GUIDELINES FOR THE ESTABLISHMENT OF A REGIONAL TRAILWAY NETWORK

Thesis for the Degree of M. L. A.

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Gary O. Robinette

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ABSTRACT

GUIDELINES FOR THE ESTABLISHMENT OF A REGIONAL TRAILWAY NETWORK

by Gary O. Robinette

America is a maturing nation and with this maturity come many new problems. One of these is that we are in the midst of a nearly unprecedented growth rate of population. Also, in contrast to a history of abundant land we are now faced with a monumental demand by industry, commerce, and the new technology for more of the available land. This same new technology, plus a new attitude on the part of society, has given the American people a new freedom from long hours of work. As a result of this there is a desire for outdoor recreation that is unparalleled in the earth's history. It is nearly impossible to solve the problem thus incurred with a limited land area, a burgeoning population, and a greater need for new outdoor recreational facilities, exclusively by means of the traditional methods of providing these facilities.

New answers must therefore be found. To do this a reappraisal was made as to what is the essence of outdoor recreation. Other nations have been studied to find the ways that they have used to solve the same problem.

A proposal is then made to satisfy man's need for intimate contact with the indigineous environment by means of providing a system or network of trailways through the

countryside, which is kept in private ownership and the existing land use, to be used by hikers, horseback riders, bicyclists, and casual strollers and walkers.

This is an unusual concept in American recreation practice and as such has been used very little. There are many problems that would arise in the implementation or effectuation of such a proposal.

Guidelines for the solution of some of these problems are covered in the final chapter of this paper. One of the first problems to be solved in this regard would be to determine the location of such trails. These possible routes may be determined by a study of the location of the existing recreational areas--since these trails are to be but a part of the recreational system, and the location of the present and future population--since these people will be the potential users of any such trails.

In addition to these a number of other studies are suggested as to possible routes of the trails. Some of these concern surveys of land ownership, possible jurisdictional boundaries and natural and man-made features that would indicate potential trail location. The preceding plus the possible methods of financing such a development are considered before the problem of actual site and route locations are considered. After this the methods of land or access rights, design, and maintenance and administration problems are considered. The access rights acquisition methods able

to be used for trail routes could be the various methods of acquiring full rights. These methods include acquisition by gift, by exercise of the power of eminent domain, or by negotiated purchase or the methods of acquisition of rights of less than full ownership, such as easements, rights, leases, licenses, salebacks and leasebacks. Regulatory devices such as zoning or cluster development and assessment policies may be also used to obtain trail access right across public land. Encroachment regulation must be instituted to protect the continuation of the use of the path and its environs for the use of the public.

The many practical and concrete problems of design are then considered. Some of these are the means and considerations of physical layout, vista establishment and the minimum standards desirable for trails of this type. The integration of this network into urban areas and existing recreation areas, plus recommendations on methods of trail marking, rest area development and mapping, and recording and compiling of guidebook data, round out the study on design requisites. Various methods of handling the planning, design, administration, and maintenance aspects of such a system are finally explored, showing the part both public agencies and private organizations can play in this.

In short, the aim of this thesis is to justify and demonstrate the steps and methods of implementation of an area-wide or regional trailway system from park to park,

from city to park and city to city. This would be in effect the bringing into being of a missing link in the recreation pattern in the United States. This would not supplant new park land acquisition or park and recreation area development but would supplement existing and proposed recreation facilities and tie them into an overall fabric penetrating all of the regional land area rather than leaving them as a series of isolated spots of parkland served only by the expressway or highway system.

GUIDELINES FOR THE ESTABLISHMENT OF A REGIONAL TRAILWAY NETWORK

By

Gary O. Robinette

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For the hours of time and for the wealth of information that they have given me I am thankful to many recreation

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INTRODUCTION

A statement of Recreation Policy for the state of Michigan:

> 1. The Government of the State of Michigan recognizes that:
>
> (a) The desire for leisure time is a natural and worthy human desire. Throughout history leisure time used for creative and regenerative purposes, and to encourage the virtues, has been essential to the full development of each individual. Today, as a result of the technological and productive achievements evolved through man's ingenuity, greater opportunities exist for the pursuit of meaningful leisure time activities. Leisure time has become an accepted part of daily life.
>
> (b) Recreation is necessary for the continued refreshment of the body and mind throughout the lifetime of the individual. Recreation encompasses a wide range of activities such as the cultural and creative arts, social and family activities and individual passive recreation. The range of recreational pursuits is limited only by the individual's choice of activities which are meaningful to him. Recreation is a human need, contributing to human happiness, essential to the well-being of people and as such the public welfare is promoted by providing opportunities for wholesome and adequate recreation.[1]

It seems axiomatic that soon after the mention of the word recreation is made and the need for it is established, the realm of planning moves out-of-doors. Granted, a great many leisure time activities take place indoors, yet

---

[1] Louis F. Twardzik, "Statement of Recreation Policy for the State of Michigan," Unpublished paper prepared for Park Management, Department of Resource Development, Michigan State University, 1961.

nearly any public agency that is concerned with recreation eventually concerns itself with setting aside land for recreation use by its inhabitants. This does not seem unusual to twentieth century American man, since in any culture relaxation is found through diversion from the realm of the usual cycle of activities. The high degree of technology and industrialization achieved in our civilization has had as an attendant evil a highly artificial urban living environment. Therefore the most satisfactory recreation is found in a return to a more natural environment. The evaluation of man's move to the city, but residual yearning for the open countryside, is shown more clearly in the following quotes from Glikson:

> We have little evidence of specifically recreational land use and facilities for preindustrial periods, because they represented a wholly integrated and therefore unrecognizable ingredient of environment.
>
> 1. Large numbers of peasants and peasants' sons gave up their ancient relationship to the soil and village, leaving their rural environment to concentrate in towns and seek employment in industries and services. Overnight, small urban or rural settlements grew enormously, both in area and in density of habitations, so that huge tracts of the surrounding landscape underwent urbanization.
>
> 2. The still increasing urban population, compressed in quarters where unhealthy conditions prevailed, remote from the open country, began to sense what it had lost and raised a demand for temporary environmental compensation. The rural and indigenous environment became for the urbanite a recreational environment.
>
> 3. Pressure of vacationers on the remaining rural and indigenous places and on newly established resorts became violent. This very pressure destroyed these places as true resources for restful recreation. In the attempt to escape overcrowding and noise and to rediscover landscape, holiday-makers were driven ever farther away from

the cities.

> The recreational movement should be considered as belonging to the wider contemporary phenomenon of population movement to and from the big centers--of spatial contraction and expansion of resources and commodities, of people and ideas. The most obvious and well known of these phenomena is the tremendous concentration of population and produce from the most distant regions in metropolitan and other big-city centers. In the dynamics of city life the demand for recreation represents a reaction against the psychophysical complexity of life introduced by centralization and industrialization and reveals a tendency to reverse the prevailing spatial relations. It is an attempt to balance the centripetal concentration by centrifugal diffusion--by a temporary escape back to the places of natural and historic origin of the people: to the indigenous and rural landscape, the hamlet, the little town bypassed by modern development--in the hope of restoring, or "recreating," health, energy, and mental equilibrium.[2]

From this cause and this beginning we now have in America a national problem. A swelling population, a land hungry technology, and an ever greater need for open space to which the urban dweller can "escape" have given us a dilemma as to how all of these may be accommodated on a limited land area. In the past any solution to a recreation problem has been somewhat simpler since it merely involved obtaining more and larger areas of land. In the future, as is obvious, this will not always be possible. Due to this fact it is incumbent upon present day planners of future recreation facilities to survey possible alternatives to the

---

[2]William L. Thomas, Jr., editor, Man's Role in Changing the Face of the Earth (Chicago: University of Chicago Press, 1956), pp. 896-897.

traditional patterns of man's relation to his natural environment for recreation purposes.

> That is why it is good for the mind to go back to the beginning because the beginning of any established activity of man is its most wonderful moment. For in it lies all its spirit and resourcefulness, from which we must constantly draw our inspirations of present needs.[3]

Possibly the most potent approach to this problem would be to return to the basic elements involved and begin again in the delineating of the needs and the problem. From this it may be possible to arrive at new answers that may have a bearing on man, his natural environment, and the interaction between the two. This may suggest some way in which more people may use less land with greater benefit for all.

> The great pioneer park planners and builders in America had no great difficulty in defining a park. The term then had a definite technical and functional connotation. Eliot defined parks to be 'lands intended and appropriated for the recreation of the people by means of their rural, sylvan, and natural scenery and character.' Olmsted, Sr., stated the nature and function of a true park as 'a place where the urban inhabitants can to the fullest extent obtain the genuine recreation coming from the peaceful enjoyment of an idealized rural landscape in rest giving contrast to their wonted existence amidst the city's turmoil.'[4]

This gives a basic and (by present standards) somewhat primitive definition of what landscape architects and

---

[3]Vincent Scully, Jr., Louis I.Kahn (New York: George Braziller, 1962), pp. 115-116.

[4]L. H. Weir, editor, Parks: A Manual of Municipal and County Parks, Vol. I (New York: A. S. Barnes and Company, 1928), p. xix.

other recreation planners should try to create.

The cultural and intellectual context in which this is to be done is shown in the following quote.

> The picture is not always a pretty one. The human race has not been at ease at home, it has been the aggressive, often surly, restless, questing youngest member of the family of Earth dwellers. It has treated its home like a mine rather than a garden, as rightful spoil to exploit and plunder. Regarded thus, as a destructive latecomer, humanity has little claim on its self assumed role as having been created in the divine image. But man can also love and know, and can transmute his loving and his knowledge into art, so that they may both be shared.[5]

Consequent to this general callousness toward the earth are further refinements used to subtantiate and effectuate this way of thinking. Some of those and their end results are shown in the following quote.

> Our technology, cities and landscapes in addition to their positive aspects, are now producing such negative conditions that the adequacy of our understanding of ourselves and nature are becoming critical daily questions in even planning offices. Professionals in the field are aware of this--they are hampered and in some cases desperate because of the lack of guidelines. Others less aware apply the primitive concepts of natural science and threat communities as complicated mechanisms or systems--sort of organized social factories for the production of goods and services--subject to the automatisms, uniformities, and predictabilities of nature. It is such technological and economic rationalism appearing in some modern city planning, urban renewal, and architecture that has raised the recent hue and cry against barren, inhuman and 'purely functional' design. Such planning and design is based upon the conceptual equipment of inorganic science--mathematics, space, time, motion, and various assumed regularities--which produces almost literal forms with a minimum of symbolic depth. It is all 'outside' with no 'inside.' It is engineering raised to a fine art. The same

---

[5] A. C. Spectorsky, editor, The Book of the Earth (New York: Appleton-Century-Crofts, Inc., 1957), p. viii.

> quantitative rationalism is at work on the farm today via the impulses underlying some agricultural economics and agricultural engineering. If applied to America with the relentless logic of the pure rationalist the end results of technological and economic rationalization will be a uniform, automated culture with a few thousand corporation farms situated between seven or eight giant metro-urban concentrations. The social and human effects of this are too harrowing to contemplate. It represents one side of the double-edged sword of human intelligence.[6]

We have seen some of the basic relationships between man and nature, how they have been destroyed, and the ideology that has supplanted them. In this context of the basic thinking of modern man we have in contrast the basic park concept. The purpose of this paper is to show how a relatively unused (in America at any rate) recreation idea may be able to give some of the additional desired access to the land even in a crowded continent.

The current and projected physical and cultural situation in America is shown in the early section of this paper. A study then is made as to how other nations in a similar situation have solved their recreation problems. One solution, unexploited to any degree by recreation planners previously in the United States, is found to stand out. This then is proposed to be adopted in our own country and the remainder of the paper is devoted to the methods of doing this, physically, economically, administratively and legally.

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[6]Sanford S. Farness, "Man --Environment Problems in an Urban Age and the Role of Universities," Unpublished paper, School of Urban Planning and Landscape Architecture, Michigan State University, 1963.

This paper is not written to advocate an either-or position toward this type of recreational activity or these facilities as opposed to other types of recreational facilities. Rather its purpose is to show the need for this in addition to other existing and proposed activities and facilities. A need for new types of facilities which will spur new activities exists in America. Current recreational types of activity cannot always be projected into the future. The situation in which the United States finds itself at present is new to us and we must find new ways to solve our problems. This proposal is for a capillary-like system of trails or paths to be injected into the body of the American landscape so that this great heritage can be more easily seen, appreciated, intensively used, and fully enjoyed. We need all types of recreation planning but this is a type that has been neglected and has great potential to give wanted, needed, and enjoyable recreation in a densely populated America. It is to that end that the following methods of implementation are given. These methods of weaving a proposal of this type into the fabric of American law, land and recreational planning, economics, and administrative machinery, are of necessity varied and complex.

This paper is for the guidance of any one, layman or professional, public or private agency, who wants to lay out a regional riding or hiking trail network. It is felt that certain encouragement and guidance is needed to do this properly. The need is shown to exist, most of the tools to do

the job are available. When the volition is exerted guidance should be available as to the right tools to use and the methods of choosing the most effective routes. This is the purpose of the paper.

CHAPTER I

THE PROBLEM

Population Growth in the United States

Amount of Predicted Total Growth in the Population

"It is estimated that if present trends continue, the population of the United States will reach a peak of approximately 158,000,000 about 1980. A plan of outdoor recreation must consider this coming population."[1] Any projections made concerning future population growth must be considered in the light of this one made in 1941. We see the present population of the United States in 1963 at nearly 185,000,000 or twenty-two million over the estimate of time 17 years from now. It is not surprising that America's recreational facilities are taxed to their limit and new recreational areas are sometimes proposed in a hasty manner, and that very few types of alternatives to the traditional recreational patterns are able to be proposed. Existing recreational experts and planners are pushed to their utmost to care for as well as they do to the increased leisure time of an exploding population. There is

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[1]United States Department of the Interior National Park Service, A Study of the Park and Recreation Problem of the United States (Washington, D. C.: U.S. Government Printing Office, 1941), p. 5.

not sufficient time to always arrive at new concepts of providing for man's recreational needs on a shrinking usable land area. This is by way of prelude to the following judgment projections of United States population in the next fifteen and thirty-five years. The population projections of recreation planners in the late 1930's and early 1940's were woefully inadequate, and possibly the following are as inaccurate. This should be kept in mind throughout their presentation. If they are low, however, the need is all the more urgent to push for new means of using the land more effectively and efficiently. In the event that the estimates are high we will have the time and the ability to apply some of the newer concepts to land areas that have necessarily been planned and developed during the time since 1946.

In a recent report very similar in nature to the one quoted above, new judgment projections are made. The population of the United States as a whole, of the regional areas, and of the states themselves were predicted for the years 1976 and 2000. These figures are shown in Table A-3. Briefly these show nearly a doubling of the total population by the year 2000. This is a phenomenal fact in the history of any nation, though in America we have come to expect such a situation. As mentioned previously, these figures may be as woefully inadequate as those made in 1941 as they may be far beyond what may exist in actuality. Generally the United States has a history of great gains in population in a short period of time as shown in the following quote.

> In the 170 years since the first census, United States population has shown uninterrupted growth. Total population has increased from under 4 million to about 180 million in 1960. The decennial growth rates from 1790 until nearly the close of the 19th century were 30 percent or above.[2]

Since the early colonial days the growth rate of the population has shown many fluctuations for a variety of reasons: restrictive immigration, falling birthrates, wars, depressions, smaller families, lower infant mortality rates, increased life span. All of these have entered in over the years to cause population growth rate variations. The post World War II "baby boom" caused the burgeoning that was unexpected by the seers in 1941.

These are all very real factors to be considered by the planner of the future recreation needs and facilities. However, what is of more concern to him than what has happened in the past is what is happening today and what will happen in the future.

> The situation today remains one of high growth and high growth potential. Birth rates in the United States have fallen slightly in the last 2 years, but most demographers are cautious in taking this as any indication of a downturn in the trend. Nearly all projections of future United States population take for granted a continued growth. The only question is how much and at what rate.[3]

As mentioned before, Table A-3 gives their judgment projections. These figures preclude the effect of any

---

[2] Projections to the Years 1976 and 2000: Economic Growth, Population, Labor Force and Leisure, and Transportation, ORRRC Study Report No. 23 (Washington, D. C.: United States Government Printing Office, 1962), p. 9.

[3] Ibid.

TABLE A-1.—Judgement projections of households in the United States, 1975 and 2000
(In thousands)

	Total	Primary Families			Primary Individuals	
		Husband-Wife	Other Male Head	Female Head	Male	Female
1975 Actual	57,049					

TABLE A-1.--Judgment projections of households in the United States, 1976 and 2000
(In thousands)

	Total	Primary Families			Primary Individuals	
		Husband-Wife	Other Male Head	Female Head	Male	Female
1960 Actual	53,021	------	-----	-----	-----	-----
1976 Judgment	66,080	49,967	1,460	5,495	2,614	6,544
2000 Judgment	97,334	73,247	2,278	8,093	4,079	9,637

Sources: U.S. Census of Population: 1960. General Population Characteristics, U.S. Summary, Bureau of the Census, U.S. Department of Commerce, Washington, D. C., 1961; ORRRC projections.

TABLE A-2.--Judgment projection, size of household, 1976 and 2000[4]
(In thousands)

	Total Households	Total Population	Number of People in Household (2:1)
1960 Actual	53,021	179,323	3.38
1976 Judgment	66,080	230,019	3.48
2000 Judgment	97,334	350,447	3.60

[4]Ibid., p. 7.

external factors such as war, depression, or a disturbing of the social, cultural, political or economic status quo.

Therefore any planning for future needs must necessarily take into account at least somewhere near this total amount of inhabitants upon the existing land surface of the fifty states.

Certain basic changes in the characteristics of the people making up these statistics are discernable in other projections. Variations in the population distribution pattern according to age are noticable. These may be very important in adjusting planning for recreation for the different age groups. These estimates are contained in Table A-7 and may show either greater or lesser need suggesting possible facilities for different age groups.

The alignment of the present and future population into their respective households is of importance since participation in a large number of recreational pursuits is engaged in as a household unit. The number of these that may exist is shown on Tables A-1 and A-2.

Regional Population Growth

All of the people mentioned above are not scattered evenly over the face of the territory of the Union. This is quite obvious from observing a listing of the states and regions with their population variation. Certain areas of the country have traditionally contained a larger proportion of the inhabitants than others. This will continue to be true

TABLE A-3.--Judgment projections of the United States population by State, 1976 to 2000 (Includes Armed Forces stationed therein, but not abroad)
(In thousands)

	Actual	Projected	
	1960	1976	2000
United States	179,323	230,019	350,477
New England:			
Maine	969	1,069	1,494
New Hampshire	607	710	1,022
Vermont	390	377	510
Massachusetts	5,149	5,487	7,759
Rhode Island	859	1,056	1,511
Connecticut	2,535	3,141	4,869
Total	10,509	11,840	17,165
Middle Atlantic:			
New York	16,782	19,859	28,964
New Jersey	6,067	8,013	12,451
Pennsylvania	11,320	12,814	17,989
Total	34,169	40,686	59,404
East North Central:			
Ohio	9,706	12,902	20,108
Indiana	4,662	6,214	9,596
Illinois	10,081	12,894	19,322
Michigan	7,823	11,615	18,745
Wisconsin	3,952	5,131	7,644
Total	36,224	48,756	75,415
West North Central:			
Minnesota	3,414	4,297	6,293
Iowa	2,758	3,266	4,514
Missouri	4,320	5,003	7,015
North Dakota	632	695	890
South Dakota	681	796	1,083
Nebraska	1,411	1,719	2,368
Kansas	2,179	2,592	3,727
Total	15,395	18,368	25,890
East South Central:			
Kentucky	3,038	3,363	4,459
Tennessee	3,567	3,943	5,537
Alabama	3,267	3,575	4,866
Mississippi	2,178	2,169	2,682
Total	12,050	13,050	17,544

TABLE A-3--Continued

	Actual 1960	Projected 1976	Projected 2000
South Atlantic:			
Delaware	446	780	1,309
Maryland	3,101	4,490	7,335
District of Columbia	764	904	1,286
Virginia	3,967	5,351	8,241
West Virginia	1,860	1,905	2,374
North Carolina	4,556	5,598	8,054
South Carolina	2,383	2,969	4,256
Georgia	3,943	4,659	6,671
Florida	4,952	8,387	14,629
Total	25,972	35,043	54,155
West South Central:			
Arkansas	1,786	1,406	1,469
Louisiana	3,257	4,114	6,204
Oklahoma	2,328	2,341	2,874
Texas	9,580	13,281	20,730
Total	16,951	21,142	31,277
Mountain:			
Montana	675	908	1,351
Idaho	667	828	1,221
Wyoming	330	393	578
Colorado	1,754	2,580	4,101
New Mexico	951	1,255	2,084
Arizona	1,302	2,144	3,859
Utah	891	1,297	2,116
Nevada	285	523	929
Total	6,855	9,928	16,239
Pacific:			
Washington	2,853	3,844	6,224
Oregon	1,769	2,415	3,920
California	15,717	23,744	41,272
Alaska	226	322	603
Hawaii	633	881	1,369
	21,198	31,206	53,388

Sources: United States Census of Population: 1960. Number of Inhabitants, op. cit., ORRRC projections.[5]

[5] Ibid., pp. 5-6.

in the future, though with some divergences. Some of the background for this is shown in the following quote.

> It is an interesting fact that the geographic center of population of the United States has been moving steadily westward since 1790, along the 39th parallel, and presently lies in south-central Illinois. This has been the major continuing trend in population re-distribution in the United States but in the last several decades, other subsidiary trends have developed which will probably continue for the next several decades. Three of these trends can be noted: (a) a generalized movement out of rural areas and small towns and into large cities. This trend is complicated by the fact that as the large cities grow larger and their area of dominance spreads further and further into what had been open country, many of those persons whose economic and social roots are in the large cities, may, nevertheless, take up residence in rural areas or small urban places distant from the central city; (b) a movement out of the Southeastern States, especially by nonwhites, into the large industrial cities of the east-central and eastern-midwest industrial belt; (c) the continuing trend of population away from the New England and upper-midwestern areas and toward the far west and southwest.
>
> The first of these three trends leads to migration occurring within States as well as across state lines and is best analyzed in terms of the growth of metropolitan areas. The last two types of migration mentioned are of great importance in projecting future state and regional population totals. Any projections must begin with these trends.[6]

These trends will undoubtedly do something to change the land use patterns in each section of the country where there is a variation between what exists and what is expected. In any given area these trends must be taken into account. If the population is predicted to decline this affords the possibility that the land use pressure may not be as great and the recreational facilities may be expanded, thus giving

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[6] Ibid., p. 11.

TABLE A-4.--United States population by census divisions as percent of total population, 1920-60 with alternative projections for 1976 and 2000[7]

U. S. Regions	1920	1930	1940	1950	1960	Migration			
						1976		2000	
						High	Low	High	Low
United States	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
New England . . .	6.98	6.63	6.38	6.14	5.86	5.15	5.37	4.90	5.17
Middle Atlantic .	21.00	21.32	20.84	19.94	19.09	17.69	17.82	16.95	17.09
East North Central	20.26	20.53	20.15	20.14	20.24	21.20	20.67	21.52	20.79
West North Central	11.83	10.79	10.23	9.27	8.60	7.99	8.24	7.39	7.87
South Atlantic .	13.20	12.82	13.49	13.98	14.46	15.23	15.03	15.45	15.30
East South Central	8.39	8.03	8.15	7.57	6.71	5.67	6.43	5.01	6.15
West South Central	9.66	9.88	9.89	9.58	9.44	9.19	9.51	8.92	9.51
Mountain	3.14	3.00	3.13	3.37	3.81	4.31	4.10	4.63	4.35
Pacific	5.54	7.00	7.74	10.01	11.79	13.57	12.83	15.23	13.77

Source: "Statistical Abstract of the United States," U.S. Department of Commerce, Washington, D.C., 1959; ORRRC projections; U.S. Census of Population: 1960.

