the Orient.

Company had started a canal, but epidemics of malaria among the workmen and officials had caused the company to give up the plan. The United States Sanitary Service, organized by General Gorgas, spent three years draining swamps, oiling stagnant pools, and screening the houses. They succeeded in abolishing malaria on the Isthmus in the same way that yellow fever had been conquered in Cuba.

Building the canal was a marvelous feat. A range of mountains ran through the narrow Isthmus of Panama. To cut a channel through the mountains was a difficult task. Since the mountains could not be blasted away to sea level, locks had to be built to raise or lower ships to the level of Gatun Lake — 85 feet above the sea. It took thousands of work-

men — with dredges, locomotives, and vast quantities of supplies — to cut away the mountains and build the giant locks. There were many discouragements. Landslides from the mountains filled in the newly-dug channels. Foundations of the locks crumbled and fell away. However, the workmen labored heroically in the hot tropical sun.

Finally, the work was completed. In Washington, President Wilson pushed a button which let the waters pour into the canal. On August 15, 1914, the first ship passed through the "Big Ditch." The chief engineer, Colonel George Goethals, was the hero of the day.

The canal had cost \$400,000,000. What had the United States received for this amount? The sailing time of ships was cut greatly. The route

you expect farming in this area to be easier or more difficult than in the Low Flat region farther to the south? Why do you think so?

There are many other things to be learned from these maps. If early colonists had been able to look at such maps, they would have found it easier to find the location they most wanted. As you read about the places settled by the early colonists and how these people made their livings, look back now and then at the maps. They will help you understand *why* many things happened.

The exact boundaries of the Louisiana Purchase were not clear

- 4a. territory of Louisiana which controlled the mouth of the Mississippi River. Napoleon's purpose was to build up a French empire, with broad and valuable lands in the New World.

- 3 The many Americans who had pushed on into the land to the east of the Mississippi were much alarmed when they heard of this move of Napoleon. Instead of weak Spain, they were to have powerful France for a neighbor. If Napoleon succeeded in his wars, it seemed likely that before very long the United States would be threatened with French armies from the west. On the other hand, if Napoleon failed and the British won, it was entirely possible that Louisiana would be ceded to Great Britain, and that strong and dangerous nation would then menace the United States. What should Jefferson do?

The American minister to France was Robert R. Livingston. Jefferson sent James Monroe to join Livingston and the two were to try to buy from France the city of New Orleans and some of the French land near there. The American envoys found Napoleon ready to sell. The war had lately been going against him, and his dream of a French empire in America seemed very faint. The one thing which he needed more than anything else was money, and he showed great willingness to sell all of France's possessions in the New World for a small amount of ready cash. Monroe and Livingston had come to buy a small tract of land near New Orleans, but when they reported the matter to Jefferson in 1803, he decided that the United States ought to purchase the entire province of Louisiana.

Napoleon's dream for an empire included the island of Saint

The speed of building increased every year for many years. In 1916 the United States had over 200,000 miles of railway tracks. In railroad building practically stopped because railroad tracks had reached all parts of the country. In recent years a few railroads have been abandoned and total road mileage has decreased somewhat. But the United States still leads all other countries in road mileage.

Railroads were joined to form systems. In the early years, hundreds of very short railways were built to serve a few cities. Many of these

agents, you would have to take a stagecoach or a ferry to go from one railroad to another. Also, freight had to be loaded and unloaded many times. The railroads had tracks of different widths so engines and cars of one railroad could not travel on the tracks of other lines. It eventually became necessary to combine many of the local lines into railroad systems to get rid of confusion and delay.

The next step, therefore, was to unite many roads so travelers could go from one part of the country to another without having to change trains. This was soon accomplished through the efforts of a few far-

EARLY RAILROADS IN THE UNITED STATES

The increase in the number of post roads in thirty years gives you a good idea of how fast our country was growing in the period which followed the war.

States came, some of the railroad-builders were pushing westward and reaching a few of the frontier settlements. Life in those settlements changed when the railroad came. The stagecoaches and freight-wagon businesses suffered and many river steamers ceased running. The railroad became important in American life.

Western Travel in the Early Days

While railroads were being built in the East and in the South, most of the central West and all of the country across the Mississippi was getting along with wagon roads—and poor ones, at that. About 1850, or a little later, plank roads were being built, chiefly by private companies that charged

toll for using them. In Illinois, for example, about six hundred miles of roads covered with two-inch planks were laid. Poor as they were, the plank roads helped prairie transportation along.

Out west, traffic moved in prairie schooners, oxcarts, and stagecoaches. Roads were dusty tracks or muddy ruts, and westerners constantly agitated for federal wagon roads with a good mail service. All sorts of experiments were tried—wagons with sails to catch the wind, camels from Asia, pack trains of Spanish burros, mules, horses, oxen—just about every way man ever moved goods. Freight was a business for rough, tough plain men, and by 1860 more than twelve thousand men were in the business. About seven thousand wagons were used to transport western freight, and the freighters owned about eight thousand mules and nearly twenty thousand oxen.

STUDY

The arrows in this map show you the general routes followed by the pioneers who crossed the Appalachians to settle the West. (1) What was the dividing line between the Old Northwest and the Old Southwest? (2) What settlements shown here were in the Old Northwest? (3) In the Old Southwest?

papers are printed in the languages of the people. There are twelve people. In the west, a Marathi-speaking state

one of the twelve principal languages in modern India

MAIN LANGUAGES OF CONTEMPORARY INDIA

map of India and the color map of Asia on pages 154-155 as you read the chapters on India and Southeast Asia.

PHYSICAL FEATURES OF INDIA

riage with his cousin, Mary, the daughter of Henry VIII and Catherine of Aragon. His

3. Was a naval defeat, as the Spanish defeat on land for a nation such as Spain

SECTION 3. THE DUTCH REVOLT AND SPANISH DECLINE

A Philip's despotic rule brought a revolt in the Dutch Netherlands. The map on this page will help you to understand the geographic background of the Dutch revolt. The belt of land lying between what are now France and Germany was called Lotharinga when Charlemagne's empire was divided after his death. Our modern term, Lorraine, was derived from that. The region has led to more than one dispute between the two countries.

In Philip's day the northern part of the region, the Low Countries, was particularly important. Here were a number of cities that had become wealthy through trade and such industries as clothweaving. For a time the port of Antwerp was the leading European center of trade and finance. Cities like Ghent and Bruges, important in textiles, also became highly prosperous.

In his efforts to centralize his government Philip met with trouble in the Netherlands. His heavy taxes, which brought in a very important part of his income, were resented. He attempted to take away the local rights of cities and provinces. Many of the people had become Calvinists and again, it was Philip's general policy to tolerate only the Roman Catholic faith. When some of the Dutch nobles rebelled in 1567, Philip sent the feared Spanish infantry into the land. It was led by a noted soldier, the Duke of Alva. A special court, the "Council of Blood," was set up for the trial of persons accused of disloyalty to the "best of kings."

The Dutch resisted Spain with great courage. They were aided by the low, semi-flooded nature of their country, and by a clever and astute leader, William of Orange, who is also called William the Silent. His career parallels that of George Washington in some respects: he was a man of position and wealth; he struggled against great odds; he was austere and silent; and he held his followers together through his personal character and integrity.

seek revenge, so he sought to isolate and prevent her from forming an alliance with other powers. He persistently cultivated the friendship of Austria, whose alliance with the German states had been formalized in 1866. In 1867 Austria had formed the Austro-Hungarian Monarchy, joining the Austrian Empire with the Kingdom of Hungary. Prussia had its own constitution, but the Emperor Francis Joseph ruled over both: in Austria as emperor and in Hungary as king. Prussia was united in such common matters as foreign affairs and military services, each retained its own government and control of its internal affairs.