[7]Ibid. p. 15.

more amenable living to the remaining inhabitants. If the population of the region is to grow by any degree it would be advisable to act promptly to acquire recreation lands and provide facilities for the increased number of citizens.

Urban Population Growth

In the colonial and pioneering periods of American history our country was largely an agricultural nation of rural inhabitants. The population balance was still non-urban until after the Civil War. From that time forward a smaller number of farm residents have been able to support larger and larger numbers of urban inhabitants. Consequently we have a further predicted increase in city-dwellers facing us in the future. This history is traced as follows:

> The United States has been in the process of a rapid and continuing urbanization ever since the beginning of this century. In the period 1900 to 1960 the urban population of the United States has grown at an average decennial rate of about 25 percent compared to an average rate of 15 percent per decade for the total United States. The United States was about 40 percent urban in 1900 and is over 60 percent urban today.
>
> In the most recent decade, 1950 to 1960, urban population increased by about 27 percent compared to an overall increase in United States population of less than 19 percent. Much of this growth has been due to new areas qualifying as "urban" as well as because of growth in existing urban areas due to natural increase and migration.[8]

These are not superfluous facts or predictions for the one who is to plan for the future recreation needs of such a population. This serves to point out what was

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[8] Ibid., pp. 28-29.

mentioned as a general concept in the introduction. Man generally, and in our case American man in particular, has drawn away from a habitation close to the land in a rural environment and placed himself in a highly artificial urban environment. This then requires a distinctive type of recreation planning and different facilities than for a rural population. A more complete explanation of the importance of such a study of population distribution is shown later in this paper.

The percentage of change in population location in the past is shown in Table A-5 while the predictions for the future are shown in Table A-6.

Clearly by the year 2000 America will be overwhelmingly a nation of urbanites. This cnange in population location should be reflected in a comparable change in thinking in the matter of recreation planning. The older, more traditional ways which applied in a largely rural nation may not automatically be superimposed upon a larger population which is preponderantly urban in character. Therefore, this is going to call for some new thinking and new alternatives to be injected into recreational planning that will be more in keeping with what is expected in the future crowding of the American landscape.

TABLE A-8.--Percentage distribution of U. S. population by urban-rural residence, 1900-80

Year	Total U.S. Population	Urban[1/]	Rural	Other SMSA's	Large SMSA's	Outside SMSA's
	(millions)	(percent)	(percent)	(percent)	(percent)	(percent)

TABLE A-5.--Percentage distribution of U. S. population by urban-rural residence, 1900-60[9]

Year	Total U.S. Population		Urban[1/] (percent)	Rural (percent)	Other SMSA'S (percent)	Large SMSA'S (percent)	Outside SMSA'S (percent)
	Thousands	Percent					
1900	[2/]76,058	100.0	39.7	60.3	18.1	15.5	66.4
1910	92,037	100.0	45.6	54.4	21.2	18.0	60.8
1920	105,766	100.0	51.2	48.8	23.9	21.0	55.1
1930	123,165	100.0	56.2	43.8	25.3	25.9	48.8
1940	132,165	100.0	56.4	43.4	25.6	26.6	47.8
1950	151,326	100.0	59.0	41.0	27.0	29.8	43.2
1960	179,323	100.0	63.0	37.0	28.6	34.4	37.0

1/ Old urban definition

2/ In this table and all subsequent tables, Alaska is included in all years and Hawaii is included from 1930 to 1960. Hawaii is excluded from 1900 to 1930 because no urban-rural or metropolitan-nonmetropolitan figures are available for these years.

Sources: Donald J. Bogue, "The Population of the United States," The Free Press, Glencoe, Ill., 1959; "Population Growth in Standard Metropolitan Areas, 1900-50," Division of Housing Research, U.S. Housing and Home Finance Agency, Washington, D.C., December 1953; Statistical Abstract of the United States, 1960, op. cit.

[9] Ibid., p. 29.

Place of residence

Total . . .

Non-SMSA .

Large SMSA

Urban 1/

Rural

1/ All urban

source:

TABLE A-6.--Projected population by place of residence 1970-2000[10]
(Assumptions)

Place of Residence	Mod. Urbanization and Metropolitanization (%)				High Urbanization and Metropolitanization (%)			
	1970	1980	1990	2000	1970	1980	1990	2000
SMSA . . .	65.4	68.0	70.8	73.4	68.7	74.7	77.8	80.8
Non-SMSA .	34.6	32.0	29.2	26.6	31.5	25.6	22.7	19.7
Large SMSA	36.4	38.9	41.3	43.6	40.1	46.2	49.2	52.3
Urban 1/	65.0	67.0	69.1	71.1	67.7	72.6	75.1	77.6
Rural	35.1	33.1	31.0	28.9	32.3	27.4	24.9	22.4

1/ Old urban definition.

Source: ORRRC projections.

The Potential Land Shortage in the United States

Gutkind in dealing with conflict and adaptation on earth enumerates four stages in the changing attitudes of man toward his environment. These stages are:

> The first stage is one of fear and the longing for security--of fear of the unpredictable and unknown forces of nature and of protection against these forces and the hostility of men.
>
> The second stage is one of growing self-confidence and increasing observation, leading to a more rational adaptation of the environment to differentiated needs. Elementary protection develops into purposeful reshaping of the environment, and displacement of nature is followed by replacement.

[10] Ibid., p. 33.

> The third stage which has led to our present situation is one of aggressiveness and conquest. Adjustment to the environment develops into exploitation.
>
> The fourth stage of the interaction of man and environment is slowly taking shape. Faintly the outlines of this new epoch are discernible. It will be an age of responsibility and unification.[11]

The continent of North America and the land areas of the United States, being discovered quite recently in the earth's history, thus underwent a very accelerated period where the first two attitudes were prevelant. The third phase has been the principal way of thinking all during America's history. This has led to a ravenous exploitation of the land resources so abundantly available. The past, present, and future may be examined to discover trends, potential problems, and possible solutions.

The Heritage--The Legacy of the Land

The history of America has been filled with stories of pioneers moving from one area of the country to another to claim and cultivate the abundant land ever available. Tales of the exploits of Alexander Henry, Alexander MacKenzie, Lewis and Clark, Zebulon Pike, John C. Fremont and a host of others sent to survey the unsettled lands of the west have been taught to nearly every school child in America. The adventures of the wagon trains moving toward California are

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[11]William L. Thomas, Jr., editor, Man's Role in Changing the Face of the Earth (Chicago: University of Chicago Press, 1956), pp. 21 and 27.

barely over a century old. Therefore with this sort of a background it is difficult for Americans to imagine a time or situation when land is not limitless and abundant. Free land and freedom itself were two of the primary magnets that pulled the "huddled masses" from the cities and ghettos of Europe toward this new land. This has been so firmly and completely inculcated into the American mind that it is with difficulty that land planners of the present day are able to imagine a situation other than that which has existed in the past. This heritage is shown in this quote:

> The outdoors lies deep in American tradition. It has had immeasurable impact on the Nation's character and on those who made its history. This is a civilization painfully and only recently carved in conflict with the forces of nature--farms from unbroken prairie and cities from wilderness. The epic of American life is the tale of the pioneer, edging his was westward in the face of unending danger and hardship. When an American looks for the meaning of his past, he seeks it not in ancient ruins, but more likely in mountains and forests, by a river, or at the edge of the sea. The tale is one of discovery, of encounter, of hard-won settlement.
>
> But there is more to the legacy than the land. From the beginning, one of the strongest currents in American thought has been the idea that the outdoors is a right of Americans--not only something to be enjoyed but vital to our spirit. The idea was born in an agrarian society, for though the outdoors was then all about, some feared that it would not always be so.[12]

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[12] Outdoor Recreation for America, Report to the President and to Congress by the Outdoor Recreation Resources Review Commission, Primary Report (Washington, D. C., U.S. Government Printing Office, 1962), p. 13.

The Present-Competitive Demands for Existing Land

The hard absolute and real fact that America has a finite and limited land area has apparently not dawned upon the collective consciousness of a large portion of the general public as well as professional land planners. Once this land has been shorn of its grain and timber, emptied of its iron, coal and oil, and covered with the impervious skin of asphalt and concrete it is only with great difficulty that it may be of benefit to mankind aesthetically and recreationally.

Today there are a great many conflicting and grasping hands for nearly every square mile of land in the nation. Great quantities of the American earth's surface are being used for the growth of cities, their suburbs, their industry and the transportation arteries linking them. New commercial, agricultural, industrial, and residential interests are constantly tearing up the American landscape for development. With a doubling population by the year 2000 this situation is not going to decrease to any degree. This has not caused concern in the past, since more land has inevitably been available and the man-land ratio was low enough not to cause alarm. Further, none of the land needs were as extensive as they have come to be and will continue to be with an increased technology and economy.

In addition to these other land demands, outdoor recreation has also increased and therefore more land is needed

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for this purpose. The recent evolution of this type of land demand is shown below.

> While the outdoors has been very much a part of the American past, and making outdoor recreation available has long been a concern of the Nation, this problem in recent years has taken on new dimensions. The growing population--with more leisure time and living largely in cities--has brought about problems different from those that were solved by the action of even the most farsighted leaders in the past. These factors have changed the nature of American society, and they have brought about a new challenge for the provision of outdoor recreation.
>
> The seeds of the problem were sown in the early 1920's when, after the first World War, the work week was shortened, personal income increased, automobiles came into general use, and the highway system was expanded. For the first time in our history, people generally had leisure time, could find ways to get from one place to another, and could afford to do it. Many types of recreation--boating, for example--became, for the first time, available to the average man. Public recreation areas--many of them ill suited to mass use--were unprepared for the wave of enthusiasts.
>
> Of all forces contributing to the difficulties of the present and future, none is more central than the concentration of population in the great metropolitan areas, where almost two-thirds of the Nation now live. Over 200 of these areas presently contain 63 percent of the population, living on less than 10 percent of the land area of the United States. Moreover, this concentration is expected to increase in coming decades. By the year 2000 some 73 percent of all Americans will live in metropolitan areas.
>
> This in-gathering of population since the turn of the century has had a profound impact. The problem posed for public policy can be simply stated: there is a striking contrast between the demand for outdoor recreation on the part of the urban populations and the limited supply of land and water resources readily accessible to them. Partly this is a matter of inherent limitations of space, and partly it is the basic problem of establishing priorities for use. A huge population generates such an enormous demand for nonrecreation as well as for recreation uses of land and water that recreation may never get its full share of space. Overcrowding at local parks and beaches may persist. This pressure, however, should be a discipline. It puts a premium on a more efficient use of the land that is available--for recreation as well as

for housing or for industry--and it is in this respect that the failure has been conspicuous.[13]

The Prospect--Technologic and Economic Projections

The United States is maturing as a nation. Despite the romanticism of television, screen, radio, and paperbacks, it no longer has unclaimed wide open spaces. No longer is there a western frontier to absorb the overflow from settled society--whether they be the poor and ambitious immigrant, the hot-blooded youth, or the adventuresome pioneer.

Human nature, however, has shown little change since our Declaration of Independence. The great wave of population that swept westward in this country was composed largely of people who sought to better their situations. Population growth did not stop when the extensive frontier for settlement was overrun. Nor did the needs of the people for satisfactions change. People have ebbed and flowed backward and forward across the country, gleaning opportunities bypassed by their predecessors, adjusting their outlook to changing times, and often developing new enterprises that have helped to make this a leading industrial nation.

This restless drive, this searching spirit, this visionary hopefulness pushed people up the mountainsides, into the deserts, and deep into the forests. They claimed and discarded likely-looking lands along the way. Some lands have been selected and rejected repeatedly by succeeding waves of settlers. The remnants from these selections now represent the bulk of our remaining public domain. It is the present major repository of publicly controlled land resources for outdoor recreation.[14]

To support a doubled population with an increased standard of living and nearly unlimited mobility the present land area will be used. We have no other choice; this will be the land area that will support possibly one-half billion

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[13] Ibid., pp. 21-22.

[14] Potential New Sites for Outdoor Recreation in the Northeast, ORRRC Study Report # 8 (Washington, D. C.: U.S. Government Printing Office, 1962), p. 2.

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What kind of technology will be in existence within a century no one living today is able to accurately predict. That more land area will be required for it is almost self-evident. Waste product disposal from newer forms of power production will be a continually greater problem. The price paid by the earth for a present and future standard of living is shown in the following quotation.

> A modern industrial society is characterized by the production of enormous quantities of goods which, for various reasons, people want to own. In order to produce these goods, raw materials are needed. Machines are needed to transform the raw materials into other machines, into secondary materials, and into finished products. Machines are needed to transport the diverse materials and goods which flow through the complex network of mines, factories, farms and cities. Energy is needed to power the machines which extract, produce, and transport. The continuation of these operations is ultimately dependent upon the extraction of materials from the earth, the atmosphere, and the oceans.
>
> In order to produce the multiplicity of goods consumed by society, we mine iron ore, convert it into pig iron, and then mill it into steel. We produce copper, lead, zinc, aluminum, and a variety of metals from their ores and blend and shape them to suit our needs. We mine phosphate rock, fix the nitrogen of the atmosphere, evaporate sea water, and quarry rock. We transport vast quantities of sand, gravel and clay; manufacture cement; and mine sulfur, gypsum, and pyrites. For every person who lives in a highly industrialized society, many tons of material must be moved, mined, and processed each year.
>
> From the time that coal was first linked to iron, the per capita flow of goods in the industrialized part of the world has steadily increased; associated with that increasing flow we see an increasing per capita demand for raw materials. By 1950 the yearly per capita demand for steel in the United States has reached 1,260 pounds; demand for copper had reached 23 pounds; demands for stone,

> sand, and gravel had reached 7,300 pounds; and demand for cement had reached 520 pounds. In order to power the industrial network, energy demands had risen to the equivalent of over 8 tons of coal per person per year. It must be stressed that these per capita demands are still rising.[15]

This is followed by a prediction as to what a ten fold increased population will do to the earth's resources.

> A population of 30 billion persons would consume rock at a rate of about 1,500 billion tons per year. If we were to assume that all the land areas of the world were available for such processing, then, on the average, man would "eat" his way downward at a rate of 3.3 millimeters per year, or over 3 meters per millenium. This figure gives us some idea of the denudation rates which might be approached in the centuries ahead. And it gives us an idea of the powers for denudation which lie in mankind's hands.[16]

The ravishing of the earth to gain its treasure will have profound effect upon the balance inherent in the natural communities and thus destroy much of the recreational value that now exists in the outdoors. Any future economic or technologic exploitation of the natural surroundings must take into account the end result of the present tendencies.

Along with the dispersion of other human activities and land demands outdoor recreation's needs will increase with the population and the multiplication of leisure time available. This is shown in the following citation.

> In any event, most Americans face the prospect of more leisure time in the future, and thus the challenge of using it for their own enrichment and development as individuals and as citizens. This is precisely the

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[15]Thomas, op. cit., p. 1023.

[16]Ibid., p. 1031.

> contribution that outdoor recreation can make. For at its best outdoor activity, whether undertaken lightly or with the serious intent of the perfectionist, is essentially a "renewing" experience--a refreshing change from the workaday world . . . .
>
> Today's challenge is to assure all Americans permanent access to their outdoor heritage.[17]

Along, then, with a greatly enlarged population will be an intensified land demand. These two have now been coupled with the many components which at the same time will increase leisure time with its need for outdoor recreation, and thus be another agent desiring a share of the scarce land.

The Demand For Outdoor Recreation

This refers not only to the total increase of leisure time of the population for the following reasons listed, but is also a selective survey of who or what group participates in certain activities. As the age, income or education of various groups change they will take on some of the characteristics of the present participants in that activity. That is, if a larger percentage of the population will be in the education category of 1-3 years of college than is at present, we may expect a larger number of participants in the activities of that group than is now the case. Therefore planning for these particular enlarged activities should be considered along with general recreation planning. The overall accretion of all recreation facilities proportionately with the

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[17] Outdoor Recreation for America, op. cit., pp. 22-24.

increased population and leisure time is not only not possible but is also not practical since the needs and wants of the increased population may not be the same as the existing population. Accordingly the effect of each of the components that make up the general increased demand for outdoor recreation will be assessed briefly to ascertain whether this will change the character also of the recreation demanded.

Institutionalized Leisure

This is the extremely general aspect of this whole syndrome. The very fact that leisure time is a widely recognized necessity leads to its increase. The wide-spread granting of increased time away from a productive occupation tends to make it more firm and able to multiply in our society. The granting by government, industry, and commerce of the various leisure time concessions listed below has made recreation a firmly institutionalized facet of our society. Shorter hours, paid vacations, retirement benefits, and higher wages are all outward manifestations of the fact that our society accepts the fact that leisure time is necessary and recreation is beneficial. This has little effect upon any one type of activity or facility but generally increases the use-pressure upon all.

Shorter Hours

As mentioned before, the work week at the turn of the century was sixty hours per week. In 1960 it was quite widespread at forty hours per week, indicating that it may fall

to as low as thirty hours a week in the future. This will vary, of course for different trades, occupations and professions. More complete projections and statistics are available in the National Recreation Survey (see bibliography) in Chapter I (Estimate of Decrease in Hours Worked, 1960-2000).

The effect of this upon future outdoor recreation will be two-fold beyond the primary factor of increasing total leisure time. This added time for rest and refreshment may be in shorter hours per day, thus allowing more time each day for recreation at the end of the day. In this case more facilities would be needed for 2-3 hour activities than are available now. The other alternative is to have an extra day off per week, which would increase the need for facilities which would be able to have a high weekend usage.

High Wages and Paid Vacations

With a period of from one to four weeks of time with full pay allowed away from the place of work it is not unusual that many families travel or spend more time participating in outdoor recreation. This is a new situation in the nation and one that is being emulated by other nations and cultures. This coupled with high wages that are able to be saved for an extensive trip have added to the vacation travels of the family group. An increase in size and numbers of National Parks, National Forests and other large reservations away from population centers has been prompted by this factor.

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Increased Education

This has allowed for an increase in skills of many people with the resultant ability to earn more. It has also allowed many people to know more not only about their own country but also concerning the other nations of the world, thus increasing foreign travel. Some of the additional income is being used for this increased education. This greater knowledge is adding to the interest and fund of information concerning the recreational possibilities in the landscape immediately surrounding the place of residence. This widens the scope of leisure time possibilities close at hand. This also suggests the need for facilities such as nature trails, historical sites, museums, arboreta, and neighborhood parks and playgrounds. It also changes to some degree the type of activities desired or participated in. Generally persons in the higher education brackets are as distinguished in their recreational desires as are those in the higher income brackets. Projections of these increased education levels should be studied to discover all of the many other possible changes in recreational needs and habits these portend.

Longevity and Pensions

Improved nutritional and sanitary conditions in conjunction with the greatly advanced medical knowledge and practice of recent years have led to a much longer life span for many of America's residents. In years gone by, longivity did not have the benefits it has today, since decreased earning

power lessened the enjoyment of retirement years. Adequate pensions, though, are a recognized part of the institutionalized leisure mentioned before and give added years of activity and leisure time to those persons of retirement age. Social security benefits from the Federal government and the prospect of medical care for the aged have lifted some of the load of financial concern from the nation's "senior citizens". All of these benefits have begun to open up a new leisure class in our nation. Table A-7 shows also the further increase not only in percentage of the total population of this group but the increase in total population. The meaning of this is that whereas today we have approximately 15 million citizens over 65 years of age, in 2000 we will have 36 million. These will be mainly retired persons with adequate income and inclination to participate in many outdoor recreational activities.

The type of activities these people will desire to participate in is varied but generally they will not be of the most active type and will be largely in certain sections of the country. Table A-11 shows some of the activities preferred primarily by this group. Provision will have to be made for this great influx of outdoor recreation facilities users that is not indicated in raw population increase statistics.

TABLE A-7.--Age and sex distribution of the population[18]

Age Group	Percent of Total Population					
	1900			1930		
	Males	Females	Total	Males	Females	Total
Under 14 .	32.0	32.7	32.3	27.4	27.3	27.3
14-19 . . .	11.9	12.4	12.1	11.1	11.4	11.4
20-24 . . .	9.3	10.0	9.7	8.7	9.2	8.9
25-34 . . .	16.1	15.8	16.1	15.2	15.8	15.4
35-44 . . .	12.6	11.7	12.2	14.1	13.8	14.1
45-54 . . .	8.8	8.1	8.4	10.9	10.4	10.6
55-64 . . .	5.4	5.2	5.1	7.1	6.7	6.9
65 and over	3.9	4.1	4.1	5.5	5.4	5.4
All ages (millions of persons)	38.9	37.2	76.1	62.3	60.8	123.1
	1959			1976		
Under 14 .	30.4	28.6	29.4	31.4	29.3	30.3
14-19 . . .	9.1	8.6	8.9	11.0	10.4	10.7
20-24 . . .	6.4	6.2	6.3	8.4	8.0	8.2
25-34 . . .	13.0	13.0	13.0	13.8	13.2	13.5
35-44 . . .	13.3	13.6	13.4	9.8	9.6	9.7
45-54 . . .	11.4	11.7	11.6	9.6	9.9	9.8
55-64 . . .	8.4	8.9	8.7	8.1	9.0	8.5
65 and over	8.0	9.4	8.7	7.9	10.6	9.3
All ages (millions of persons)	87.6	89.5	177.1	118.5	121.5	240.0

Age Group	2000		
	Males	Females	Total
Under 14 .			
14-19 . . .	29.4	30.3	28.6
20-24 . . .	8.0	8.2	7.9
25-34 . . .	13.5	13.7	13.2
35-44 . . .	11.9	12.0	11.8
45-54 . . .	10.3	10.3	10.3
55-64 . . .	6.6	6.4	6.8
65 and over	9.0	7.5	10.4
All ages (millions of persons)	173.6	175.7	349.3

[18]Projections to the Yrs.1976 and 2000: Economic Growth Pop., & Leisure & Transporation. (ORRRC Study Report # 23) p.179.

Changing Economic and Social Status

Changes in income and education also bring about altered aims, ideals and social classification. With these then are brought recreation activity diversification and modification. These income changes are shown in Table A-8. Increased total income will not only mean that there will be more money for leisure time and recreation but also this will bring about changed attitudes and desires. Total participation in outdoor recreational activity also moves up at a greater rate than does income as the economic level rises.

TABLE A-8.--Actual and estimated percent of consumer units in each income class, 1947, 1957, 1976, and 2000[19]

Income (1959 dollars)	Percent of Consumer Units			
	1947	1957	1976	2000
Below 2,000	15.6	13.8	7.5	4.2
2,000 to 3,999 . . .	27.2	20.8	10.6	7.8
4,000 to 5,999 . . .	26.3	23.8	13.2	7.6
6,000 to 7,499 . . .	11.4	14.5	11.3	6.8
7,500 to 9,999 . . .	9.9	13.3	17.8	13.1
10,000 to 14,999 . .	6.1	8.8	22.9	25.5
15,000 to 19,999 . .	1.6	2.6	8.2	15.9
20,000 to 24,999 . .	0.8	1.0	3.8	8.0
25,000 and over . . .	1.1	1.4	4.7	11.1

Source: "Economic Projections for the Years 1976 and 2000," Part III, Table 11, "Income Size Distribution," National Planning Association, included in Projections to the Years 1976 and 2000, ORRRC Study Report 23.

[19]Ibid., p. 220

Both of these factors and their implications may be examined more fully in various Outdoor Recreation Review Commission reports, namely Outdoor Recreation for America and Projections to the Years 1976 and 2000. In short these factors will change not only the total demand for outdoor recreation but also the selective demand for certain activities as opposed to others.

Increasing Urbanization

This has been mentioned before as one of the creators of the potential land shortage and as one of the competing elements for the remaining land areas. It has a further effect on future recreation needs. There seems to be a direct relationship to the amount of urbanization in an area and the required open land immediately surrounding it needed for recreation purposes. The more intense and widespread the urbanization the greater the need for recreational land for the crowded inhabitants of the city. Since the urban dwellers are not able to find the re-creation they need within the city, facilities and space will have to be provided in the surrounding land area. The revolt against the crowding of the urban life will increase the desire of the inhabitants for more contact with nature. The following quote by Glikson which will be referred to later in the paper is worth a double mention and it certainly has application in this discussion. "The more artificial the urban environment, the

larger the demand for compensation in indigenous landscape."[20] In a rural economy recreation land is integrated into the way of life and little or no land is set aside specifically for the purpose of recreation. In the modern city with its high land values very little land may be allotted for leisure time activities. Therefore an increased amount of land must be allowed for in the open countryside to take care of the open space recreational needs of the crowded urban inhabitants. This burgeoning urban population will then create new and unprecedented demand for outdoor recreation.

Time-Distance Factor Between Population and Recreation Areas

It is obvious that this in itself will not create new demands for outdoor recreation. It will, however, create a change in type and location of outdoor recreation facilities. The rise in mobility of the American population has made many new forms of recreation and many isolated locations popular. The short period of time required to move from crowded cities through the hinterland to open countryside has been compressed by the automobile, airplane and rapid rail transit. Therefore a greater portion of the land area of the nation is available for the use of persons crowded into urban areas. This spreads the total increased demand over the whole of the land rather than in the immediate area of high population densities. This

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[20] Thomas, op. cit., p. 903.

does lead, at times of peak demand, to the crowded population of cities escaping to overcrowded recreational facilities on highways jammed bumper-to-bumper with others trying to accomplish the same end. This is a definite consideration in total demand for outdoor recreation.

These factors cited above have served to point up some of the new and projected problems facing recreation planners in America now and in the future. These are basic underlying elements in modern and future considerations for planning for leisure time facilities. These trends and their importance may not be noticed by the designer of a small park or playground. They do, however, exist and should be recognized by regional planners and others concerned with large scale decision-makers. Three main centers toward which the problems seem to gravitate have been identified above. Together they form a new problem that exists and will continue to grow in America. A suggestion is given in the remainder of this paper as to one possible way the recreation needs of this population could be met in this crowded land area. Before putting forth this proposal it has been necessary to show why it has validity in the context of the American landscape and in the face of twenty-first century problems. This is the reason for the necessity of so forcefully pointing up the problems that gave rise to this suggestion for a new type of recreation facility in our country.

CHAPTER II

THE PROPOSAL

A Look at How Other Nations Solve the Same Problem

With the doubling of population, the tripling of leisure time, and the resultant demand for recreation of all types, including outdoor recreation and its attendant need for new facilities, America is facing a new situation--a new situation, however, only for America. As indicated above our nation is a maturing country. The early colonial and pioneering days when land was cheap and plentiful are gone forever.

The unprecedented population explosion in the world and especially in the United States, coupled with the increased demand for space by modern society and technology, bringing with them the gifts of increased leisure and a higher standard of living, have given America's physical and recreational planners a herculean problem. In the matters of living standards and technology we have no reference points in history with which to orient ourselves, but in the matter of the accommodation of large masses of people upon limited goegraphical areas, we have a vast heritage and source of information upon which to draw. The major nations

of past world power have the background of a high population inhabiting a confined or unexpandable portion of the earth's surface. The Netherlands, which is the most densely populated of the nations of Europe, has 879.5 inhabitants per square mile. If the United States had a population density of this scale the entire population of the world (3.1 billion) could inhabit its land area. If the United States had the average per square mile population density of France it would have to support 751,300,000 people, or more than the entire population of Communist China. This however, carrying the above population predictions beyond the year 2000, is very possible within the expanded lifetime of children now being born. The physical planning of all but the most pessimistic has to take these sobering facts into consideration. Therefore we must take into consideration a physical population pressure on the American landscape that has been experienced by other nations of the world, in addition to a phenomena that has never before happened in world history. This consists of increased longevity, staggering technological advances, previously unheard of income, potential leisure time on a new scale, educational possibilities at an all time high, and fast nationwide transportation facilities. The degree and scale of this is uniquely American.

We can, however, learn much in the way of land use economy and high density land utilization from some of the more densely populated nations of the world. It is acknowledged that America early took the lead in setting aside and

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preserving large masses of the natural landscape as wilderness and for recreational uses. Nevertheless, this smacks of the characteristic American insensitivity to the land and its potential. The land and its products have traditionally been thought of as commodities to be bought, sold, exploited, and cast aside for virgin areas. This, due to the lack or absence of a continuing supply of such land, has ceased, and a new approach or approaches must be considered.

For concepts and attitudes necessary in a re-approach to our new situation as a soon-to-be "land poor" nation, we must look to the thoughts and deeds of nations to whom this has been a continuous problem. In Table A-9 we see six other nations of the world with their land area, gross population, and population densities, compared to those of the United States. Since each of the countries--Japan, Denmark, France, West Germany, the Netherlands, and Great Britain--has and will be faced in the future with a land shortage and population increase much greater than even that anticipated by the United States in 2000, we can learn something from each of them in the way of more effective and sensitive utilization of the landscape under their political control.

Generally, each of these nations has experienced an increased post war demand for new and more pervasive recreational pursuits and facilities. In many cases pre-war recreational as well as other facilities were destroyed by the devastation attendent to the participation of the respective countries on one side or the other during the war. However,

TABLE A-9.--Population Density Table in 6 Countries and U. S. A.[4/] [1]

Country	Area in Sq. Mi.	Population	Density: Persons per Sq. Mi.	Projections[3/] 1976	States with Comparable Areas
Netherlands. . .	12,616	11,096,000	879.5	13,810,000	1/2 S. Carolina
Japan	142,202	90,600,000	637.1	[4/]100,000,000	Montana
W. Germany[1/] . .	95,923	54,061,000	563.6	56,200,000	Oregon
United Kingdom .	93,895	51,813,000	551.8	56,100,000	Oregon
Denmark[2/]. . . .	17,159	4,522,000	263.5	5,150,000	1/2 Indiana
France	212,736	44,289,000	208.2	49,000,000	Arizona & Col.
U.S.A.	3,608,787	182,269,000	50.5	227,000,000	. . .

1/ Excluding West Berlin. 2/ Excluding Greenland; including Faroes. 3/ Without migration.
4/ 1971.

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[1]Betty Sullivan Martin, A Look Abroad: The Effect of Foreign Travel on Domestic Outdoor Recreation and a Brief Survey of Outdoor Recreation in Six Countries, (ORRRC Study Report No. 18 (Washington, D. C.: United States Government Printing Office, 1962), p. 4

and in a great degree the same factors that have ballooned the desire for outdoor recreation and facilities in the United States have worked (although in some cases to a lesser degree) in most of the countries in question. Shorter work hours than in previous generations are generally the case in most industrialized nations. Higher wages and paid vacations have increased the ability of the average wage earner and his family to participate in recreation of all types and to use outdoor recreation facilities. These factors have also made greater travel possible, within these countries and from country to country. The difference in the high degree of urbanization that already exists in many of these countries as compared to what has existed in the United States in the past is marked. Nevertheless, as in the United States, the trend is toward yet greater urbanization. The rapid increase in the growth of the European economy due to the success of the common market and the application of modern American mechanized farming methods to the traditional agriculture of these countries has led to a freeing of the rural population and their subsequent move to urban areas. The relative proportion of the labor force in agriculture in each of these countries and the United States is shown in Table A-10. The urban dwellers of most if not all of the countries studied, demand outdoor recreation on the fringes of the cities and in the countryside. As Glickson has said, "The more artificial the urban environment, the larger the demand for

compensation in indigenous landscape."[2] This once again is similar to, except more intense in degree, than what the United States has faced and will face in the future. Greater opportunities for education, and with it the accompanying change in social and economic opportunities have given many (who never before had the chance) the time, the money, and the inclination, to take advantage of recreational opportunities and facilities. The automobile and work-saving appliances have given more free time and mobility to the average European and Japanese worker and their families.

Increased life expectancy and the provision in most cases of even very small pensions for older people have increased the demand for leisure time activities and facilities for this group in most of these countries to a marked degree. This is, however, much less the case in these nations than it is in the United States at present and will continue to be to a greater degree in the future.

All of this mention of the facets of similarity between the social, cultural and technological trends of the new Europe and Japan and the United States has been done to point up the similarity of some of the problems faced. Yet there are certain divergences as mentioned previously. These changes in Europe are taking place upon old, more densely

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[2]William L. Thomas, editor, Man's Role in Changing the Face of the Earth (Chicago: University of Chicago Press, 1956), p. 903.

populated land areas. Therefore we can learn some lessons as to how the recreational desires of a crowded people can be met while undergoing the traumatic changes of modern society, culture and technology. The question arises and can be pursued as to what kinds of recreation and recreational facilities these countries have fostered and developed as an answer to basic leisure time needs in cramped physical surroundings. The precedents they have set can act as possible guides for present and future recreational planners in the United States. Some of the traditional patterns of recreation have been kept, some have been adapted to the new pattern of living, and still other new demands have arisen in these countries. Motor transport to recreation areas or as a form of recreation per se is not as ubiquitous in these countries as it is in our country. Due to the large amounts of land taken by the movement and storage of motor vehicles used for commerce and pleasure, it is doubtful if they ever will in countries where land is at a premium be used as extensively as they have been in our country. In fact the eventual diminution of either use or size is inevitable, at least as recreation media, as the population increases.

The Outdoor Recreation Resources Review Commission report says concerning the traditional patterns of recreation

> Old habits and cultural patterns as they apply to recreation are influential, but they, too, are changing. The bicycle which has long been the dominant means of private transportation in all countries studied, though still ubiquitous, is gradually giving way to the motor; if not motor cars--at least motorized bicycles, motor scooters, and motorcycles. Even in Denmark and the

Netherlands (where there is one bicycle for every two people), inroads are being made by motor vehicles.

The British still like to walk and garden and holiday at the seaside, but the spread of automobile ownership has given rise to a form of recreation called caravaning.

The urban German or French worker's family still takes off to the woods for a day-long picnic but is also likely to spend a week or two of the summer at a holiday camp in the mountains.

The Japanese still flock to cherry groves at blossom time. They also pack the excursion trains to ski resorts throughout the skiing season.[3]

It is interesting to note how the traditional patterns are being changed by modern technology, but it is more interesting to see what the trends are in the new demands for recreation. The same publication states under Kinds of Recreation in Demand a number of types of recreation that have not been exploited to any great degree in the United States as yet. These are underlined in the following quotation:

> Cycling, strolling, rambling, swimming, picnicking, hiking, mountain climbing, camping, touring, sightseeing, and lazing in the sun are high on the list of most-favored outdoor recreation activities in every country. Motoring is a most popular activity with car owners, especially first-time car owners. Canoeing and rowing are favorites; small boat sailing and motor boating are gaining popularity.
>
> Our survey indicates that the kinds of facilities listed below are among the most needed in each of the countries.
>
> Playgrounds, playing fields, and recreation centers for young people especially in urban areas.

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[3]A Look Abroad (Washington, D.C.: United States Government Printing Office, 1962), Outdoor Recreation Resources Review Commission Report No. 18, p. 7.

TABLE A-10.--Percentage of Labor Force in Agriculture[4]

Denmark	1/ 24 percent
Great Britain	4 percent
France	9 percent
West Germany	14 percent
Netherlands	12 percent
Japan	35 percent
U. S. A.	6 percent

1/ Of employed workers.

Outdoor recreation facilities such as campsites, tent villages, and mountain shelters for young people. This need goes hand in hand with desire to provide increased opportunities for young people of all economic levels to use such facilities.

More youth hostels to accommodate domestic users and to meet increasing demand by foreign tourists.

Extension and cataloging of cycle paths, trails, and walkways, and overnight accommodations along them for cyclists, hikers, and ramblers.[5]

Some of these functions mentioned are of the type that can easily be combined in multiple land use situations. This in time to come will be a vital requisite for any recreational facility. We see that "In Holland, all land serves as many functions as possible."[6]

It also seems that a re-assessment of the basic purpose of recreation is necessary in America since we must use all of our land to serve the best needs of an enlarged population. Once again Glickson says,

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[4] Martin, op. cit., p. 6. [5] Loc. cit.

[6] Ibid., p. 16.

> To come in touch with different types of environment belongs probably in the same category of desires as the physical demand for a variegated nutrition and the psychic demand for variegated social contacts.
>
> . . . . . .
>
> The need for recreation varies with the individual; it obviously depends on personal versatility as well as on the quality of his daily environment. To consider recreation as a human need in past, present, and future, we shall have to make a clear distinction between the normal demands for change of environment on the part of members of healthy communities and the abnormal recreational instability of modern men living compressed in cities which are not planned to the human scale and which time and again compel attempts to escape.[7]

Some of the European facilities, as noted before, seem to provide more effectively for this variety of recreational environments and an intimate contact or a meshing of the urban man with the remaining vestiges of indigenous environment available to him. To take the twentieth century technological man from his insulated automated environment and to allow him to move through the countryside in continuous contact with the sky, the earth, the natural vegetation, and in a relatively uncontrolled environment, is a recreational need in America. Some of these afore-mentioned nations are immeasurable ahead of our own country in this regard. This then is one of the major areas in which America's recreation planners may learn of the more sensitive arrangement of recreational facilities and of man's avenues of access in the land that is available for this purpose. The

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[7]William L. Thomas, editor, Man's Role in Changing the Face of the Earth (Chicago: University of Chicago Press, 1956), p. 898.

THE PENNINE WAY.

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following quote illustrates this.

> In Britain, a survey of all footpaths and bridleways in England and Wales is currently being made by local authorities for a comprehensive national record of public rights of way. In some areas existing footpaths and bridleways are being linked to form long-distance routes which will become continuous rights of way for travelers on foot or on horseback.
>
> Responsibility for making proposals for long-distance routes rests with the National Parks Commission. Proposals for seven routes covering 1,028 miles have been approved, and more routes of this kind are beind [the correct spelling is being] considered. The Ramblers Association provides information on walking tours in every part of Britain, including urban areas.
>
> The British Cycling Federation and the Cyclists Touring Club have mapped the cycle paths of Britain from Land's End to the north of Scotland and provide itineraries and maps for their members. The 50 district associations of the CTC also arrange holiday and weekend tours as well as cycle tours and itineraries abroad.
>
> In West Germany, the German Cyclists' Association provides the same services for its members. Both West Germany and France have excellent networks of cycle paths as well as footpaths. There are marked routes for hikers in the mountain areas, and the various societies and walking clubs publish detailed walking maps for all parts of both countries. Mountain climbing is extremely popular in both countries. The most-climbed mountain in West Germany, however, is not the country's highest. Some 3,000,000 visitors a year climb the Siebengebirge (Seven Hills, altitude 1,066 ft.) opposite Bonn. Ski tracks--both cross-country and downhill-toboggan tracks and bobsled runs are plentiful and increasingly used in both countries.
>
> In the Netherlands where there is one bicycle for every two people, an elaborate system of cycling roads entirely divorced from motor roads is planned. Of course, hundreds of miles of such roads are already in existnece. The new plan calls for a new country-wide network of simple roads. They may be specially constructed tracks, or rough country lanes improved and incorporated into the system. The plan is to connect the large centers of population with various holiday centers. It is also planned to run the new roads close to large numbers of smaller towns and villages of historical or cultural interest.
>
> In mountainous Japan, hiking and mountain-climbing

> attract increasing numbers of Japanese. There are well-marked trails in many mountain areas. Fuji alone annually attracts more than 10,000 climbers. Along the routes to the summit, there are stone huts where climbers may rest.[8]

A Neglected Segment of Recreation Planning in the United States

This segment of recreation planning has been greatly neglected in America in the past due to the abundance of available land, the relative nearness to most inhabitants, accessability of the natural landscape, the sparsity of population, and the adequate job recreation planners have been able to do on the acquisition and design of large scale land preserves. However for the reasons given above--vastly increased population with its concomitant land demands and the increased ability and demand for leisure time activities--some of the energies and imagination of those who provide and plan recreational facilities could well be directed toward the possibility inherent in these trails or pathways, which are developed so effectively in Europe. As Mr. Lewis Mumford states

> The time has come in landscape design to conceive alternatives for the classic and romantic cliches of the past, and for the even more sterile cliches of the mechanical "space eaters" who would destroy all the esthetic resources of the landscape in their effort to enable tens of thousands of people to concentrate at a distant point

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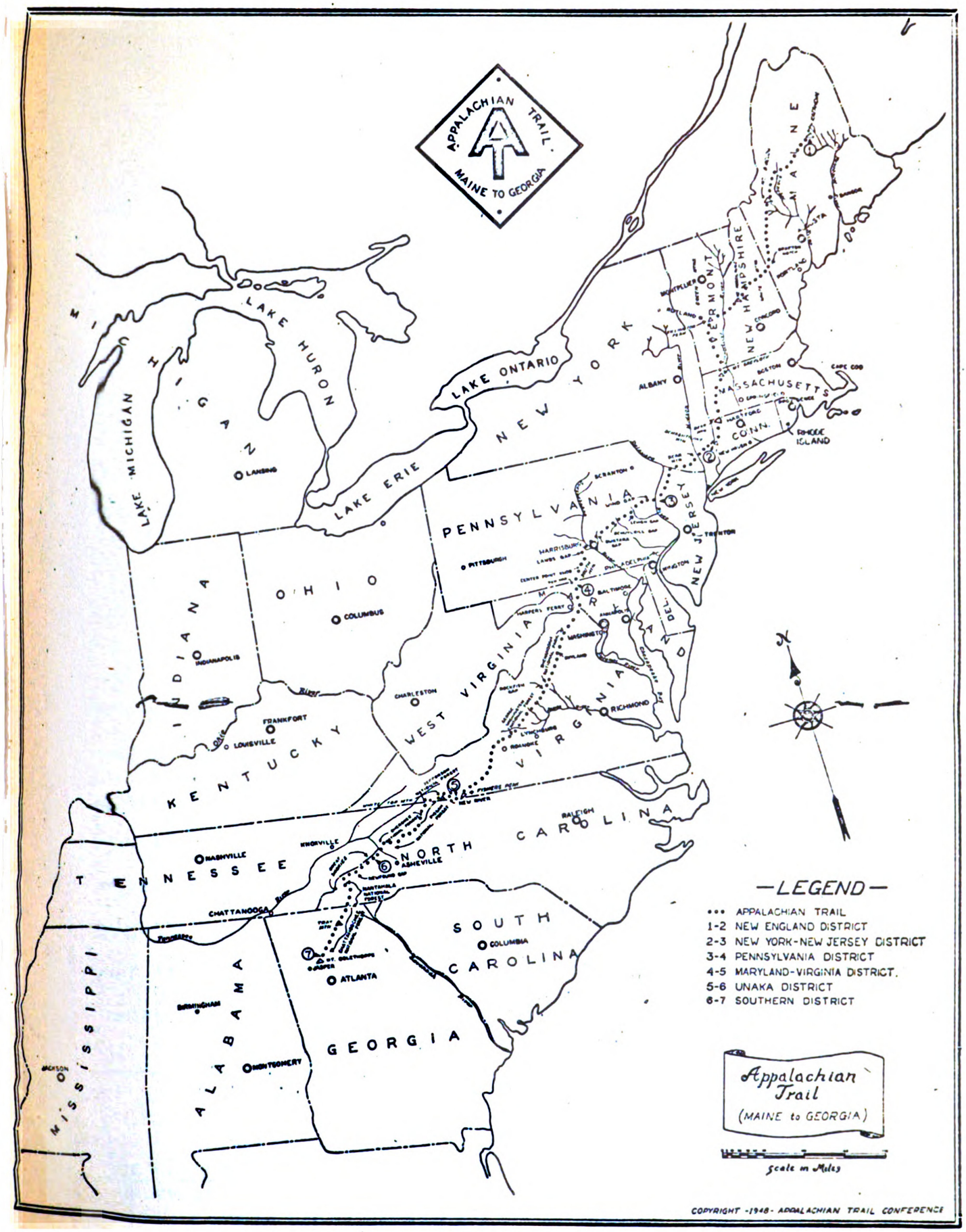
[8] A Look Abroad (Washington, D.C.: United States Government Printing Office, 1962), Outdoor Recreation Resources Review Commission Report No. 18, p. 26.

> at the same time; and who, when their weekend tourists finally reach such a point, can only offer them the congested facilities and the banal amusements of the community that they have made such a desperate effort to escape. It is not be a mere quantative increase in the present park facilities, but a comprehensive change in the whole pattern of life that we shall realize to the full the social function of open spaces.[9]

Some beginnings of this type of thing in America have been made in such long-distance routes as the Appalachian Trail, and the Cascade Crest trail. In addition, there are many trails throughout parks, forests and recreation preserves. These can be used only as guides in trail layout design and construction since, contained within existing parklands, they are consequently unaccessible to the great centers of population, except by means of relatively long journeys by autos or by some other mechanized transportation. The need is rather that there be a network of interconnected trails of various lengths, character, and destination spreading throughout the natural landscape, linking urban area to urban area, urban area to parks, urban parks to rural parks; and permitting intimate contact with the natural, historical, and recreational areas of a region.

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[9] Sylvia Crowe, editor, Space for Living (Amsterdam, Netherlands: Djambaton, 1961), p. 24.



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THE APPALACHIAN TRAIL

MAINE TO GEORGIA

A Trailway System Proposal

This leads then to a proposal of the establishment of such a network of trails.

> . . . the task of the landscape architect will be to design footpaths, picnicking grounds, pedestrian pleasances along riverfront beaches and woodland groves in such a fashion as to give access to every part of the rural scene without undue disturbance to the daily round of life. One must think of continuous strips of public land weaving through the whole landscape and make it usually accessible to both nearby resident and to holiday visitors. There is the beginning of this new process of using the whole landscape as a recreational facility in the layout of bicycle paths in the Netherlands and there remains in certain parts of England, as a residue from a quite different era, a system of public footpaths over hill and dale, through field and wood, that needs only to be broadened into somewhat wider strips, no more than twenty or sometimes fifty feet to provide amply for public needs without encroaching too heavily on agricultural uses.[10]

Mr. McKaye says that "The basic achievement of planning is to make potentialities visible. . . . The function of planning is to render actual and evident that which is potential and inevident."[11] The potentialities for such a system or network exist in America and are generally self-evident. The methods of its implementation, it is hoped, shall be made clear in the remainder of this paper. The need of it and the function it can serve in the future of America must first be shown.

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[10] Ibid., p. 25.

[11] Benton McKaye, The New Exploration: A Philosophy of Regional Planning (second edition; Urbana, Illinois: University of Illinois Press, 1962), pp. 147-148.

In connection with and subsequent to the above quotation by Mr. McKaye which is from his 1928 book The New Exploration a Philosophy of Regional Planning he goes on to say that:

> There are two particular potential images and worlds lying within practically every region: these are the indigenous world and the metropolitan world. The contrast between them is obscure and inevident. The most important revelation to be made by the chemistry of the imagination, in our own particular problem of regional planning, is the rendering evident of this inevident contrast.
>
> The notion is dawning in the public mind, apparently, that something is wrong with the way in which our towns and countryside are being treated. The cry grows louder against "billboards," "hot-dog stands," and the "motor slum" which is pushing its way along the rural waysides. "Slum flow" is what a friend of mine has called it, a term which we might well use as a short name for "metropolitan flow."[12]

This was in 1928. Now, 35 years later, how much greater the problem! Mr. McKaye proposes to direct this unregimented flow of the metropolitan into the indigenous by means of a series of "levees" or open-ways made up of the natural land features of the region.