Bismarck's diplomatic maneuvers went so far that in 1873 the rulers of Germany, Prussia, and Austria met in Berlin and formed the Three Emperors' League for mutual protection. A few years later, when Prussia defeated Turkey in the Russo-Turkish

War, Germany concluded a military alliance of which Italy became a member in 1882. The Triple Alliance thus formed lasted until the outbreak of the First World War. Russia relented and the Three Emperors' League was re-established for several years, but Russia soon withdrew. By being nimble on his diplomatic feet, Bismarck maintained German leadership from 1871 to 1890.

D Industry and trade prospered under Bismarck's long administration. Although the German Empire faced many domestic problems between 1871 and 1890, Bismarck solved many of them and influenced the whole life of the nation. During the 1870's he had a commission improve the civil and criminal codes. He had measures adopted to unify the German railway systems; he created a new system of coinage and founded

The heart of the Moslem world is the so-called Arab bloc of nations. Despite rivalries among themselves, these nations feel an urge toward unity which first took shape in the Arab League. Later, Egypt and Syria formed a United Arab Republic.

cent of the free world's oil reserves. For years the countries of western Europe have depended on the Middle East for a large part of their oil supplies. European and American companies have furnished the capital, the machinery, and the technical skill which have made this flow of oil possible.

Oil is a source both of trouble and of power to the Middle Eastern countries. On one hand, Arabs see in it a continuing threat to their peace and security. In today's world oil is such a vital necessity that there is always the danger that a foreign power will interfere in an Arab country to protect its present oil holdings or to acquire a bigger supply of oil. One Arab is reported to have summed up the

French . . . would leave us alone and let us live in peace and freedom." On the other hand, the Moslems of the Middle East realize that oil is a source of great wealth and gives them bargaining power in dealing with oil-hungry foreign powers.

Oil caused a crisis in Iran. These mixed feelings about oil came to a head in Iran. Britain had a sphere of influence in Iran for many years (page 656), and the rich Iranian oil fields were largely under British management. In 1951 the Iranian government, led by an excitable prime minister named Mossadegh (*mahs'uh-dek*), seized the oil fields and refineries. Iran planned to run the oil industry solely for its own benefit. But the Iranians were not prepared for the job, and production

or if farmers raise more wheat or cotton than can be sold at a profit, they have to cut down on their production. Some of the steel plants close, or the mines shut down for a few months, or the farmer lets his hired hands go. Soon there may be thousands of people walking the streets looking for work.

In the last 150 years there have been several severe business slumps, or *dépressions*, not only in Great Britain but

from Sweden to the United States. New machines created a new group of workers who faced difficult problems. They were far less independent than farmer or skilled craftsmen. They were crammed together in the dingy houses of the growing cities. Working conditions were bad, especially for children. And unemployment, due either to new inventions or to the ups and downs of business, was a constant problem.

Significant changes came about in England as a result of the Industrial Revolution.

(1) What urban centers (areas with over 250 people per square mile) existed in England about 1700? Notice the many urban centers scattered over the island 200 years later. (2) Around what cities had great industrial areas grown up by 1900?

Kingdom, Israel, was rich and prosperous, for its lands were fertile. The Southern Kingdom, Judah, was poorer. Aside from Jerusalem, it had no large cities, and many of its people still led the life of shepherds.

Rise of the Prophets • From time to time the Hebrew people strayed from the worship of their god, Yahveh (or Jehovah). The northern tribes, especially, had come to worship the old local *baals*, or gods, of the Canaanites.

In this religious crisis some great prophets spoke up. Elijah fearlessly denounced a king of Israel for idol worship. Amos, Hosea, and Isaiah warned the people of punishment if they offended Jehovah. This punishment would include military defeat at the hands of the foreign powers which were threatening the Hebrews at this time.

Northern Kingdom Destroyed by Assyria (722 B.C.) • The Assyrians crushed the kingdom of Israel and destroyed Samaria, its capital, in 722 B.C. The little kingdom of Judah, however, escaped the Assyrian armies. A century later Jerusalem rejoiced over the fall of Nineveh and the Assyrian power (p. 35). But she had escaped one master only to fall under another, for Chaldea followed Assyria in control of Palestine. Judah now shared the same fate as Israel. In 586 B.C. Nebuchadnezzar destroyed Jerusalem and carried away many of its people into exile.

Persian Kings Restore the Exiled Hebrews • When, forty-seven years later, a Persian king, Cyrus, conquered Babylon, the Hebrews greeted him as their deliverer. He allowed the exiles who wished to do so

The Kingdoms of Israel and Judah • With which of the above locations are you familiar? What nations occupy ancient Palestine today?

fortress of Jerusalem and made it his residence. From his new capital David was able to extend his kingdom and raise his people to a position that they had never before enjoyed.

The Hebrews never forgot the heroic deeds of King David as a warrior, nor his skill as a poet and musician. Centuries later they revered him as the author of many of their religious songs, or psalms.

Solomon's Reign and the Division of the Kingdom • David was followed by his son Solomon, who collected great riches and delighted in display. Solomon built a magnificent temple to replace the old Hebrew

tors and combines are common, on the wheat farms of the Middle West. Canada lacks a sufficient labor supply. Yet Canadian industrial development is on the rise. The government has developed hydroelectric power and a system of railroads. There is extensive use of lake and river transportation. Canada's wealth of nickel, silver, copper, and asbestos, and capital

from both England and the United States have also aided Canadian industry. Since World War II, Canada's industrial progress has been remarkable.

Most Latin Americans are farmers, using backward methods. However, in Uruguay, Brazil, and Argentina, many modern agricultural machines imported from the United States are used. Except for coal, Latin Amer-

of the peasantry actually became worse; Catherine extended serfdom to over a million peasants who had formerly been free.

Catherine, like Peter the Great, wanted to expand Russian territory, especially in the south, where the Ottoman Empire seemed unable to offer effective resistance. She goaded the Turks to war in 1768, and by 1774 had won back Azov and territories on the Crimean peninsula, as well as free access to the Black Sea and the right to protect Christians living within the Ottoman Empire. A few years later she seized the Crimea, bringing about a second war with the Turks in 1787. A treaty signed in 1792 confirmed Russian ownership of the Crimean and other Turkish lands north of the Black Sea. During the same period Russia took part in the division of Polish territory (see page 371). When Catherine died in 1796, Russia had not only won its Black Sea "window" to the West but had become one of the great powers of Europe.

for herself, taking the title Catherine the Great. (She later became known as the Great.) Her husband, was in prison, probably with Catherine present, but she announced gravely that he had died of colic.

At the time of Catherine's accession to the throne, the philosophical doctrines of the Enlightenment had spread through the intellectual circles of Europe (see page 17). Several European rulers had begun to put into practice some of the ideas about political liberty and constitutionalism that were called enlightened despots. Catherine, gifted and well educated, corresponded with the leading men in western Europe and considered herself an enlightened ruler. She continued Peter's westerniza-

Section Review

1. How did Peter the Great try to westernize Russia? How did he strengthen Russian absolutism?
2. What was Peter's goal in foreign policy? To what extent did he achieve it?
3. How did Catherine the Great continue Peter's policies?

3 Prussia stressed militarism

During the late Middle Ages a new state began to take shape in northeastern Europe. This nation, later called Prussia, owed its rise to the Hohenzollern family, originally from the south German state of Swabia. The family produced a long series of capable rulers who wanted land and

EVENTS IN TIME

- 1769 Watt improved upon the steam engine.
- 1821 First public high school opened in Boston.
- 1832 Reform bill extended suffrage in England.
- 1840 Hill succeeded in establishing penny postal service in England.
- 1848 Karl Marx published *Communist Manifesto*.
- 1859 Darwin published *Origin of Species* outlining theory of evolution.
- 1862 Slavery ended in the United States.
- 1864 International Red Cross established.
- 1869 Suez Canal opened.
- 1914 Panama Canal opened.
- 1931 Statute of Westminster created Commonwealth of Nations.