Through, in, or on these levees would then be the pedestrian ways, hiking paths, bicycle paths and bridle trails. These thoughts and this man proved to be the midwife of the Appalachian Trail concept in the easter United States. This, then, coupled with Mr. Mumford's ideas as quoted above (which ideas, incidentally seem to have been stimulated by Mr. Mumford's contact with Benton McKaye) form

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[12] Ibid., pp. 148-49.

the seed of this concept, to be spread across the United States and incorporated into national and state recreation plans, regional recreation proposals, and local development schemes, by various methods. The methods and implementation section of this paper will deal with processes of organization, control, land acquisition, design, etc.

Before delving into the actual working out of such a system, the use, need and demand for such trails or paths must be seen in the contemporary and future recreational patterns of America.

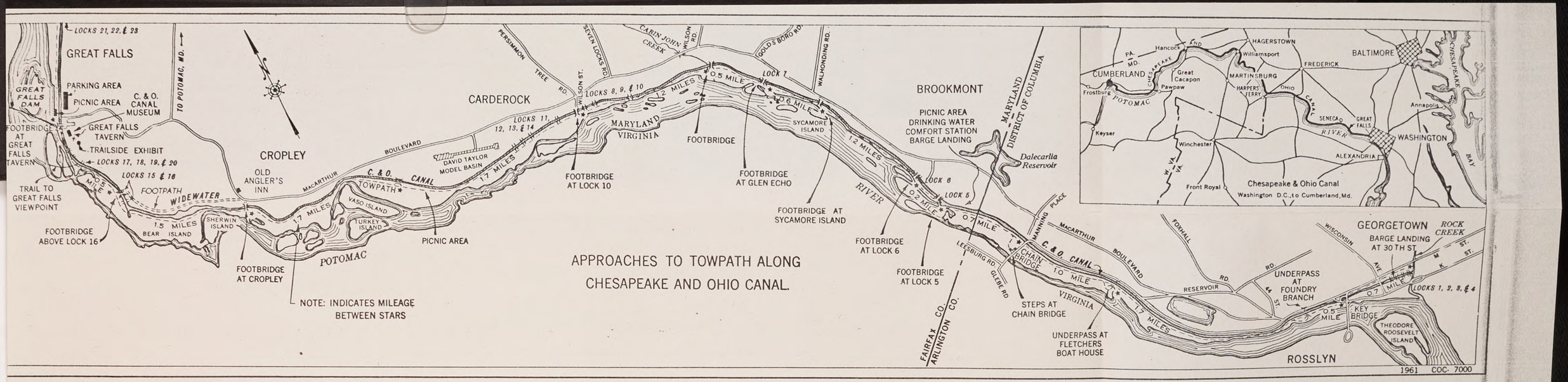
The interest current in the United States at the start of the present decade in the physical fitness and vigor of the populace has taken many forms. The area most publicized by the popular press has certainly been that of hiking.

The 50 mile hike and its attendant "hiking craze" is widely publicized in the daily newspapers and popular magazines. As mentioned in the February 22, 1963 issue of Life magazine,

> It was just one of those friendly office jokes, but in no time at all it got out of hand--or foot. Marine Commandant David M. Shoup unearthed an old executive order sent out in 1908 by President Teddy Roosevelt that required all Marine Corps officers to be able to walk 50 miles in 20 hours. Then Shoup sent the curio along to another presidential believer in vigor, John F. Kennedy, who wrote back wondering if today's Marines were fit enough to do it.
>
> Soon everybody in the country was taking an old fashioned walk of 50 miles more or less.[13]

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[13]Robert Wallace, "The 50-Mile Walk," Life, Vol. 54, No. 8 (February 22, 1963), 72B.


GREAT FALLS
LOCKS 21, 22, & 23
GREAT FALLS DAM
PARKING AREA
PICNIC AREA
C. & O. CANAL MUSEUM
GREAT FALLS TAVERN
TRAILSIDE EXHIBIT
LOCKS 17, 18, 19, & 20
LOCKS 15 & 16
FOOTBRIDGE AT GREAT FALLS TAVERN
TRAIL TO GREAT FALLS VIEWPOINT
FOOTBRIDGE ABOVE LOCK 16
FOOTPATH
WIDEWATER
1.5 MILES
BEAR ISLAND
SHERWIN ISLAND
1.7 MILES
FOOTBRIDGE AT CROPLEY
POTOMAC
NOTE: INDICATES MILEAGE BETWEEN STARS
TO POTOMAC, MD.
CROPLEY
OLD ANGLER'S INN
MACARTHUR BOULEVARD
C. & O. CANAL
TOWPATH
VASO ISLAND
TURKEY ISLAND
PICNIC AREA
DAVID TAYLOR MODEL BASIN
1.7 MILES
CARDEROCK
PERSIMMON TREE RD.
SEVEN LOCKS RD.
WILSON ST.
CABIN JOHN CREEK
WILSON RD.
GOLD'S BORO RD.
WALHONDING RD.
LOCKS 8, 9, & 10
1.2 MILES
0.5 MILE
LOCK 7
0.6 MILE
LOCKS 11, 12, 13, & 14
MARYLAND
VIRGINIA
FOOTBRIDGE AT LOCK 10
FOOTBRIDGE
FOOTBRIDGE AT GLEN ECHO
SYCAMORE ISLAND
FOOTBRIDGE AT SYCAMORE ISLAND
1.2 MILES
RIVER
BROOKMONT
PICNIC AREA
DRINKING WATER
COMFORT STATION
BARGE LANDING
MARYLAND
DISTRICT OF COLUMBIA
Dalecarlia Reservoir
LOCK 6
0.2 MILE
LOCK 5
0.7 MILE
FOOTBRIDGE AT LOCK 6
FOOTBRIDGE AT LOCK 5
MANNING PLACE
MACARTHUR BOULEVARD
C. & O. CANAL
CHAIN BRIDGE
1.0 MILE
LEESBURG RD.
GLEBE RD.
STEPS AT CHAIN BRIDGE
FAIRFAX CO.
ARLINGTON CO.
VIRGINIA
1.7 MILES
UNDERPASS AT FLETCHERS BOAT HOUSE
ROSSLYN
FOXHALL RD.
RESERVOIR RD.
UNDERPASS AT FOUNDRY BRANCH
WISCONSIN AVE.
GEORGETOWN
BARGE LANDING AT 30 TH ST.
ROCK CREEK
K ST.
0.7 MILE
LOCKS 1, 2, 3, & 4
0.5 MILE
KEY BRIDGE
THEODORE ROOSEVELT ISLAND
1961 COC- 7000
APPROACHES TO TOWPATH ALONG CHESAPEAKE AND OHIO CANAL.
Hancock
PA.
MD.
CUMBERLAND
Great Cacapon
Pawpaw
Frostburg
POTOMAC
Keyser
Winchester
W. VA.
VA.
Front Royal
HAGERSTOWN
Williamsport
MARTINSBURG
HARPERS FERRY
OHIO
CANAL
SENECA
GREAT FALLS
RIVER
FREDERICK
BALTIMORE
Annapolis
WASHINGTON
ALEXANDRIA
CHESAPEAKE BAY
Chesapeake & Ohio Canal
Washington D.C., to Cumberland, Md.

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The article continues giving medical opinions on the healthful benefits of walking.

> (Dr. Paul Dudley White) White himself is in excellent shape, and obeys his own maxims of "an hour's exercise a day" by not only walking wherever and whenever he can but by chopping wood, bike riding, snow shoveling and skiing. "Walking is easiest," he explains. "Your don't need a lot of apparatus. Just shoe leather and good feet. It is better than using the arms, with their smaller muscles. Leg muscles are biggest in the body. You get most out of walking by going along briskly, swinging the arms and breathing deeply. It also helps promote the circulation of blood to the brain. The Greek philosophers promenaded as they philosophized." White philosophized.[14]

With the impetus of such articles and medical advice, general interest has been aroused in walking or hiking as a form of recreation. The most common routes of these hikers have been existing roads, railroad rights-of-way, trails within existing parks, and foot-paths within military reservations. However the highly publicized hike of Presidential press secretary Pierre Salinger was along the old towpath of the Chesapeake and Ohio canal which goes through the District of Columbia and into Maryland, the map of which towpath is included in this paper. This demand which is thus being created by new groups of walkers must be met by recreational planners who are to provide the walking or hiking paths and other facilities necessary to make these trips worthwhile for the individual, not only from the physical, but also the educational, social and cultural aspects.

To show the interest that exists at present in

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[14] Ibid., p. 82.

activities of this type and to predict what will in the future be the interest, desire, and demand that will generated by publicity of this type, a number of studies have been made. These studies are precluded upon the facts that "participation in a given outdoor activity is predictable from the social and economic characteristics of the participant," and "that the unfulfilled demand for an outdoor recreation activity is reflected in preferences for the activity, even though the person may not participate"[15] (possibly due to the lack of facilities). The sex, income, education, age and amount of leisure time of potential recreation facility users will influence the desires and demands for certain types and forms of physical designs.

"At present, it is the simple pleasures which Americans seek most," such as swimming, sightseeing, walking for pleasure, fishing, boating and bicycling.[16] Some are activities primarily of the young; for example, swimming and bicycling. Some other activities tend to last a life-time; such as, camping, fishing, sightseeing and walking for pleasure. Yet others tend to become a habit after the early years. These include boating, hiking, horseback riding, nature walks and water skiing. The only activity that recures with age is

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[15] National Recreation Survey (Washington, D. C.: United States Government Printing Office, 1962) Outdoor Recreation Resources Review Commission Report No. 19, p. 4.

[16] Outdoor Recreation for America (Washington, D.C.: United States Government Printing Office, 1962) Outdoor Recreation Resources Review Commission Report, p. 36.

walking for pleasure. These facts are all shown on the statistics listed in Table A-11.

Family income has a bearing not only on total amount of recreation participated in, but also in the type of recreation chosen and enjoyed. These facts are shown in Tables A-12 and A-13.

Education is another factor that affects amount and type of recreational activity chosen.

> Since education creates interests and develops skills, participation in some activities will be associated with years of schooling. One would expect that nature walks will be more highly associated with education than is fishing.[17]

Table A-14 shows this. The general educational level of the nation is predicted to increase so that in the future this aspect will be of even greater importance in the providing of facilities.

Opportunity to participate is a factor, but it is also a determinate of desire, so that if the facility were available a greater desire might also be generated--Table A-15.

Occupation affects amount of time available and as the occupational make-up of the population will be changed in the future due to technology, expanded economy, and increased education, this must be taken into account in future plans.

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[17] National Recreation Survey (Washington, D.C.: United States Government Printing Office, 1962), Outdoor Recreation Resources Review Commission Report No. 19, p. 5.

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The projected picture of recreation demand in the year 2000 is shown on Table A-16. The areas of recreational activity that are proposed to be served by the trails and paths advocated in this paper are not the largest areas of demand at that future time, but totaled together they are significant. This is true in the light of the fact that present facilities are negligible, and proposals for an expansion of facilities of this type are even more difficult to find.

The need for a physical route is tied to the participants and their needs and characteristics. Some of the attributes of the recreation users of these paths and trails through the countryside have been examined in the National Recreation Survey. The following quotes and references in the appendix then show who does what in these forms of leisure activity.

> There is a riddle of trails over the earth's surface. There are the trails of the first land creatures scribbling the rock that was once shore, the deep-dug trails of the hooved creatures moving with the undulations of caution towards the salt licks and the places of water, the paths of the Indian planted in the hoof grooves of antelope and deer and buffalo, the ways of the white man overmarching them all, lines at last of the machines, hard as asphalt, straight as steel.
>
> Trails are the script of life on the clay tablet of the earth. Splendid and sordid motives have etched the pattern, search for water, search for minerals, for treasure, for the fountain of eternal youth, for the Sabine women, for the swords of conquest, for the Holy Grail, for places beyond persecution, for opportunity, for space, for fame, for freedom![18]

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[18]Julia Cooley Altrocchi, The Old California Trail (Caldwell, Idaho: The Caxton Printers, Ltd., 1945), p. 15.

TABLE A-11.--Percent of the population 12 years and over participating and number of days per person for selected outdoor activities, by age, 48 contiguous States, June-August 1960

Age	Bicycling		Hiking		Horseback Riding		Water Skiing	
	%	Rate	%	Rate	%	Rate	%	Rate
All	9	1.75	6	0.26	6	0.42	6	0.30
12-17 . . .	41	10.02	18	.91	22	2.17	14	.93
18-24 . . .	10	.61	5	.18	8	.33	14	.55
25-44 . . .	5	.62	6	.16	3	.09	6	.29
45-64 . . .	2	.12	2	.13	2	.15	(1)	(2)
65 and over	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)

Age	Camping		Swimming		Boating		Fishing	
	%	Rate	%	Rate	%	Rate	%	Rate
All	8	0.46	45	5.15	22	1.22	29	1.99
12-17 . . .	20	1.07	83	15.27	39	2.97	45	3.76
18-24 . . .	8	.55	65	5.75	28	1.08	39	2.43
25-44 . . .	8	.41	55	5.02	23	1.29	31	1.83
45-64 . . .	5	.35	22	1.88	16	.69	23	1.61
65 and over	1	.06	(1)	.42	5	.25	10	.59

Age	Nature Walks		Walking for Pleasure		Sightseeing	
	%	Rate	%	Rate	%	Rate
All	15	0.75	33	4.34	42	2.20
12-17 . . .	28	1.64	53	7.29	52	2.71
18-24 . . .	16	.82	34	4.84	45	2.31
25-44 . . .	15	.53	34	3.23	46	2.09
45-64 . . .	10	.67	25	3.57	40	2.37
65 and over	6	.44	22	5.36	23	1.37

Source: National Recreation Survey, Commission staff, ORRRC Study Report 19.

[1]Less than .5 percent

[2]Less than 0.005 days per person

[18]Ibid., p. 214

TABLE A-12.--Total days participation and days per person in 17 outdoor activities by family income, for the population 12 years and older, 48 contiguous States, June-August 1960

Annual Family Income	Total Days Participation (millions)[1]	Total Days Per Person	Percent of Sample	Estimated Population (millions)
All	4,306.7	33.0	100.0	130.4
Less than $3,000 . . .	552.0	18.5	22.8	29.8
$3,000 to $4,499 . . .	744.7	33.5	17.0	22.2
$4,500 to $5,999 . . .	887.1	33.3	20.4	26.6
$6,000 to $7,999 . . .	853.6	40.5	16.2	21.1
$8.000 to $9,999 . . .	498.2	42.4	9.0	11.8
$10,000 to $14,999 . .	488.0	44.2	8.5	11.0
$15,000 and over . . .	204.5	49.7	3.2	4.1
Not reported	-----	----	2.9	3.8

Source: National Recreation Survey, Commission staff, ORRRC Study Report 19.

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[1]The total days for income classes do not total to the amount shown for "all" because of 2.9 percent nonresponse on income.

[19]Ibid., p. 215.

TABLE A-13.--Percent of persons 12 years and over participating and number of days per person for selected outdoor activities by family income, 48 contiguous States, June-August 1960

Annual Family Income	Boating		Camping		Horseback Riding		Walking for Pleasure		Fishing	
	%	Rate	%	Rate	%	Rate	%	Rate	%	Rate
Less than $1,500 . . .	4	0.14	2	0.05	2	o.24	19	5.20	24	1.50
$1,500 to $2,999 . . .	9	.52	4	.13	3	.25	28	4.72	21	1.00
$3,000 to $4,499 . . .	19	.97	6	.29	4	.27	32	4.06	28	2.57
$4,500 to $5,999 . . .	24	1.05	8	.44	6	.68	36	4.21	32	2.15
$6,000 to $7,999 . . .	28	1.56	10	.63	7	.55	37	4.31	32	2.16
$8,000 to $9,999 . . .	33	2.06	13	.92	7	.36	37	3.61	31	2.12
$10,000 to $14,999 . .	41	2.29	18	1.09	11	.40	37	4.07	39	1.94
$15,000 and over . . .	36	3.16	10	.68	13	.75	46	6.66	27	1.58

Source: National Recreation Survey, Commission staff, ORRRC Study Report 19.

[20] Ibid., p. 215

TABLE A-14.--Percent of persons 25 years of age and over participating and number of days per person in selected outdoor activities by number of years formal schooling, 48 contiguous States, June-August 1960

Education	Playing Games		Swimming		Sightseeing		Driving for Pleasure		Walking for Pleasure	
	%	Rate	%	Rate	%	Rate	%	Rate	%	Rate
All age 25 or more	20	1.61	35	3.12	41	2.07	50	5.47	29	3.71
4 years or less. .	2	.11	9	.57	17	.49	25	1.75	20	3.80
5 to 7 years . . .	9	.77	16	1.00	27	1.01	35	3.97	25	3.85
8 years	12	.47	23	1.25	35	1.90	48	4.44	25	3.82
High School										
1 to 3 years . .	22	1.51	36	3.00	36	1.82	54	5.85	29	3.27
4 years	25	1.93	49	4.55	51	2.59	58	6.63	32	3.11
College										
1 to 3 years . .	30	3.15	43	5.22	53	3.14	60	7.03	33	4.26
4 years or more	36	4.31	56	5.85	57	3.39	56	7.22	39	5.69

Source: National Recreation Survey, Commission Staff, ORRRC Study Report 19.

[21] Outdoor Recreation America, loc. cit.

TABLE A-15.--Percent of adults engaging one or more times during a year in selected activities according to rating of opportunity to engage within day-use range of the residence of respondent

	Area Ratings for Outdoor Recreation				
	Percent of Respondents who Participated in Areas With-- Least Opportunity ... Best Opportunity				
	1	2	3	4	5
Hunting	6	11	17	22	23
Outdoor swimming or going to a beach	35	40	48	54	53
Picnicking	50	68	65	65	71
Camping	15	9	11	18	28
Boating & canoeing	19	26	31	28	30
Hiking	14	11	19	17	25
Skiing	3	4	11	7	10
Horseback riding .	6	5	7	7	5
Fishing	26	40	39	42	31

Source: Eva Mueller and Gerald Gurin with the assistance of Margaret Wood (Survey Research Center, The University of Michigan), Participation in Outdoor Recreation, ORRRC Study Report 20, table 8.

[22] Ibid., p. 217.

*TABLE A-16.--Actual and estimated number of occasions** (millions) by persons 12 years and over residing in large standard metropolitan areas,** by selected recreation activities and major region, 1960, 1976, and 2000[23]

Outdoor Activiey	1960				
	United States	North-east	North Central	South	West
All Activities	1,606	622	547	150	288
Driving for pleasure	298	107	126	27	38
Walking for pleasure	277	132	74	27	45
Swimming	260	115	71	22	52
Playing outdoor games or sports	187	65	68	15	39
Sightseeing	118	32	49	10	26
Picnicking	106	45	36	7	18
Bicycling	71	20	19	15	17
Attending outdoor sports events	59	18	25	7	8
Fishing	58	20	23	5	11
Boating other than sailing or canoeing .	56	24	20	4	9
Nature walks	37	19	11	3	4
Camping	17	4	6	2	5
Hunting	14	4	6	2	2
Hiking	14	4	3	1	6
Water skiing	12	5	3	1	3
Horseback riding	11	4	3	1	3
Attending outdoor concerts, drama, etc..	11	4	4	1	2

*Number of separate days on which persons engaged in activity during June-August, except hunting for which September-November period was used.

**Population 1 million persons and over.

TABLE A-16--Continued

Outdoor Activity	1976				
	United States	North-east	North Central	South	West
All Activities	2,785	918	920	326	623
Driving for pleasure	502	160	187	59	96
Walking for pleasure	442	163	130	53	95
Swimming	498	176	148	56	118
Playing outdoor games or sports	356	110	121	40	85
Sightseeing	201	56	74	22	49
Picnicking	172	60	57	18	38
Bicycling	104	29	30	19	26
Attending outdoor sports events	95	28	35	13	18
Fishing	89	27	32	10	20
Boating other than sailing or canoeing	110	38	38	11	23
Nature walks	63	24	20	7	12
Camping	36	10	12	1	11
Hunting	21	6	8	3	5
Hiking	28	8	7	3	10
Water skiing	30	10	8	4	7
Horseback riding	18	6	6	2	5
Attending outdoor concerts, drama, etc.	20	7	7	2	5

TABLE A-16--Continued

Outdoor Activity	2000				
	United States	North-east	North Central	South	West
All activities	5,742	1,616	1,827	783	1,514
Driving for pleasure	952	264	324	131	233
Walking for pleasure	892	267	270	124	230
Swimming	1,107	323	335	149	300
Playing outdoor games or sports	810	221	262	108	221
Sightseeing	408	105	137	54	112
Picnicking	325	94	104	42	85
Bicycling	188	48	55	33	52
Attending outdoor sports events	180	48	61	26	44
Fishing	159	43	53	21	42
Boating other than sailing	248	72	81	32	63
Nature walks	124	38	39	16	30
Camping	88	22	28	12	27
Hunting	36	9	12	5	9
Hiking	62	16	17	8	21
Water skiing	79	23	23	11	22
Attending outdoor concerts, drama, etc.	45	13	14	6	12

Source: Estimated by ORRRC. Comparable to "without opportunity factor" estimates in table 23. Regional detail does not necessarily add to United States totals because of rounding.

[23] Ibid., p. 221.

CHAPTER III

THE IMPLEMENTATION OF THE PROPOSAL

Location of Existing and Proposed Recreation Areas

Any trail system of consequence will encompass a large enough area to traverse numerous political subdivisions. Each of these is very apt to have a recreation program of its own. In turn each will probably have parks and recreation areas. The smaller of these areas will be contained in successively larger areas of jurisdiction, which in turn will be contained in state or Federal overall plans and jurisdiction. Recreation in cases has been felt to be a local problem and as such parks and recreational facilities are developed in varying degrees by nearly all levels of government. All of these recreation areas of whatever size and jurisdiction are of interest to the trailway planner for a variety of reasons.

First of all since these trails or paths are not isolated phenomena but are part of an overall recreation plan, they will have to relate to other existing and proposed recreation areas. Secondly, some of the parks of a region will act as termini of the path network. It is logical to take people from or through urban areas to parks by means of these trails. Therefore in addition to locating the places where people are, it is necessary to find present and future parks

of all types. Many parks of various agencies may already contain trails of all types. These trails may suggest extensions that could be made to increase their scope or effectiveness. Broadening of the scope of trails that exist by connecting them by means of a trail network is certainly one of the purposes of this proposal. Maps of trails that exist in recreation areas are included in this paper and in the appendix to illustrate their variety and type. A knowledge of what parks exist of all sizes, complexity, and type in a given region may suggest where trails are needed and what routes to choose to give continuity and cohesion to a regional recreation plan. This type of survey must be so complete as to contain an indexing of all open spaces and parks of all levels of government. Even in a case where complete indexing or cataloging is obtained, it may not always be possible to integrate all of these with a trail system, but a more full attempt may be made than with fragmentary or incomplete information. The range of the information that is needed and the source of it for each jurisdictional agency is an important consideration. This may be briefly covered in the following paragraphs though many more sources will suggest themselves in any given region and when the proposal is implemented in actuality.

Municipal

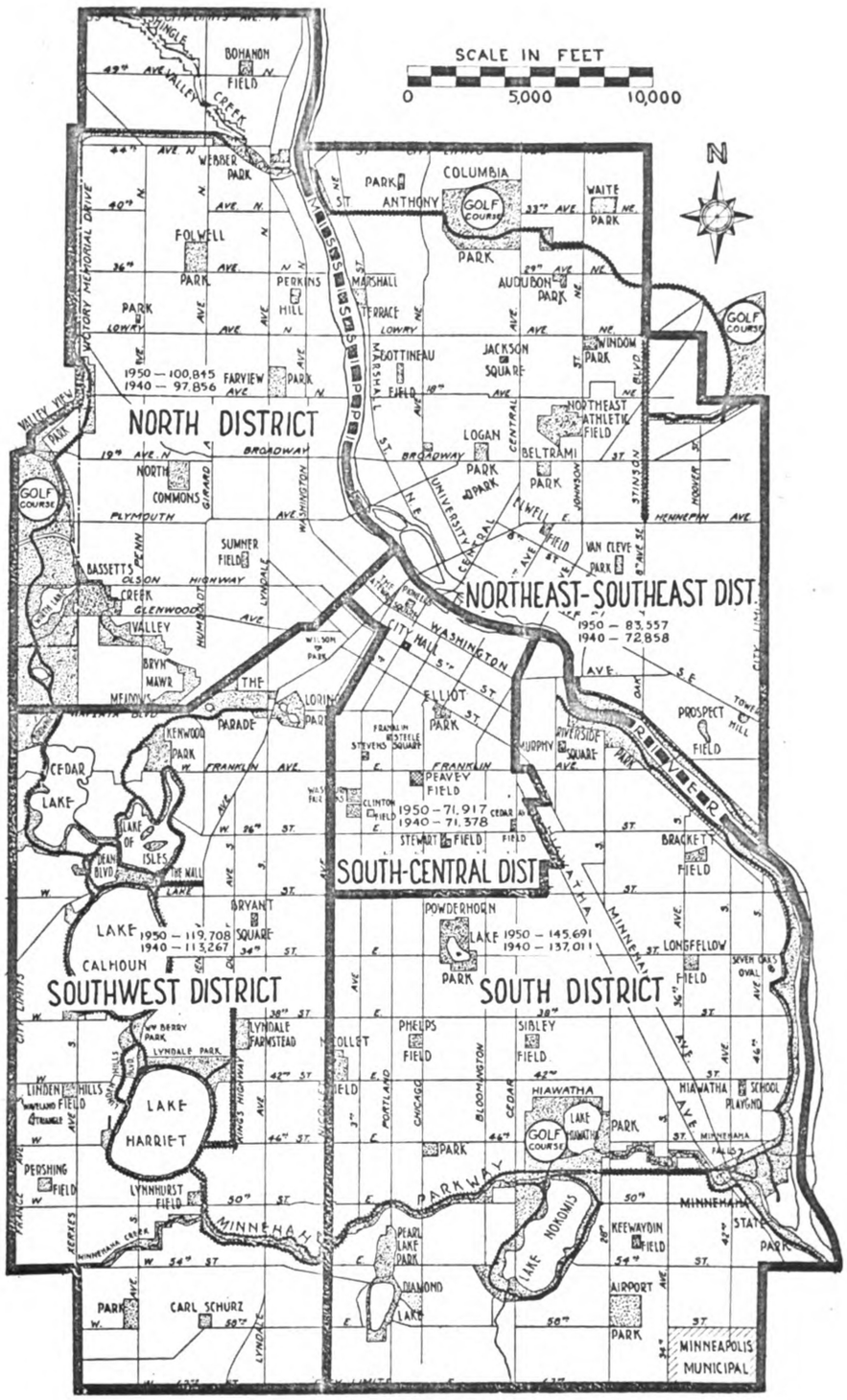
In many cases cities of various sizes will be at certain termini or junctions of the trails. Due to this it is advisable to locate, catalog, and assess all of the various

areas under the authority of the municipal parks developments within the region where the establishment of such a trailway is being proposed. These parks may be in such a pattern as to suggest a linking trail system such as is true of the parks of Minneapolis on the accompanying map. The areas to be catalogued should be parks, playgrounds, school sites, public water frontages, arboretums, zoos, golf courses, forest preserves and reservations, and all other municipally owned and operated recreational land and facilities. It is not necessary that all of these be unified by trails nor that they have a cohesion in themselves, though this is desirable. Some of these may be joined to units of recreation land outside the city and administered by county, regional, state, or Federal recreational agencies. Neither the need, location, nor purpose of a trail network can be decided upon by merely surveying the parks of a city alone. Since trails to be most effective on an overall basis should be designed for the region as a whole, the recreation places and plans of cities within the region should be considered first. This is due to the fact that the cities have the predominant concentrations of population of the area and thus indicate the logical originating points of a path system.

County

It is confusing to encounter a great number of governmental groups within an area that are concerned with the leisure time activities of the residents of that region. As

mentioned before, anything less than a regional trail system leads to greater problems. This is true since short, disconnected trails contained within existing parks, arboreta, etc. have the effect of still requiring urban inhabitants to drive to the area to use the trail. This has an aura of artificiality since the crowded highway--crowded park syndrome which now exists would then continue, and trails would be tacked onto, as it were, existing open spaces. The trails proposed in this paper would extend like fingers into the city and allow the residents to walk or ride (horses or bicycles) through the parks of the city and into the countryside itself. This necessitates crossing both political boundaries and private lands. Where possible, super-urban governments may be used to best advantage to accomplish this. In many standard metropolitan areas the county governments have undertaken to provide recreational facilities for the area. Los Angeles County, California, is a good example of this type of area or regional responsibility. This shifts the responsibility from the city upward, but there are more cases where the authority to provide recreation facilities has been passed from the state downward. The situation exists in Iowa where the state has given a major portion of recreation planning authority to various county governments. The county plan is then submitted to a central state coordinating agency which advises on modifications that would blend the system into that of surrounding counties. The actual implementation of such programs is then left with the counties.



TOTAL POPULATION
CITY OF MINNEAPOLIS

1950	521,718
1940	492,370

A DISTRICT MAP

SHOWING THE BOUNDARIES OF THE DISTRICTS STUDIED IN PARK AND RECREATION SURVEYS

BOARD OF PARK COMMISSIONERS
MINNEAPOLIS MINN.

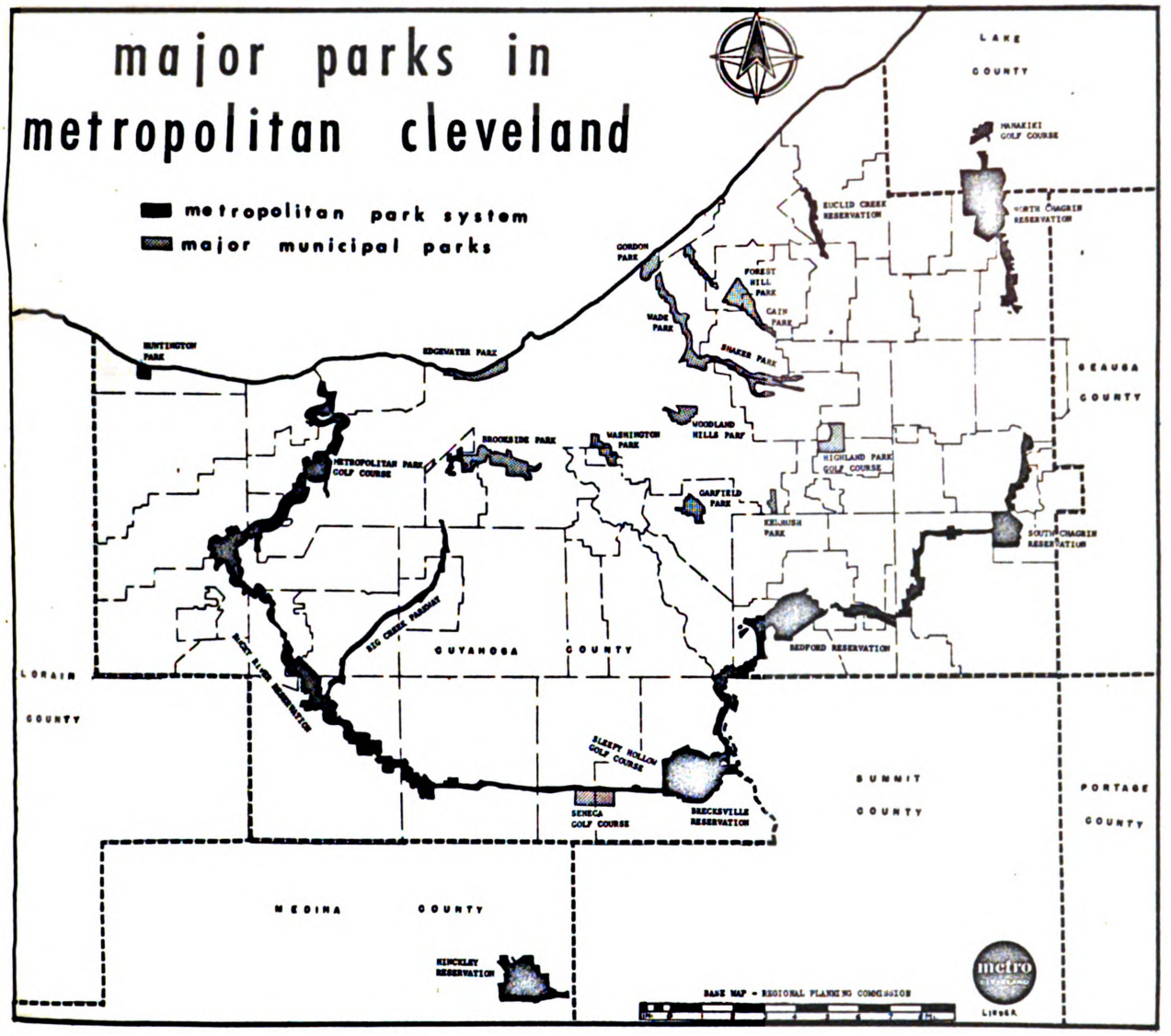
C.E. DOELL - SUPERINTENDENT	F.K. DHAININ - LAND. ARCH. ADM.
K.B. RAYMOND - DIR. OF RECR.	E. BRADDOCK - ENGINEER

	AUGUST 1952	DRAWN BY B.EDMONDS	DZ-462

In any of these cases, if there are inter-urban or county-wide facilities or planning, these recreation places should be located and added to those already gathered from the cities. These may include parks, fishing sites, picnic grounds, roadside parks, riverside parks, forest preserves, parkways, or any other recreation spot established and maintained exclusively by a county organization. This should be done for each county within the region where the trail is proposed. Trails may already exist in these areas, such as they do in the Cook County Forest Preserves in the Chicago region. Special note should be made when a situation such as this occurs, as mentioned before. Many times when the county itself does not have a recreation plan, the region does. Therefore this inter-county group should be consulted where it exists.

Regional

With rapid urban growth and its attendant sprawl over city and sometimes county boundaries it is necessary and advisable to have regional planning. In some cases this work has included the establishment of recreation facilities. Where it has, these also should go into such a survey. The best form for a survey of this type is a large scale regional map which may include areas no matter how small, and yet be able to give an overall regional picture of route locational factors to be covered later. These facilities are of less than state-wide influence and of more than city or county-wide influence. The regional agency may possibly be the



The Metropolitan Park System is an "emerald necklace" stretching throughout the county and even beyond county boundaries. In addition to this system, many municipalities have parks, also. Only a few of the larger municipal parks are shown on this map.

logical agency to plan such trail systems, then to coordinate them through an appropriate state agency. Many areas have developed extensive regional planning commissions and some have within them independent recreation authorities, such as the Huron Clinton Metropolitan Authority in the Detroit region. Within most of the regional plan commissions there are, however, groups that plan and coordinate area-wide recreation facilities if they do not actually acquire land and develop the areas. Also included here may be watershed planning groups or conservancy district governing boards who may have the authority to care for the recreational needs within their respective regions. Any such parks in planning or actuality should be considered and indexed into the outdoor recreation facilities of the area. Much of this may be along or around natural water bodies or be in the form of parkways, nature preserves, or other large or comprehensive areas that would be of benefit to more than either city or county residents alone. There may be an overlapping of these units, in that regional facilities have to be within a county and may be within a city. The agency responsible for each area should be kept separate since a future trail may cross any of these and it would then be necessary to gain permission from any of the groups responsible for a particular area.

State

Every state in the Union has at least one, and many

times more than one agency that is concerned with the recreation needs of its people. Much land therefore in each state is devoted to recreational use. These areas are usually independent of the areas previously mentioned of the smaller units of government. Some unit of the state park system is located in nearly every region of every state. Therefore it is advisable for anyone surveying an area for a possible trailway need or location to determine the location, size and use of the existing parts of the state park system within the area. In all of the smaller governmental units there has only been one agency, if even that, concerned with recreation. However, at the state level there is quite often more than one agency and many departments within one agency that are concerned with recreation and its resultant land areas.

The division of each state and the subdivisions which are concerned with recreation are listed for each state in the Outdoor Recreation Resources Review Commission report on "Directory of State Outdoor Recreation Administration." (see bibliography) Also another booklet by the same group on "Public Outdoor Recreation Areas--Acreage, Use and Potential" (see bibliography) shows something of this, though not the specific location of the actual areas. In Michigan the Department of Conservation issues a series of county maps that show the state and national areas within each county. These may be picnic sites, fishing sites, roadside parks, state game areas, state recreation areas and state forests. Also on these sheets are located some regional areas such as those

of the Huron-Clinton Recreation Commission. National wildlife refuges and National forests are shown as are all of these other areas in both existing and proposed designation. Being of county size only, these maps are limited since they have to be pieced together to make a regional study of any scope. Though showing also all roads of the region, they do not show city or county facilities. The only other map which might help in this regard is the official state highway map since this is the only state-wide map to show public recreation areas. This has the disadvantage of not being large enough to show sufficient detail to be worthwhile except in a general way to determine public land in immediately adjacent areas to the region being developed. It lacks enough detail to be of any use to actually plan the trail network. There is an excellent map, with reference to public facilities, that was put out in the past by the Michigan Tourist Council on the "Canoe Trails of Michigan" (see map list). This could be used to integrate the proposed land trails in an area with the canoe trails that now exist. This is mentioned further on in this paper. It could add to the overall effectiveness of any trail system.

In this indexing of state recreation facilities in a region it is well to remember that state forests and state game areas should be noted, and not just state parks because these also may be trail terminal points, or their land may be crossed by paths. Later in the paper lands other than those used for recreation purposes will be explored and

mentioned, but for this section of the study it will be enough to be concerned with the recreation lands alone.

It must be remembered that probably no one map will contain all of the recreation areas of whatever jurisdiction within a region. Such a map, along with many of the other maps for study suggested in this paper, will have to be prepared for any given region.

Federal

It seems that as the move is made up the hierarchy of governmental responsibility, the number of agencies that have some concern with recreation multiplies. In cities only one or two groups are concerned with recreation; in the county it is merely a few; and in a region not many more. In the state the agencies proliferate, but in the National government they burgeon. Part of this trend toward multiplicity, plus the reason for it, is listed in the following quote:

> In 1960 there were some 425 to 450 million recreational visits to Government managed, financed, or licensed facilities but no agency of the Federal Government was established to provide recreation for the public. The U.S. Army Corps of Engineers was concerned with aids to navigation and flood control--yet it entertained 106 million visitors in 1960. The Forest Service was established to conserve the forests, but it played host to 92.5 million visitors. The Soil Conservation Service and the Agricultural Stabilization and Conservation Service were created to improve and conserve farm lands, but in the process they have helped farmers and ranchers construct 1.7 million farm ponds which provide outdoor recreation for uncounted millions each year. The public Health Service was obviously not established to aid in providing recreational services to the public, but its water pollution abatement program may be of greatest benefit to fishermen. Even the National Park Service was not formed to provide recreation in the usual sense, but to preserve unique or exceptional

> scenic areas. None of these, or any other Federal agency, started out to provide public outdoor recreation, but they have had recreation and recreationists thrust upon them. Recreation has been an incidental, and almost accidental, by-product of the "primary" purposes of Federal agencies. Consequently there is no unified national policy on recreation, and few of the agencies have any real recreation policy. Agency practices have been established usually without adequate research and long-range planning and oftentimes as defensive measures against the recreationists. Lack of anything resembling a national policy is therefore at the root of most of the recreation problems of the Federal Government. But the recreationists exist even if a policy does not.
>
> A second major difficulty lies in the phenomenal growth of recreational use of Federal properties since World War II. Recreational visits to Corps of Engineers reservoirs grew from 5 million in 1946 to 106 million in 1960. Visits to the national forests rose from 18 to 92 million in the same 15-year period. Other resource-managing agencies experienced similar recreational growing pains. In the words of one official, "This thing is rolling over us."[1]

All of the recreation areas of each agency should be found for the given region. This may be difficult, for some of the agencies do not list their lands primarily as recreation lands, which is correct, though they do have recreational uses and potential. The Outdoor Recreation Resources Review Commission report on "Federal Agencies and Outdoor Recreation" lists the following National agencies that have some concern with recreation in some form or place.

The Corps of Engineers
The Bureau of Reclamation
The Tennessee Valley Authority
The Federal Power Commission
The Conservation Agenicies *sic*. of the Department of Agriculture

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[1] *Federal Agencies and Outdoor Recreation* (Washington, D.C.: United States Government Printing Office, 1962), Outdoor Recreation Resources Review Com. Report No. 13, p. 1.

The Forest Service
The National Park Service
The Bureau of Sport Fisheries and Wildlife
The Bureau of Land Management
The Housing and Home Finance Agency
The Bureau of Indian Affairs
The Coast Guard
The General Services Administration
The Small Business Administration
The Department of Defense (Military Reservations)
The Bureau of Public Roads
The Department of Health, Education and Welfare[2]

The location of the given Federal land and areas that may have a concern with outdoor recreation and therefore that could serve in some capacity in a trailway system is a ponderous task. An excellent map of the Federal lands held by a number of agencies in the whole nation is available. It is a 1953 map from the United States Department of Interior Bureau of Land Management (see map list). This task may give a great many returns not originally anticipated since it may mean increased usage and possible routes and termini not initially contemplated.

All of the above existing and proposed recreation areas should be placed upon one single map with appropriate jurisdictional designation. This will give some idea of the pattern of facilities within a region. This may also suggest areas where trails are and where trails are needed. When further studies as to possible route locations are made, as suggested below, this will act as a master sheet, along with the population study, as to what the existing recreation

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[2] Federal Agencies and Outdoor Recreation, pp. viii, x and xl.

situation and need is in the area under consideration.

As mentioned before the value of this study is that any pathway system proposed and planned is only part, and a supplement at best, of the regional recreation pattern. This total pattern must be discovered and made evident before effective future planning of the type suggested here may be implemented fully.

Location of Population

The importance of this factor may be readily seen when it is realized that for any recreational facility to have value it is necessary for it to be accessible. The subsequent proximity of the facility to the large centers of population must be calculated in the planning stage.

The location of the existing and proposed population is important for a number of reasons. First of all it shows where the people are or will be. This is of importance since a certain amount of the recreation time available to the people is in short periods of time where it will be necessary to have recreation places near to the place of residence for maximum effectiveness. Then it also shows where the people must come from to get to proposed areas of outdoor recreation. This also shows the relative density of population in various areas of a region or locality. The approximate use-pressure may be calculated for a given facility by a knowledge of the population density in a given area.

A number of types of data are available on populations

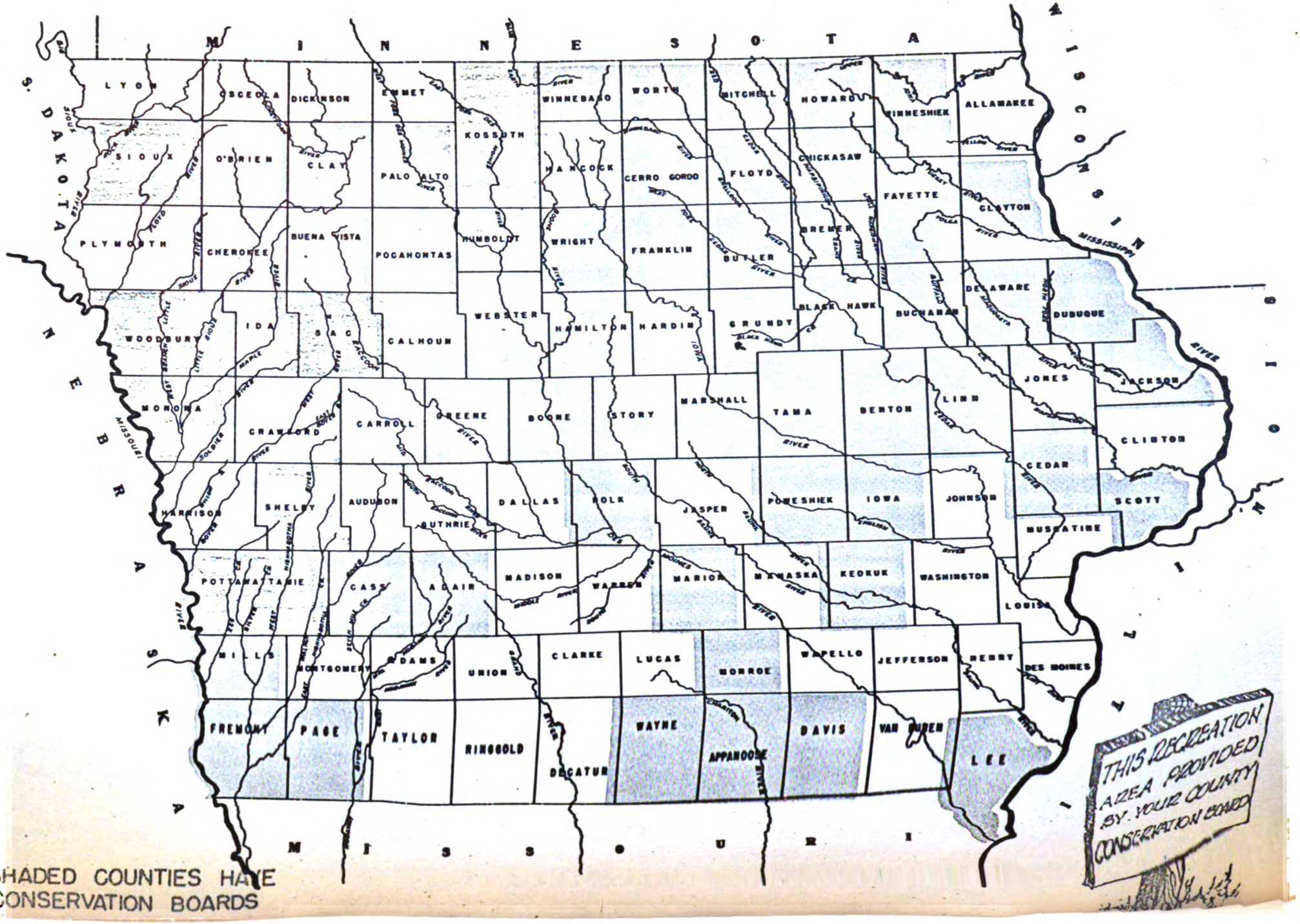
and their characteristics for any given locality.

Regional

This may mean the national or state region depending on the scale of the planning of the trail network. It may be the region of the state which is within the jurisdiction of the agency planning the trailway system. This could very well be the region of the nation in which the proposed paths would be located. These areas may be differentiated as Northeast, North Central, South, or West as are the broad divisions used by the Outdoor Recreation Resources Review Commission. In a more concise manner these may be referred to as the New England, Middle Atlantic, East North Central, West North Central, South Atlantic, East South Central, West South Central, Mountain or Pacific groups of states.