A map of Asia and Oceania showing industrial activity and foreign control in the 19th century. The map includes a grid of latitude and longitude lines. Industrial activity is marked with small circles, and areas under foreign control are shaded in dark blue. The map shows a high concentration of industrial activity in the British Empire, particularly in India and Southeast Asia. Other areas under foreign control include parts of China, Japan, and the Philippines. The map also shows the outlines of the continents and major islands.

INDUSTRY AND EMPIRES IN THE 19TH CENTURY

CENTERS OF INDUSTRIAL ACTIVITY
AREAS UNDER FOREIGN CONTROL

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INDUSTRY AND EMPIRES IN THE 19TH CENTURY

CENTERS OF INDUSTRIAL ACTIVITY
AREAS UNDER FOREIGN CONTROL

In the seventh century, the Japanese lost interest in Korea and turned directly to China as a source of civilization. However, China's interest in Korea increased. Part of the peninsula was annexed to the T'ang Empire. From 918 to 1392, Korea was a united kingdom, but was under Chinese political control.

Chinese writing and Buddhism. Because of their close ties with the Koreans, the Japanese had long been familiar with the Chinese script. Early

soon won many converts to Buddhism. The patron of Buddhism in Japan was Shōtoku (A.D. 621), the crown prince of the imperial family. He served as regent for a Japanese emperor for 28 years. During this time, he drew a code based upon the political ideas of Confucius and made Buddhism the state religion. He also sent educational missions to China to learn its laws and institutions, its art and philosophy.

Buddhism had many supporters, among them the influential Soga clan. The Sogas had increased their prestige and political power by, among other ways, arranging marriages with the imperial family. After Shōtoku's death, the Sogas conspired to seize the imperial throne. They met with strong opposition. In 645, the Sogas were overthrown by a violent counter-conspiracy, and a period known as the Great Reform began.

The Great Reform. During the Great Reform (645–701), the Japanese redoubled their efforts to acquire Chinese ways. Much of the Chinese bureaucratic government was adopted. A Great Council of eight boards and over 60 bureaus. The Chinese civil service system, in part, also adopted. Government officials were chosen from among the graduates of the imperial Japanese university, and their appointments were to be based on ability and merit. However, since only the sons of the nobility were admitted to the university, only they were eligible for government office. Japan was an aristocratic nation, sharply divided into fixed classes. The small governing class remained far removed from the people.

The Great Reform increased the power of the central government and, in theory, exalted the emperor. In fact, however, the imperial court was soon dominated by the Fujiwara family. The Fujiwaras acquired power in much the same way as the Sogas—by arranging marriages with the imperial family and then dominating the government.