The information that is available from the National Census gives many facts about the region in addition to the raw total number of inhabitants. These totals, though, are given for cities and counties and are classed as to place of residence whether urban or rural. Under the heading of general population characteristics are listed the age, race, household relationship, sex and marital status of the people in a given area. Under the general social and economic characteristics of the population are listed the ethnic origin, migration, families, income, education and employment of the residents. The detailed characteristics according to the Census Bureau would include families, fertility, migration,

COUNTY CONSERVATION BOARDS



SHADED COUNTIES HAVE CONSERVATION BOARDS

employment, income, occupation and industry. There is a definite overlapping in some of these studies but in combination they are able to be used to give a fairly complete picture of not only the distribution but also the characteristics of the inhabitants of a region. These reports are assembled by states and are listed in the bibliography.

Existing

This is what is largely covered in the above mentioned reports. The population density for any given land area is of importance since it indicates the intensity of use of the land and the amount of remaining land that is potentially useful for outdoor recreation purposes. A number of other studies have been made in this general nature such as the one on quarter-section population density in the lower peninsula of Michigan. This was done by Dr. A. K. Philbrick of the Geography Department at Michigan State University. A study such as this is very helpful for showing the rural non-farm population density throughout the whole of a region. Many city or regional planning groups will have data on existing land use density and population characteristics for the area of their concern. A Michigan State University Agricultural Experiment Station Bulletin (see bibliography) has information on Michigan Population of 1960.

Projected

This type of study is necessary for a region if the proposed recreation facilities are to be meaningfully placed for future users. Past trends in regional growth do not

always indicate the direction of future growth. Therefore, it is advisable to find whether the judgment projections call for an increase or decrease in the total inhabitants of the area. The distribution of the residents may change by a movement away from the central city and toward the suburban areas, and this too is vital in future recreational planning. Any projected variations in the characteristics of the population have some value as indicators of future directions of need in planning. The opportunity to thus locate the projected regional population will reveal certain facets that should indicate the need for a trailway system and will suggest some termini where the paths may be most accessible to the inhabitants.

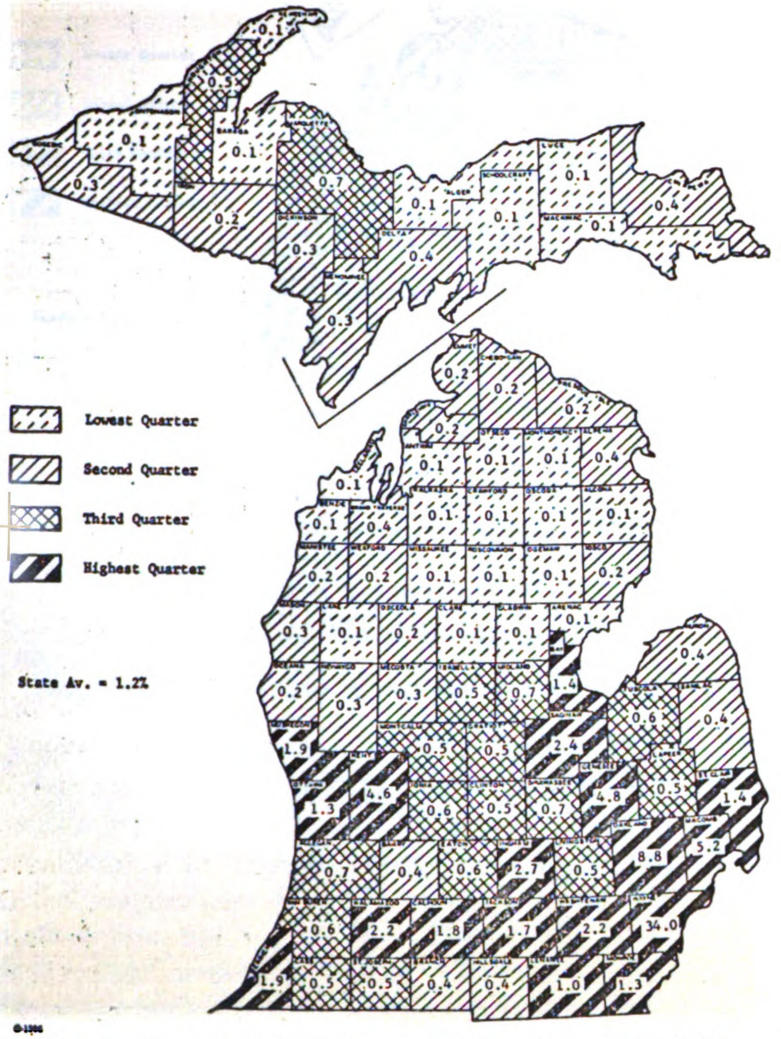
Local

Existing

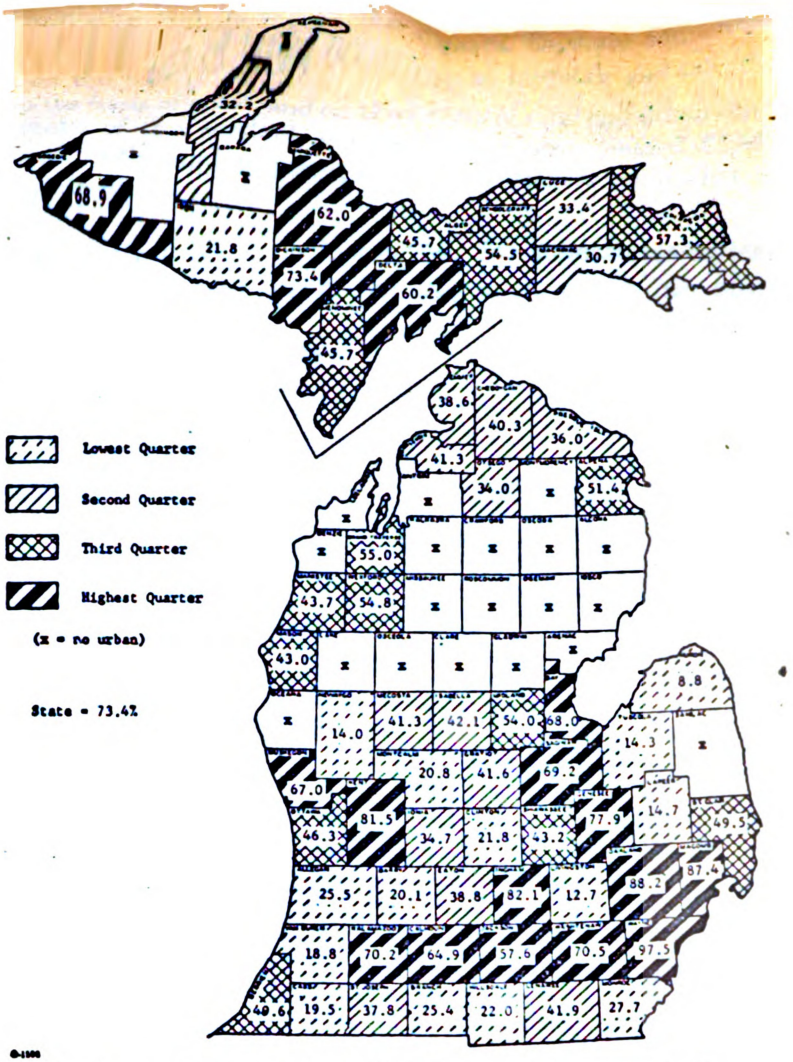
In this context "local" will mean that population which is definitely within the area where the trails are proposed. At times it may be advisable to ascertain the precise location of and density of the inhabitants in a city, village or rural section of a county. This will show certain needs and locational aspects with more clarity for a limited area than will the regional survey. Selected characteristics for the inhabitants of some regions may be a decisive element in the need for a trail or a decision as to where it will be placed. These should possibly be studied for this reason if other information is indecisive. A cross-referencing of

e national average. This rate of increase, however, was not main-
ined for all counties in Michigan. Only 18 counties of Michigan
ere characterized by higher rates of growth than the 22.8 percent
crease reported for Michigan as a whole. Eighteen counties actually
perienced losses in their total populations between 1950 and 1960.
p 4 shows the variations in percent increase in the total popula-
of counties.

s pointed out previously, Michigan's population classed as urban
ed more rapidly during the decade than that classed as rural.



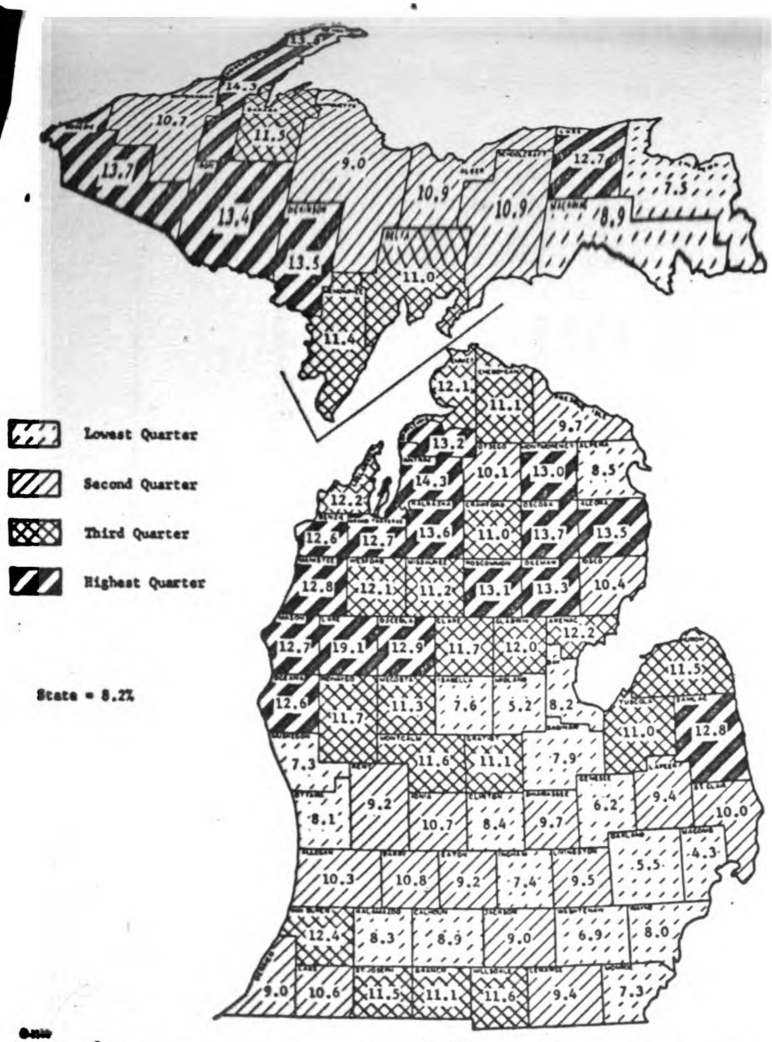
Map 1. Percent of total state populations, by county, 1960.



Map 2. Percent of total population urban, by county, 1960.

Variations in rates of change for the urban population of counties (Map 5) and for the rural population of counties (Map 6) are very great. The urban population of 12 counties declined during the decade; the urban population of Oakland and Macomb, on the other hand, gained during the 10-year period by 112 and 176 percent, respectively. The rural population of 20 counties declined between 1950 and 1960; approximately one-fourth of the counties, however, experienced gains to the rural segment amounting to more than 20 percent.

As mentioned earlier, the explanation of change in population

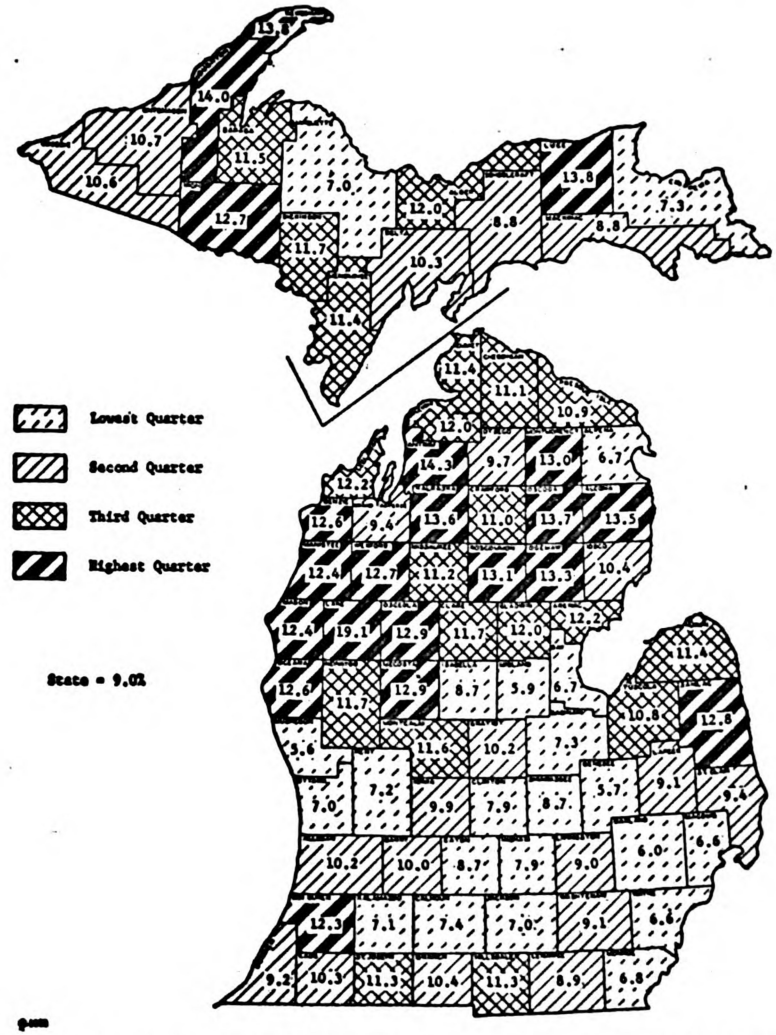


Map 12. Percent 65 years of age and over, by county, 1960.

ng the decade ranging from 98.9% in 1950 to 99.8% in 1959 and . Those counties for which the NOVS completeness test reported in 1950 were assumed to have remained unchanged. The remain-6 counties of the state were assumed to have improved in birth tration completeness during the decade. For the state as a whole, method increased the number of births during the decade by 0 to a total number of corrected births numbering 1,917,842.

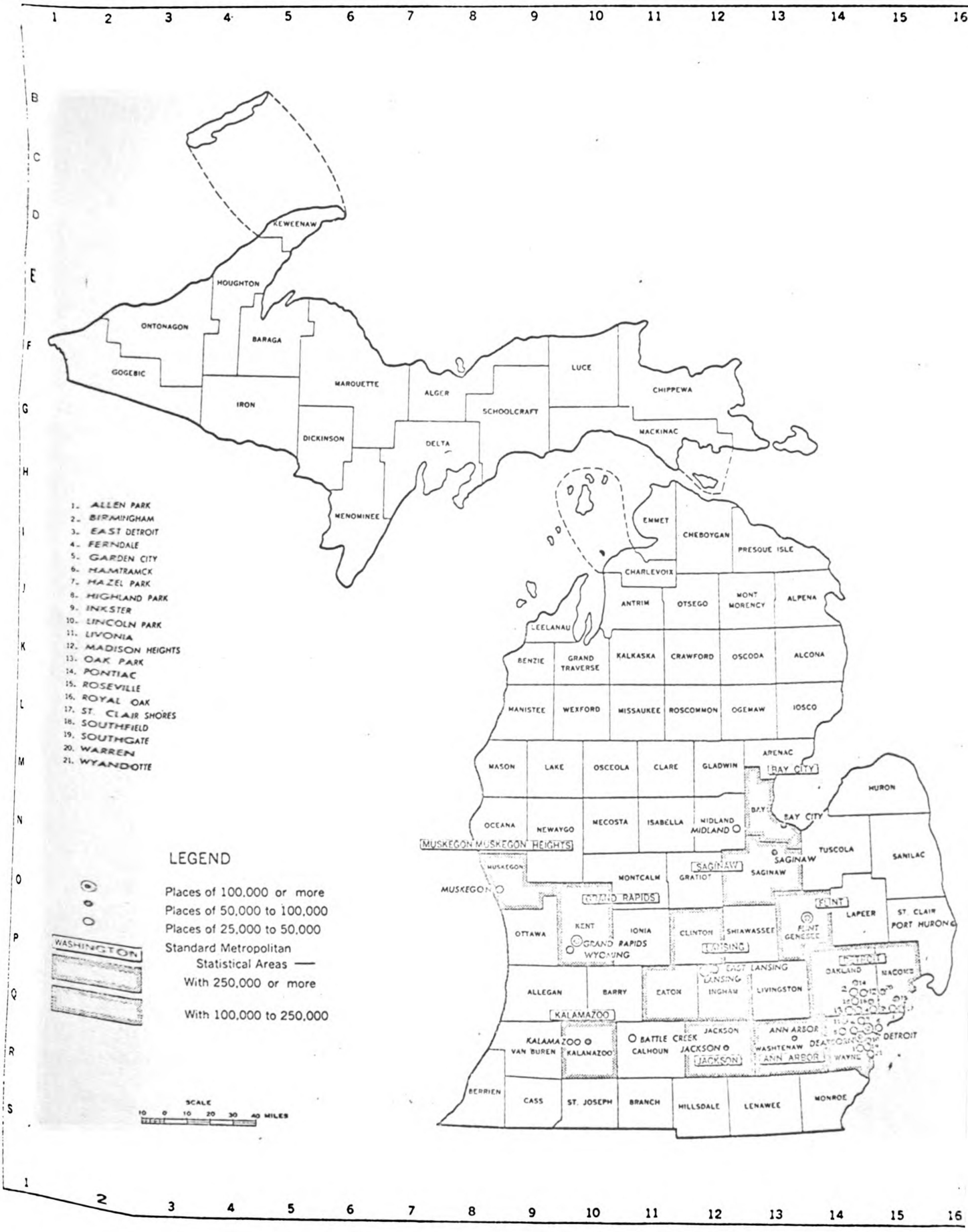
he second method used in correcting birth data drew upon a num-f completeness factors made available by the National Office of Vital Statistics and Bureau of the Census. Separate corrections were made on the basis of births occurring in hospitals and not in hospitals, on the basis of color, and on the basis of rural and urban residence. The results of this method, not published here, yielded 25,807 unregistered births and a percentage completeness somewhat below the 1950 level.

In Appendix Table 2, no "correction" for annexations of territory during the decade was made. Net migration results are obviously



Map 13. Percent 65 years of age and over in the rural population of counties, 1960.

MICHIGAN— COUNTIES, PLACES OF 25,000 OR MORE, AND STANDARD METROPOLITAN STATISTICAL AREAS



census data with other statistics, primarily those dealing with outdoor recreation may lead to some very worthwhile assumptions that may otherwise be overlooked. An example of this would be if in the census it is found that a county has a high percentage of non-white inhabitants. Then from statistics in one of the Outdoor Recreation Resources Review Commission reports the recreation needs and desires of this group is found and further facilities may be planned to meet their needs. This is an over-simplification, since other determinants would have to be considered also, such as income, education, occupational types, etc. However, this serves to show how these census figures could be used not only for themselves alone but also to gain further relevant information through interpretation.

Projected

Such projected data on a detailed area is very difficult to locate but in many cases should be obtained or derived where possible. This would in effect be the enumeration, location, and analysis of the future inhabitants of the city, county or region. This type of determination has been made, especially in the outdoor recreation field, to some extent by the Outdoor Recreation Resources Review Commission at least on a national and a broad regional scale. Local governmental and planning groups will have started and perhaps completed at least some work of this type and should be consulted.

The value once again of these studies is to find the

location and amount of the existing and proposed populations so that a trail system may be planned which will most benefit those inhabitants. The best way to do this would be to set out on a map the relative population densities of various regions within which the trail system is being planned. This graphic representation may be studied to record the land with a low number of inhabitants per unit area which might be more available for recreation use. This would also show where the greatest population density would be in an area and thus where the people would be that would use such a trail system. This would also show the regions of most congestion and therefore the ones most needful to be served by such trails.

The order of approach in the implementation section of this paper is generally the one that is suggested in actually putting such a proposal into effect. Therefore the location of this population would follow the location of the recreation areas.

Steps in the Location of Potential Trailway Routes

This is probably the most important and difficult phase of the implementation of such a proposal. It is upon this aspect that the success of such a system is largely dependent. The land acquisition portion may have some weaknesses, as may the actual design of the trails themselves, without proving completely disastrous. However, if the trail is not located in such a manner so as to create sufficient

interest, variety, and recreative potential, the trail system is not successful. A study of the characteristics of the prospective users themselves, along with the judicious use of balance between the factors listed below should lead to a route location that would meet the recreation needs of a majority of the population. A summary of the characteristics of the present and future users of such trails is found in the Appendix. More detailed information on these people may be found in the Outdoor Recreation Resources Review Commission report from which these were taken, along with other of these reports. The examination of various sources as listed in the bibliography on the hobbies and hobbyists connected with such a recreational development would be a valuable study prior to the implementation of a proposal such as suggested here. Such a base may be helpful, since a fundamental knowledge of the characteristics of people and an intense and sensitive study of the land, both primeval and exploited, may yet suggest other and possibly better solutions.

The routes that such trails as proposed here may take are myriad and at first approach to route selection may appear to be haphazard and accidental. Even the earliest known tracks of man through the primitive wilderness do not always make apparent sense. This is so since we do not know what prompted the various individuals making the track to go from one terminus of the trail to the other. The seeming confusion of trail location is due to the lack of knowledge

on the part of the outside observer as to what conditions could and did dictate trail routes or potential trail routes. We may never know all of the determinants of the routes of early man but we are able to some extent to lay out certain guidelines that may assist in locating future routes most effectively. Some of these are taken up in greater detail in the following section. This is the portion or the phase of such a problem in which the landscape architect is most valuable and most needed. Other aspects of the proposal and its implementation may be best undertaken by planners, land management specialists, or administrators, but the matters of route selection and design are at the center of the realm of the landscape architect and nowhere else. This matter of possible routes assessment and determination should be influenced by someone well aware of and sympathetic toward the natural landscape and with the sensitivity of a designer. For this the landscape architect, by training and experience, should be best qualified. A very careful study of these and other factors should be made before any route selection is made and the voice of the landscape architect should be loud in any final decision.

The advisory capacity of the landscape architect may be brought to bear on a land acquisition problem since the value of the land as a resource may suggest the method of obtaining it as well as holding it.

In time landscape architect may devise a method or system for evaluating land for trails or paths. This would

at some future time prove a productive and beneficial research project. An assessment could be made concerning the qualities needed in the land to provide for good trailway routes. A study of trailways, their inherent characteristics, and those of their users, could be made to ascertain what lands would be most suited to path or trailway development.

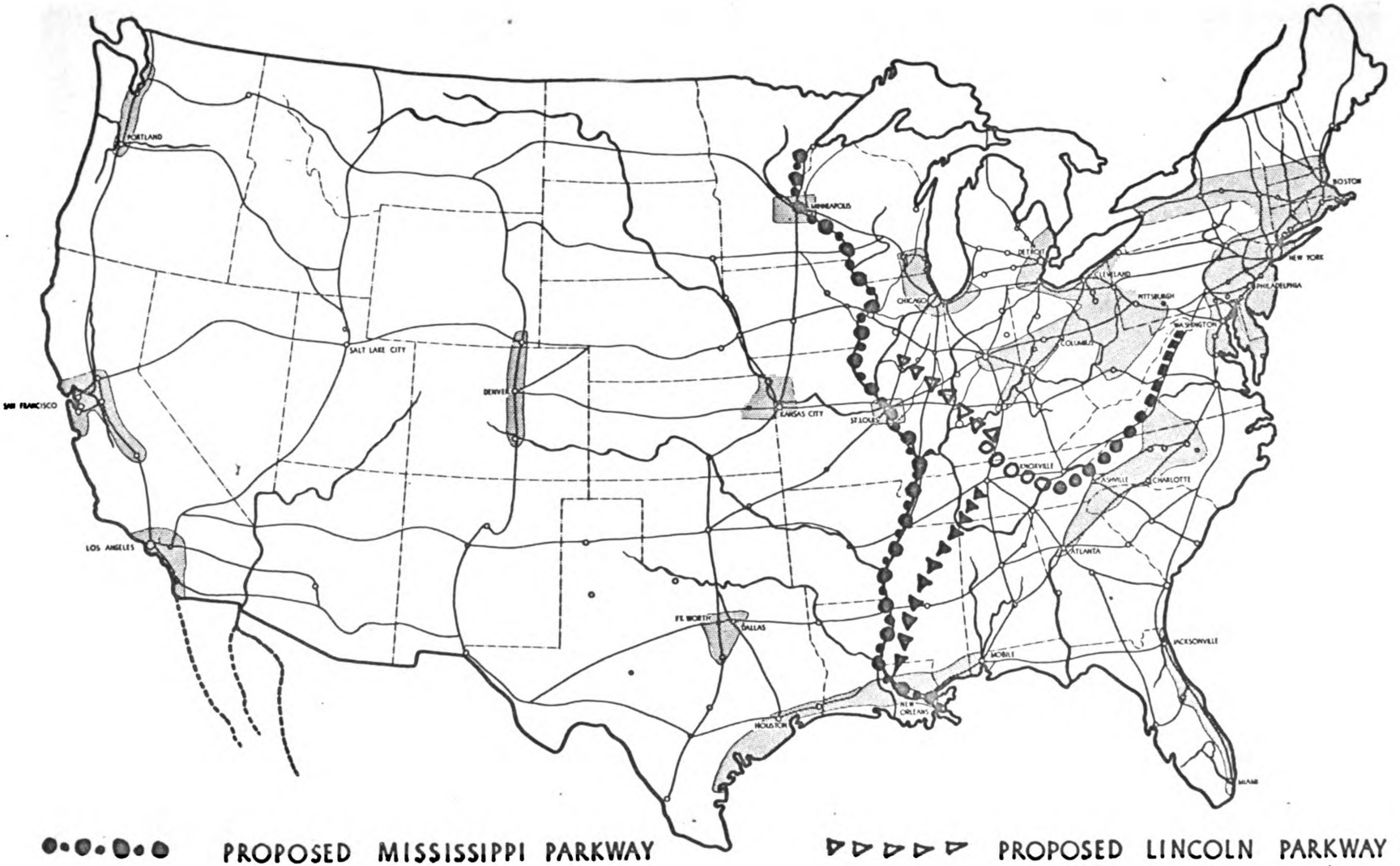
Survey of All Publicly Owned Land

This is a logical step from the above points of the location of population and recreation areas. The publicly owned land mentioned here may be in addition to recreation land. This may be land owned or controlled by any municipality, county, or county-like area (this includes roads, streets, watercourses, etc.), or controlled by a regional planning group, and any land in the ownership or under the control of the state or Federal government (this also includes roads, etc.). Even though these may not be used at present for recreational purposes, it is possible that small portions of them may be used to connect portions of an overall network of pathways or trails where only unavailable private land otherwise could be used. The location of existing recreation land will act as somewhat of a guide as to where people may go upon such trails or paths. These may be the termini or foci of trails leading from urban or residential areas. The total picture of what land is at present or will be in the future in public ownership is one segment in the overall mosaic necessary to determine potential route location

and land acquisition policy. This should not be the only determinant but should act as one possibility and certainly be recorded along with the factors listed below. After all of these factors have been noted and overlaid on a map of a region and the consideration of economics applied to each potential site, a decision as to the best site can be made. The relative weight of each factor can be made at the time of site selection but all of the potential influencing factors must be indexed and recorded prior to this time. This survey of the complete spectrum of land ownership by public agencies of all levels of jurisdiction is one factor, then, in making any decision. All of the other determinants may be overlaid on a map of the public land ownership of a region.

Such information is difficult or at least tedious to obtain, due to the fact that it is never compiled in one place or on one map. This may be due to many things, some of which perhaps no one involved will admit. The reason generally given, which is a plausible one, is that no map could be made large enough to show in detail all of the land owned by every level of governmental agency. As mentioned, this is true, though it is suspected that were all of this gathered into one map the result would be arresting. The total amount of land area, owned or controlled by all levels of government in America is staggering. This land in parcels of all sizes completely permeates the landscape of our nation. Some statistics as to land ownership in the United States are available in the Outdoor Recreation Resources Review

NATIONAL PARK PARKWAYS AND PROPOSED PARKWAYS THAT MAY WELL AFFECT TOURIST MOVEMENT IN ILLINOIS



PROPOSED MISSISSIPPI PARKWAY

NATCHEZ TRACE PARKWAY

BLUE RIDGE PARKWAY

SKYLINE DRIVE PARKWAY

PROPOSED LINCOLN PARKWAY

PROPOSED MAMOTH CAVE PARKWAY

URBAN PATTERNS

Commission report "Outdoor Recreation for America," pages 54 to 56.

Most of this land would be available at least to a degree, for public access in a trailway system. The obtaining of trespass permission and the administrative problems involved would be great but not insurmountable. A location of this land would be a valuable first step in locating where trails could possibly go.

There is a multitudinous variety of sources of such information. Starting at the Federal level and working to local areas a compilation could be staggering. Yet beginning at the local circumscribed level a great many regional planning offices have compiled material as to land ownership of the area under their jurisdiction. Since this is usually where an implementation of this type will begin, checking for information on this level and at this source might prove worthwhile.

The state of Michigan has produced a series of county maps showing public land ownership of all jurisdictions within each county, which maps should serve this purpose well in spite of the "ant's-eye" view one gets in maps of this kind. The Federal government has put out a number of maps showing land under its control. One in particular shows National Parks, National Forests, Indian Reservations, wildlife refuges, and reclamation projects (see map list).

Although this has the drawback of being printed in 1953, it does give a broad over-all picture, which is some-


ISLE ROYALE
KEWEENAW
LAKE SUPERIOR
DOMINION OF CANADA
HOUGHTON
ONTONAGON
BARAGA
GOGEBIC
MARQUETTE
ALGER
LUCE
CHIPPEWA
SCHOOLCRAFT
MACKINAC
IRON
WISCONSIN
DICKINSON
DELTA
MENOMINEE
GREEN BAY
LAKE MICHIGAN
EMMET
CHEBOYGAN
PRESQUE ISLE
CHARLEVOIX
ANTRIM
OTSEGO
MONTMORENCY
ALPENA
LEELANAU
BENZIE
GRAND TRAVERSE
KALKASKA
CRAWFORD
OSCODA
ALCONA
MANISTEE
WEXFORD
MISSAUKEE
ROSCOMMON
OGEMAW
IOSCO
MASON
LAKE
OSCEOLA
CLARE
GLADWIN
ARENAC
SAGINAW BAY
OCEANA
NEWAYGO
MECOSTA
ISABELLA
MIDLAND
BAY
HURON
MONTCALM
SAGINAW
TUSCOLA
SANILAC
MUSKEGON
GRATIOT
KENT
OTTAWA
IONIA
CLINTON
SHIAWASSEE
GENESEE
LAPEER
SAINT CLAIR
LAKE
Lansing
ALLEGAN
BARRY
EATON
INGHAM
LIVINGSTON
OAKLAND
MACOMB
LAKE ST. CLAIR
Detroit
VAN BUREN
KALAMAZOO
CALHOUN
JACKSON
WASHTENAW
WAYNE
CANADA
BERRIEN
CASS
ST. JOSEPH
BRANCH
HILLSDALE
LENAWEE
MONROE
LAKE ERIE
INDIANA
OHIO
MICHIGAN
DEPARTMENT OF CONSERVATION

times necessary for the integration of a number of regional trailway plans. There are, of course, many sources of this information, too many to be compiled or mentioned here, but it should be obtained, studied and recorded as a primary step in finding satisfactory routes for such trails.

Survey of Existing Water-ways

The purpose of such a survey is illustrated by a quote from Mr. Phillip Lewis' study on "Recreation and Open Spaces in Illinois."

> In a look at other resources it becomes more clearly apparent that the Illinois landscape resources of good quality lie in relatively narrow ribbons criss-crossing the state.
>
> We have either a linear system of river and flood plains enclosed by the only significant topography and timber of the region or high linear ridges with distant views and timbered slopes. These linear patterns compose the recreational potential of Illinois.
>
> It may be said that it is an extensive and well distributed pattern and that its relationship to existing population concentrations is in many respects ideal. The early settlers utilized the linear routes to penetrate the area and consequently settled nearby.
>
> As mentioned earlier, many landscapes are abundantly endowed with structures and objects of historic and prehistoric significance. The Illinois landscape is no exception. We see an outstanding number of Indian villages, camps and battlegrounds located near the river patterns throughout Illinois. Accepting these resources as potential recreation and tourism attractions we again enrich the already abundant resources within our linear ribbon concept.
>
> In looking at the extensive State park systems in Illinois we again see a most familiar linear pattern.
>
> Perhaps the most significant finding in this report is the strong evidence that the quality resource which is necessary for recreation, tourism, and open space does lie within this unique linear pattern.

> Such evidence might well suggest that making detailed surveys of the landscape resources within these linear patterns is an essential State activity. It could be said that this area activity could be narrowed down to the linear landscape patterns most subject to disruption as a result of population expansion and technologic change. Urbanization, industrialization, canalization, reservoir flooding, and new transportation systems are all aspects of such change.[3]

This incidentally is an excellent study of the type that should be made preparatory to such an appraisal of the land for a trailway system. This is one of the first and best studies showing what the potential analytical power of the landscape architect can and should be.

A map showing the major rivers of the state of Michigan is included in this paper and can be used as a rough guide to what exists as to rivers and their characteristic dendritic pattern. This latter is one of their most valuable attributes. They usually send fingers into the hinterland of a state or region, then regather themselves to empty into a large body of water. Near the mouth of this regathering as well as where branches join is usually found a major city. This leads to a natural route of access from city to city. This access route on shore and in the water was recognized by the native Indians as well as the early explorers of the region. The logic of using these passageways through the landscape for potential trailway routes is readily apparent.

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[3]Phillip H. Lewis, Jr., Recreation and Open Space in Illinois (Urbana, Illinois: The University of Illinois, 1961), p. 63.

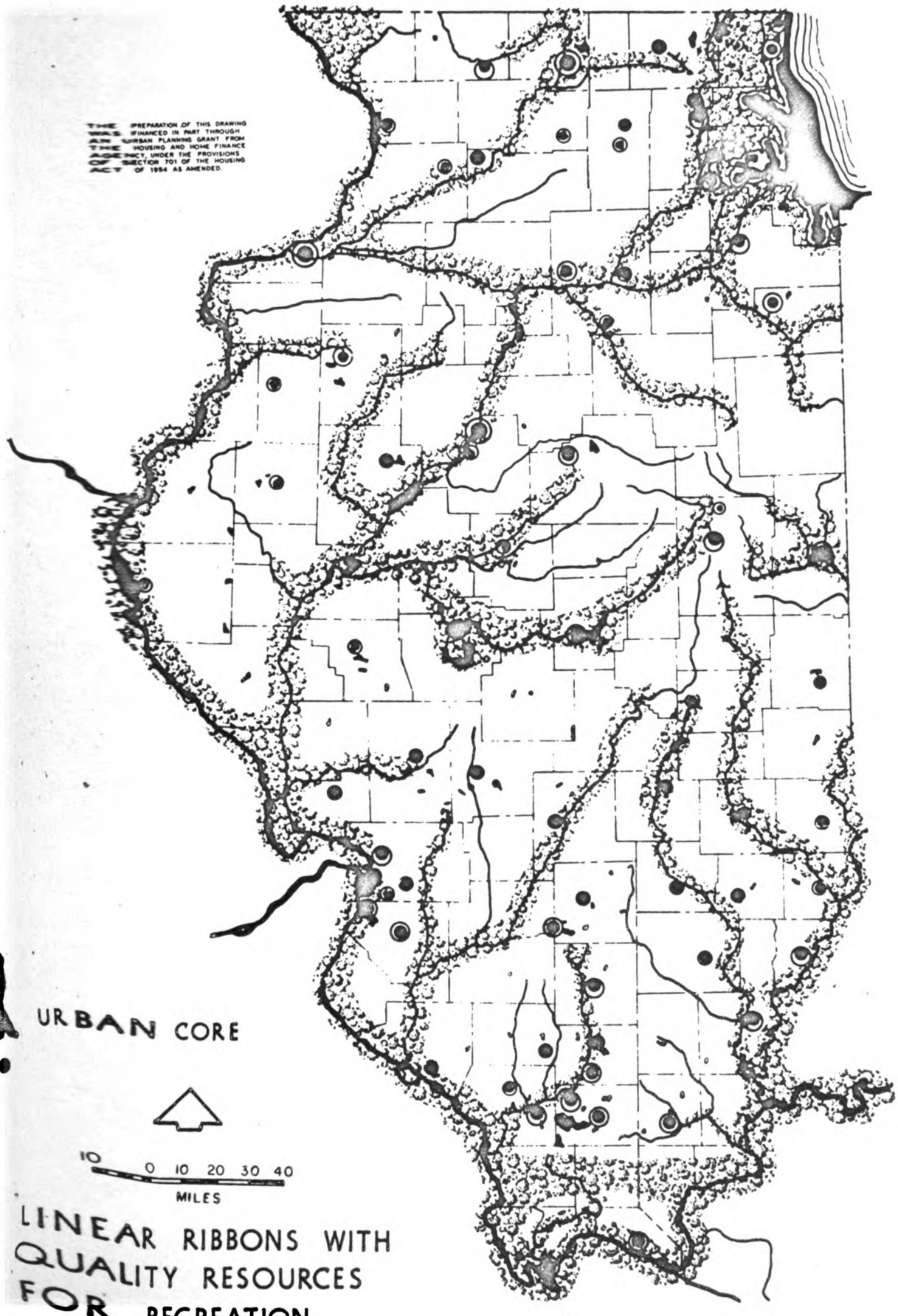

THE PREPARATION OF THIS DRAWING WAS FINANCED IN PART THROUGH AN URBAN PLANNING GRANT FROM THE HOUSING AND HOME FINANCE AGENCY, UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954 AS AMENDED.
URBAN CORE
10 0 10 20 30 40
MILES
LINEAR RIBBONS WITH QUALITY RESOURCES FOR RECREATION

FIG. 26

It is further possible to connect the footpaths of suggested canoe trails which already exist in the State of Michigan. Travel on these could be combined for a tour through the state. Trailside rest and picnic facilities could be combined for both the land and water "hiker." Land trails or portages may be developed to connect rivers and river systems to each other.

This further provides in a sense a potential route in that the public has water rights on these rivers, though not as the law now stands do they have access rights along this water. In Canada the travel of the public cannot be impaired for a distance of ten feet on either side of a water body. The enactment of such legislation in our country would greatly facilitate the rapid implementation of such a proposal as desired here. Some beginning on this has been initiated in Wisconsin where increased tax rates are assessed against land abutting public water bodies. This in effect recognizes that these property owners are benefitting from water that is not exclusively theirs. More will undoubtedly be done along these lines as the population increases and multiple use of land and water resources becomes more necessary.

Location of Utility Rights of Way

This is another type of network that criss-crosses the American landscape. The potentiality of using the easements of these utilities as trailway route locations has been

most dramatically put forth in Santa Clara County California where they have printed a small folder on the advantages and possibilities of "Greenways." The following is a quote from that publication.

> Greenways are utility easements transformed into park-like walkways. Along their tree-shaded paths children will walk to the school or the park, or gather for informal play close to their homes. Adults will find the Greenways a pleasant place to stroll and a welcome open space in a closely built-up urban neighborhood.
>
> A dramatic thing about these threads of green is that they can be spun from trash-collecting, weed-growing utility easements. Greenways offer a means of turning single purpose land which is often a community liability into a multipurpose community asset.[4]

Therefore, in a community in which a pathway network is considered, the existing and proposed utility rights of way must be indexed and studied as possible route locations.

Location of Lands Suitable for Recreation

There are in existence in nearly every community lands that are ill suited to farming and not well located for industrial, commercial, or residential uses. These lands should be noted and their location examined for possible conversion to recreation land. If there is a distinct pattern in these, and there may be, all or some parts of this land may be used for trailway routes. This land may be obtained by public agencies, or it may remain in private hands, and some

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[4] Greenways (San Jose, California: County of Santa Clara Planning Department, 1961), (pamphlet).



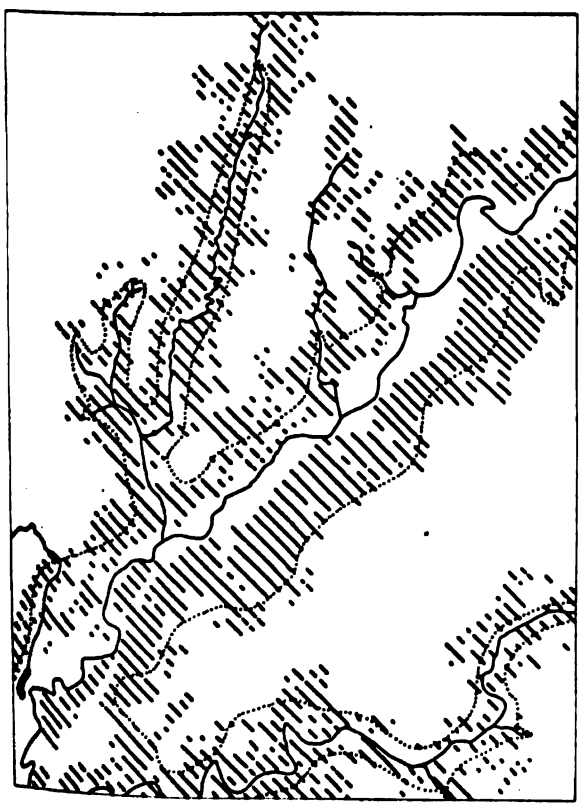
FOOTPATHS

FIG. 42



EMBANKMENT SOILS

FIG. 43



LAKE SHORE SOILS

FIG. 44



CAMPING & PICNIC AREAS

FIG. 45

THE PREPARATION OF THIS DRAWING WAS FINANCED IN PART THROUGH AN URBAN PLANNING GRANT FROM THE HOUSING AND HOME FINANCE AGENCY, UNDER THE PROVISIONS OF SECTION 701 OF THE HOUSING ACT OF 1954 AS AMENDED.

sort of public access rights obtained from the owner. Once again this is not something that can be used alone, but used in conjunction with other of these possible determinants, it might mean the difference between a complete and a spotty network of paths through the countryside.

The most awkward aspect involved here is that the defining of land best suited for recreation is a very exacting process. Traditionally conservation and public recreation has been given the choice of what land is left over. Many times this is fortunate since land of more picturesqueness and character is obtained than would be if recreation planners had initial choice. It has not been possible to establish rigid criteria as to what land is most suitable for recreation, though since the above is true in an examination of land classes in an area, the available land will usually start at the bottom of the scale or continuum. This then is closely tied to soil types and characteristics, though topography and location enter in as well. An out-of-print publication on "Land Classes in Michigan" by J. O. Veatch explores to some extent this matter. Many studies of this type have been made by local agencies for the specific region with which they are concerned. An excellent pilot study of this type of thing is contained in the above-mentioned report by Mr. Lewis. An explanation of the major lines of this study is contained below.

> As an aid to the use of the soil map, each soil unit is rated according to its suitability for use in agriculture and recreation. The suitability rating is

based primarily on the physical and chemical aspects of the soil--other factors such as location, economics, politics are not considered. In other words, the ratings reflect the relative suitability of each mapping unit; an area rating "less favorable" does not mean that the area in question cannot be used for that particular use, but there are limitations due to the soil characteristics that interfere with any use. A five class rating system is used. The classes are described as follows:

Class A--Most favorable. No serious limitations in use.

Class B--Very favorable. Some limitations exist but can be easily overcome.

Class C--Favorable. Limitations exist but they can be overcome or corrected.

Class D--Less favorable. Limitations are serious or severe.

Class E--Unfavorable. Limitations are serious or severe enough to make usage unsound.

The soil units have been rated for agriculture and various recreational uses in Table 2 (in "Recreation and Open Spaces in Illinois").

Agriculture is concerned primarily with the production of livestock and crops. Recreation consists of various forms of activities each with a different set of desirable characteristics. For this reason, recreation is subdivided into the following:

Roadways--includes such uses as parkways, drives, and horseback trails. The roadways generally follow the contour of the ground and are designed for scenic beauty.

Footpaths--trails or paths used by people afoot to enjoy scenic bsauty [sic.] or exercise.

Pond Development--includes the embankment and the shore. Under embankment, the fill or dam and the area under water is considered. Shore is the area extending ten to twenty feet landward from the water line.

Golf Courses--are primarily concerned with the fairways. Good vegetative cover and trafficability are desired.

Camping and Picnic Areas--include campsites, picnic sites and unsurfaced parking facilities. Areas that are moderately rolling and have good vegetative cover and the

trafficability are the most desirable.

Service Facilities--include service buildings, motels, swimming pools, gasoline stations and other buildings connected with recreational areas. For this use the soil unit should be well drained and have good foundation qualities.

From these ratings for each soil unit, an area can be quickly judged as to its suitability or limitations for agriculture or recreational use.[5]

The accompanying illustrations show how this could be done.

This method could be valuable in the location of land or routes potentially useful for trailways. Thus it should be included in any preliminary study, and should influence eventual route location.

Determination of Watersheds

This determination of the outline boundaries of a watershed is valuable for a variety of reasons. It is possible to use watershed areas as boundaries for a more suitable and logical regional planning system.

These units may not be just for the purpose of water and natural resource control but may be so structured and organized as to include recreation in the scope of their administration. This has been done already in Ohio, and the Conservancy Districts Law of Illinois includes the scope of recreation though this provision is not now being utilized. Some of the new thinking on these regions is contained in the

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[5]Lewis, op. cit., pp. 81, 83.

following quote.