EASTERN EUROPE

TABLE XI

TOTALS FROM ANALYSES OF MAPS IN
TWENTY-THREE TEXTBOOKS

Number and Name of Text	Political	Physical Geography	Labeled Physical Geography	Historical	Economic	Cultural	Transportation	Climatic
1. <u>The History of Our World</u>	8	14	3	105	5	2	8	0
2. <u>The Human Achievement</u>	8	8	2	82	6	3	4	0
3. <u>Our World History</u>	24	9	8	75	3	4	7	0
4. <u>The Pageant of World History</u>	10	10	3	63	3	3	2	0
5. <u>Our World through the Ages</u>	10	4	3	48	11	3	7	0
6. <u>Past to Present</u>	10	6	10	67	0	6	4	1
7. <u>The Making of Today's World</u>	1	4	1	78	2	3	6	0
8. <u>Our Widening World</u>	13	17	0	48	1	7	5	0
9. <u>Living World History</u>	7	19	2	93	1	7	2	4
10. <u>World History and Culture</u>	10	6	18	62	1	1	4	0
11. <u>Story of Nations</u>	19	17	2	75	0	3	4	0
12. <u>The Free and the Brave</u>	2	36	0	82	3	3	8	0
13. <u>West's Story of Our Country</u>	12	33	1	58	5	2	9	3
14. <u>The Story of Our Country</u>	3	2	0	28	1	0	6	0
15. <u>Exploring American History</u>	6	7	0	30	3	1	2	0
16. <u>This is America's Story</u>	9	25	1	74	6	7	8	0
17. <u>Living in Our America</u>	9	14	0	69	4	3	5	0
18. <u>Story of the American Nation</u>	8	31	0	64	7	0	18	1
19. <u>Land of the Free</u>	2	17	0	35	3	8	2	0
20. <u>History of Our United States</u>	8	12	0	44	4	1	11	1
21. <u>Discovering American History</u>	1	8	0	72	8	3	13	1
22. <u>Story of Our Land and People</u>	9	34	0	58	8	2	11	0
23. <u>One Nation Indivisible</u>	0	5	0	43	1	0	7	0

TABLE XI (cont.)

(Number of Text)	General Introduction	Atlas	Cartogram	Black and White	Shaded Color	Color	Size	Key	Scale	Latitude and Longitude	Directional Arrow	Question	Explanatory Note	Context	Location	Total Number of Maps	Total Number of Pages
1.	0	0	2	5	115	0	42 1/2	44	33	11	0	0	120	28	2	120	792
2.	0	7	0	0	0	106	64 1/2	75	1	17	0	5	0	0	0	106	783
3.	7	13	3	9	63	37	31 1/2	73	42	17	0	8	85	35	7	109	765
4.	7	0	3	6	79	0	34	55	0	78	0	4	7	4	0	85	610
5.	0	0	0	70	2	0	36 1/2	43	30	6	0	0	1	0	0	72	723
6.	0	0	1	8	61	15	48 1/2	47	7	9	6	77	6	59	3	84	693
7.	1	12	7	8	63	12	48 1/2	62	14	67	2	0	32	0	0	83	748
8.	27	0	2	97	0	9	51	49	30	26	0	0	67	18	4	106	743
9.	0	7	1	0	50	60	53 1/2	50	24	15	6	0	11	2	0	110	732
10.	38	7	1	0	104	7	35 1/2	62	8	7	0	41	1	6	4	111	675
11.	21	0	0	10	83	0	38 1/2	65	0	2	0	0	0	3	0	93	787
12.	0	0	3	1	49	37	35 1/2	32	74	27	0	17	84	18	4	87	731
13.	0	0	0	0	45	36	36 1/2	53	9	43	1	11	31	14	1	81	641
14.	0	0	4	1	4	30	31 1/2	14	7	3	0	3	22	0	0	35	401
15.	0	0	1	38	2	0	19 1/2	12	18	4	0	37	2	0	0	40	461
16.	0	5	0	0	75	9	40 1/2	23	37	7	2	8	81	52	16	84	750
17.	1	0	3	41	31	15	37 1/2	18	0	13	0	1	63	9	0	87	691
18.	0	3	0	0	73	4	49 1/2	61	54	11	0	1	72	65	30	77	776
19.	3	0	3	3	35	3	21 1/4	24	1	1	2	0	7	0	0	41	642
20.	0	0	0	33	10	13	27 1/2	11	10	3	0	0	30	18	2	56	651
21.	0	0	0	10	68	0	35 1/2	56	0	12	0	50	21	37	20	78	784
22.	1	5	3	1	70	10	35 1/2	24	21	18	6	0	7	20	10	81	741
23.	0	2	0	0	35	6	19 1/2	27	0	0	0	0	10	0	0	41	656