> The strategic importance of water resources as a man-nature problem now and as a critical factor in future development raises to new prominence the watershed region. A watershed is the land area unified by a surface drainage system. It is well known that in the arid western sections of the United States, the availability of water determines land values and land use. There is now an awakening realization that the once adequate water resources of the eastern states are in many areas no longer adequate, without further development, to meet the needs of the future. Solutions to present problems and development of additional water resources require that the watershed be studied as an entity susceptible to coordinated design along with the overlying socio-economic regions in a unified framework.
>
> A significant legal, economic, and biological community of interest is created through the unifying character of surface water. It is the same run-off water that passes each section of the watershed and any changes in quantity or quality are the result of the use patterns and regulation throughout the watershed.
>
> In this framework, land and water emerge as closely related resources. Most human activities involve the use both land and water resources with varying effects. Water resources and land resources can no longer be meaningfully analyzed or developed in isolation from each other. Because water resources are more limited than land resources, watershed factors and water use decisions will play a leading role in determining future environmental health conditions and the most feasible settlement patterns.[6]

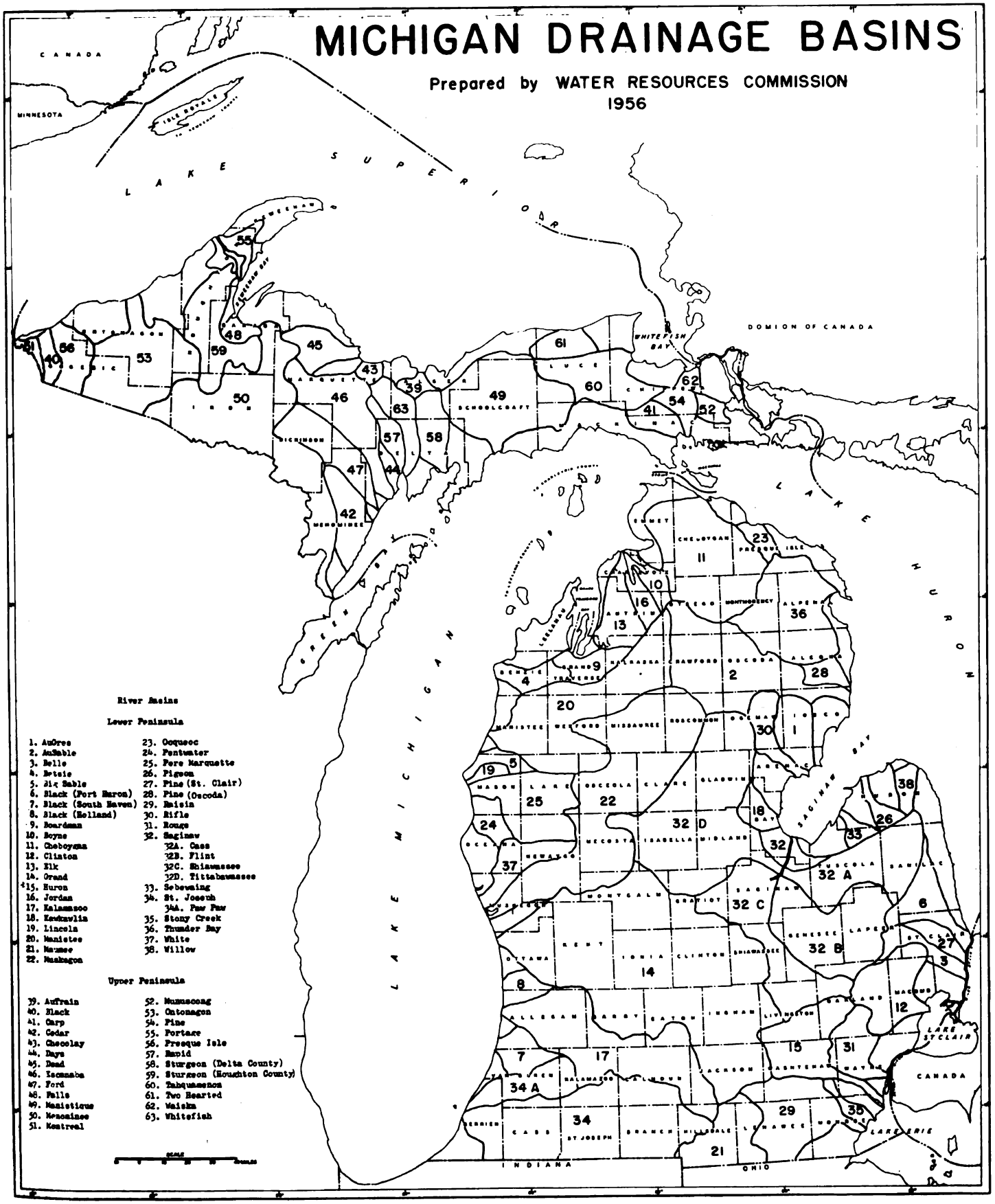
Furthermore these may be the logical units into which to break down trailway planning. Since the watershed is structured into a dendritic pattern which is fundamentally the same type of pattern desired for trailways, the similarity should be exploited. This does not imply that the trail

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[6]Sanford S. Farness, "Man-Environment Problems in an Urban Age and the Role of Universities" (unpublished paper, School of Urban Planning and Landscape Architecture, Michigan State University, 1963), p. 11.

MICHIGAN DRAINAGE BASINS

Prepared by WATER RESOURCES COMMISSION
1956



River Basins

Lower Peninsula

1. AuGres
2. AuSable
3. Belle
4. Betsie
5. Big Sable
6. Black (Port Huron)
7. Black (South Haven)
8. Black (Holland)
9. Boardman
10. Boyne
11. Cheboygan
12. Clinton
13. Elk
14. Grand
15. Huron
16. Jordan
17. Kalamazoo
18. Kawkawlin
19. Lincoln
20. Manistee
21. Maumee
22. Muskegon
23. Ocqueoc
24. Pentwater
25. Pere Marquette
26. Pigeon
27. Pine (St. Clair)
28. Pine (Oscoda)
29. Raisin
30. Rifle
31. Rouge
32. Saginaw
    32A. Cass
    32B. Flint
    32C. Shiawassee
    32D. Tittabawassee
33. Sebewaing
34. St. Joseph
    34A. Paw Paw
35. Stony Creek
36. Thunder Bay
37. White
38. Willow

Upper Peninsula

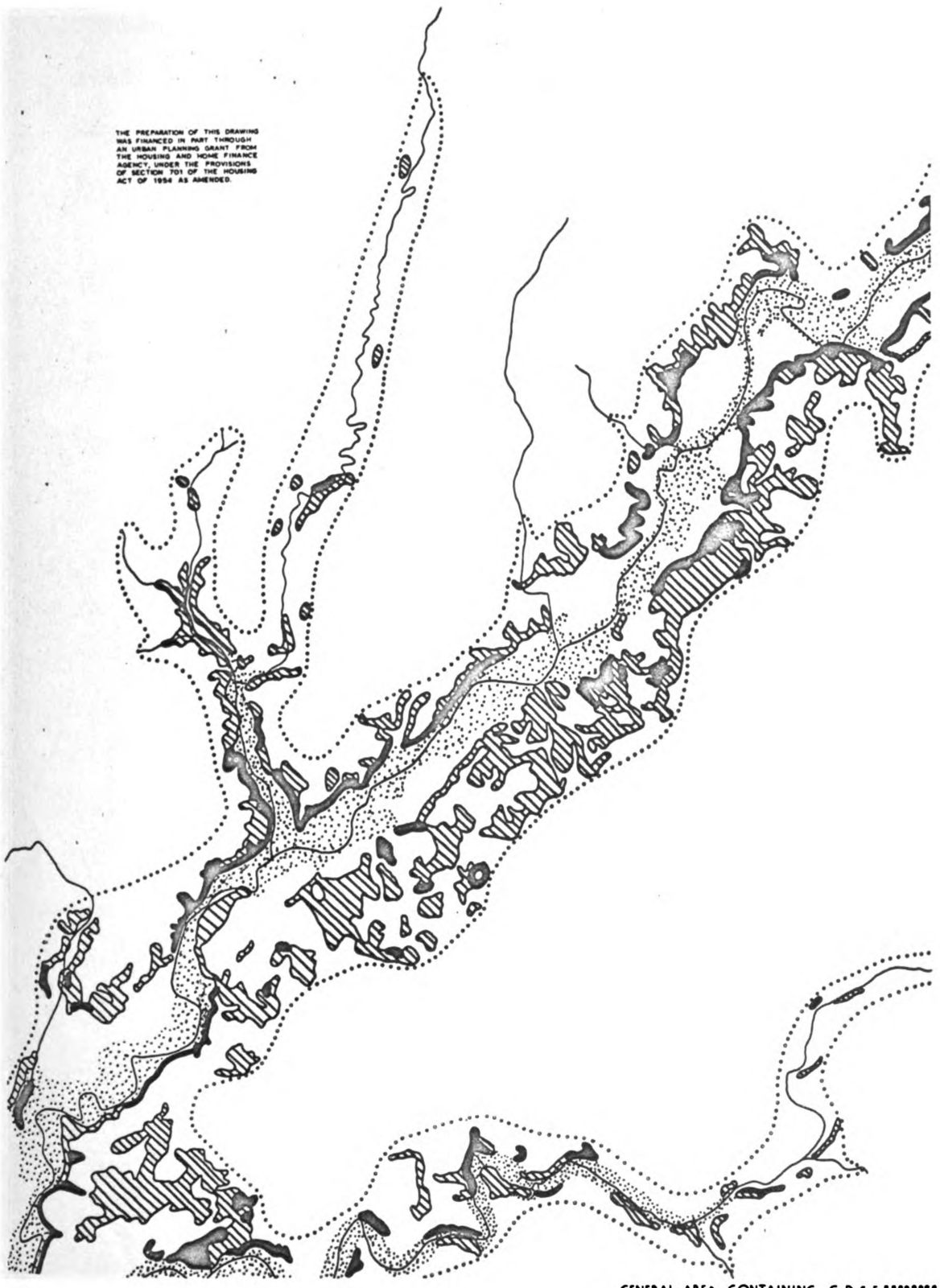
39. Au Train
40. Black
41. Carp
42. Cedar
43. Chocolay
44. Days
45. Dead
46. Escanaba
47. Ford
48. Falls
49. Manistique
50. Menominee
51. Montreal
52. Munuscong
53. Ontonagon
54. Pine
55. Portage
56. Presque Isle
57. Rapid
58. Sturgeon (Delta County)
59. Sturgeon (Houghton County)
60. Tahquamenon
61. Two Hearted
62. Waiska
63. Whitefish

and river patterns have to be coincident. Trail networks from one watershed may be adjusted to mesh more perfectly with those of another. These natural boundaries may be more advantageously used by the designer than would artificial political boundaries. Quite complete information as to various deciding factors might be available for watershed areas. Accompanying this section is a boundary map of the Michigan drainage basins. This shows the outlines of potential trailway planning regions.

Soil Survey

This aspect is closely related to the above-mentioned factor of location of lands suitable for recreation purposes. Certain types of soils, as related previously, are best suited to recreation purposes and of those types some are better fitted for trail routes than others. This is not to say that recreation should be given first choice of the available land in a region rather than last choice as it is now. Many times land with the character, variety and interest that is necessary in recreation land is ill suited to any other purpose. Perhaps this is fortunate, since because of this certain land is preserved from exploitation and remains accessible for recreation purposes. Also as noted before, there is a hierarchy of soil classifications and resultant uses, going from soil that has the highest inherent value to that which has little or no value within itself.

Certain types of soil will quite often be available



AGRICULTURAL SOILS

FIG. 38

for recreation purposes and this may be found through the study of soil maps. Certain patterns of soil distribution may be discovered through a study of soils maps. This pattern in itself may suggest land uses or use relationship patterns. In some instances this pattern may be linear. When this is the case and the soil is suitable or available for recreation purposes, a trailway route may suggest itself. Some work is being done in regard to studying the possibilities of zoning according to soil type. This alone cannot be the determinant of route location, but it should be studied and considered as a factor. Both the engineering and agricultural characteristics of the soil must be included in an assay of its suitability for trailway use.

Such information is obtainable in a variety of places and in a variety of ways. There are major soils associations maps of the state of Michigan such as some of those listed in the bibliography. For a particular region more detailed soils maps are published of most counties. In some cases the United States Department of Agriculture has made detailed soil surveys on aerial photographs of counties. These would be very effective in finding pattern and types in a region.

What of value can be determined from a soils map that would assist in choosing a possible trailway route location? First the general character of the soil type and its origin, such as whether it is sand, clay, or organic soil may be found by an intelligent analysis of such a map. Then the drainage ability of the soil may be found, such as how well

it dries up in the spring and how soon it will stand early traffic. Then some idea of its fertility may be gained. This is important since highly fertile soil will rarely be available. Then the general degree of erosion and erodability may be uncovered from a good soils map. The gradient or slope of the land is also able to be found on this map. These last two factors have some relation to topography in that they show where the route might be too steep for trail traffic or where the trails can be worked into and around the land conformations.

Other possible uses of the soil survey might suggest themselves, but since most of this mapping is done, it generally need only be analyzed and considered along with the other deciding points in possible pathway routes.

Ecological Survey

This is a science little understood and appreciated by the general public. Trails of the type proposed here could be used as an educational media in which to bring this fascinating study to their attention. Before this can be done, though, the trails must be located in such places as to best observe the ecology of a region. A study of the ecology must then necessarily preceed the location of such trails.

This is fundamentally the study of the inter-relationships between different organisms and their environment. There is much drama and excitement in a study of this science

EVERGREEN TRAIL MAP and WORK SHEET

planned to accompany EVERGREEN TRAIL GUIDE booklet

Test yourself by filling squares with letters preceding names in list at lower left-hand corner of this page. This is a self-marking test. If you know your conifers, it will tell you so.

1. The evergreen with coral-red berries is ☐
2. The spruce with drooping twigs is ☐
3. The evergreen that does not get along with hawthorns is ☐
4. The 5-needled pine of great value as lumber ☐
5. The evergreen with all its needles flat and overlapping is ☐
6. The spruce with the longest, stiffest cone is ☐
7. The tree from the Pacific northwest with drooping twigs is ☐
8. The deciduous conifer from Europe is ☐
9. The spruce from northern Europe is ☐
10. The evergreen planted in low, wet places along this trail is ☐
11. The pine with orange bark on its upper branches is ☐
12. The pine with shortest needles is ☐
13. The eastern pine with 3 needles in each bundle is ☐
14. The deciduous conifer from southern swamps is ☐
15. The evergreen from the North that makes the most fragrant of Christmas trees is ☐



PLANTS ALONG THE TRAIL

- [a] eastern hemlock
- [b] Carolina hemlock
- [c] European larch
- [d] mountain pine
- [e] pitch pine
- [f] Jack pine
- [g] limber pine
- [h] Ponderosa pine
- [i] Scotch Pine
- [j] Austrian pine
- [k] white pine
- [l] red pine
- [m] Jeffrey pine
- [n] arbor vitae
- [o] Norway spruce
- [p] white spruce
- [q] Colorado spruce
- [r] bald cypress
- [s] balsam fir
- [t] white fir
- [u] red cedar
- [v] false cypress
- [w] Douglas fir
- [x] common juniper
- [y] Japanese yew
- [z] rhododendron

THE MORTON ARBORETUM

numbers on the map refer to explanations in the Guide booklet

common juniper

W. M. T. Watts

that can help locate trails and then be used educationally where trails move through good examples of distinct ecological phenomena. Since ecology is a dynamic and not a static thing, the precise ordered movement of walking through a natural area can reveal some of the rhythm of these organic inter-relationships. Interpretive facilities should be made available at trailside to bring to the attention of the walkers some of this drama and movement.

There are various methods of determining the basic ecology of a region. One of these is a study of the existing vegetation characteristics of a region. This may be done by determining where the chosen region is in the overall context of North American ecology. Then the ecological history of the region may be surveyed and the present day situation located on this time scale in its context with reference to the past. Again on this there have been some excellent studies made, among them a map of the "Presettlement Forests of Michigan." Interpretive note may incidentally be made of this when it still exists in trail areas, since it rarely does in the lower half of the lower peninsula of Michigan.

Ecology may be used often as an indicator of the character of a region. This may serve to identify soil type, geological background, climate, and the potential use of a region. Certain areas for trails and recreation may be chosen as most desirable from their aesthetic and engineering characteristics by means of study of the regional ecology. An oak-hickory upland ecological system will usually prove

more interesting as a place for hiking or riding than would an area of a bog or grassland association area. Though care should be taken to bring the hiker or rider through a variety of regions to maintain the interest and diversity necessary, certain specific ecological areas are more desirable for trail route use than others. When moving from an area of a ravine association to a jack pine plains area, it is advisable to draw this and its cause to the attention of the hiker where possible. No thoughtful consideration of possible trail route location may be made effectively without consideration of the areal ecology.

Lastly, considering all of the influences which disrupt the natural ecological balance in the countryside, the trail and its users should not contribute to this. Therefore care should be taken in route location to disturb as little as possible what nature has done and is doing. Observation and appreciation without destruction and disruption should be the key for trail planner and user.

Population Travel Routes or Termini Study

Trails, like gardens, are for people. Therefore, they should be designed and located with people in mind. Future as well as present users should be considered. The places where people live, play (and want to play), work, and trade should have a direct bearing on where these paths go. It seems to be a national phenomenon that people are congregated in one place while the large areas of open land

available for recreation are set aside in quite another part of the nation or region. Only recently have open areas been left to any great degree in the midst of urban expansion. The trails of which we are speaking are a means of bringing fingers of open space into congested regions. These paths must be laid out to lead people from where they are to where they want to go. To do this studies must be found or made to indicate where the population goes and wants to go and the possible trail routes to these places. The potential trail routes lie along lines between city and city, city and park, or park and park. The present and future population with its growth patterns, coupled with the natural conformation of the region, may suggest levees, avenues, or corridors into which the population would "flow" naturally. A study of size and direction of movement of an actual or anticipated population should certainly be a factor of consideration in potential trailway locations. The reciprocal effects of population and landscape on one another should be considered and directed to the best advantage of both through the use of these trails.

Survey of Geological Features

The land upon and through which the rider or hiker moves has profound influence upon the re-creative powers of the trail. The pedestrian who follows a gravelly, winding rise of land across a flat plain and realizes he is on an esker from a long ago glacier more fully appreciates the

earth on which he lives. The hiker over hill and dale who becomes aware that the "hills" are not hills but really moraines left by the ice of a glacier receding from a region is ever after more cognizant of the land about him. Since there is hardly any better place to teach geology than in a drumlin field the question then follows, why not locate the trails with an eye to the distinctive landforms of a region that were produced by geological formation? This is precisely why this component is included in route locational factors. Today when many of the forms created by ice over thousands of years are leveled by Tourneaupulls in a matter of days, part of the difference between urban and rural areas is in the natural landforms of the countryside. These should be examined, exploited, and explored by means of trails.

Much of what is considered "scenic" is in the natural earth and rock forms carved by wind, water, and ice. Areas that contain such scenery can be discovered quite often from knowledgeable scrutiny of a geology map of the region.

These natural changes of elevation in the earth may quite often act as logical traffic directors. The valleys carved from rock by water and the ridge tops left by ice suggest a pattern on the earth's surface. This pattern may also be uncovered by the sensitive check of a geology map.

Where a trail guide is prepared for the route some of these salient geological features may be pointed out for educational purposes. A good example of this follows:

> These ranges form the eastern wall of the Central Valley extending the length of the Atlantic seaboard. Geologically the rocks of the Unaka Forest are of great age. They are the distinctive remains of long erosion in some of the oldest rock formations in the United States. Iron, manganese and some silver and gold have been discovered in the Unaka area. Ruins of old iron furnaces are found; in connection with their operations large forest areas were "coaled over." At Erwin, Tennessee, near Nolichucky River, the kaolin deposits, which once served the Cherokees for war paint, are now manufactured into chinaware.[7]

The soil of any region is a direct result of the geological background of the area in combination with the bedrock surrounding the area. This information may serve to point out ways of travel and reasons for choosing one route over another.

There is no one source of geological information that would be directly applicable to this study without certain interpretation and adaptation. There are, however, a number of references and maps available that could be used in connection with this phase of the study. One of the best of the maps of this type would be the two sheet set of the "Surface Formations of Michigan" (see map list). These maps show some of the history of the parent bedrock and of the various ice fronts that have covered the state in addition to the present land forms and their derivation. Certain state-wide systems may be seen on these maps of moraines, eskers, drumlins, boulder belts, outwash channels, and

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[7] Guide to the Appalachian Trail in the Southern Appalachians (Second edition; Washington, D. C.: The Appalachian Trail Conference, 1942), p. 46.

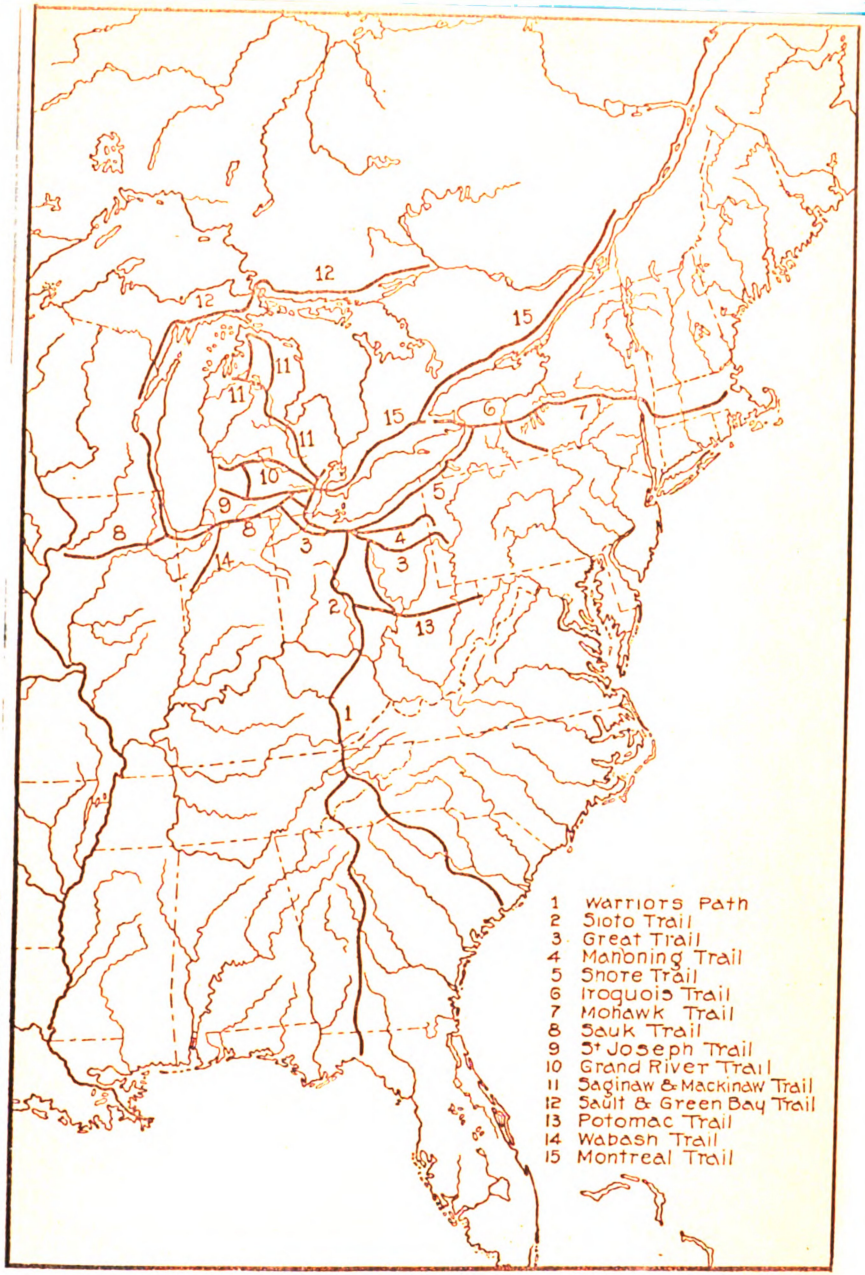


Fig. 1. Important trails to and from Michigan

glacial lake beds. More detailed county and area maps are available for precise study of these geological features that could influence possible trail route locations. The background of at least some study of geology and the use of the sensitive hand of the designer thus trained in placing trails within and upon the landscape can make the ultimate route location more effective.

Survey of Historical Features

". . . in no way better than in following an old trail, perhaps, can one come to feel a physical and spiritual kinship with generations of men laid away to rest."[8]

Walking on a trail through the countryside taken by the early explorers of a region has many values. The "re-creation" of the individual may then be tied to the "re-creation of the sights, sounds and smells experienced by those traveling a trail before. The feeling of "re-creating" some of the work, the agony and the ecstasy felt by the first white men coming to a region engenders a greater feeling of pride and appreciation of one's heritage.

The term history here is slanted in such a way to mean only the time since the advent of the white man in America. Everything before that is considered archeology. This delineation is merely for convenience in this section

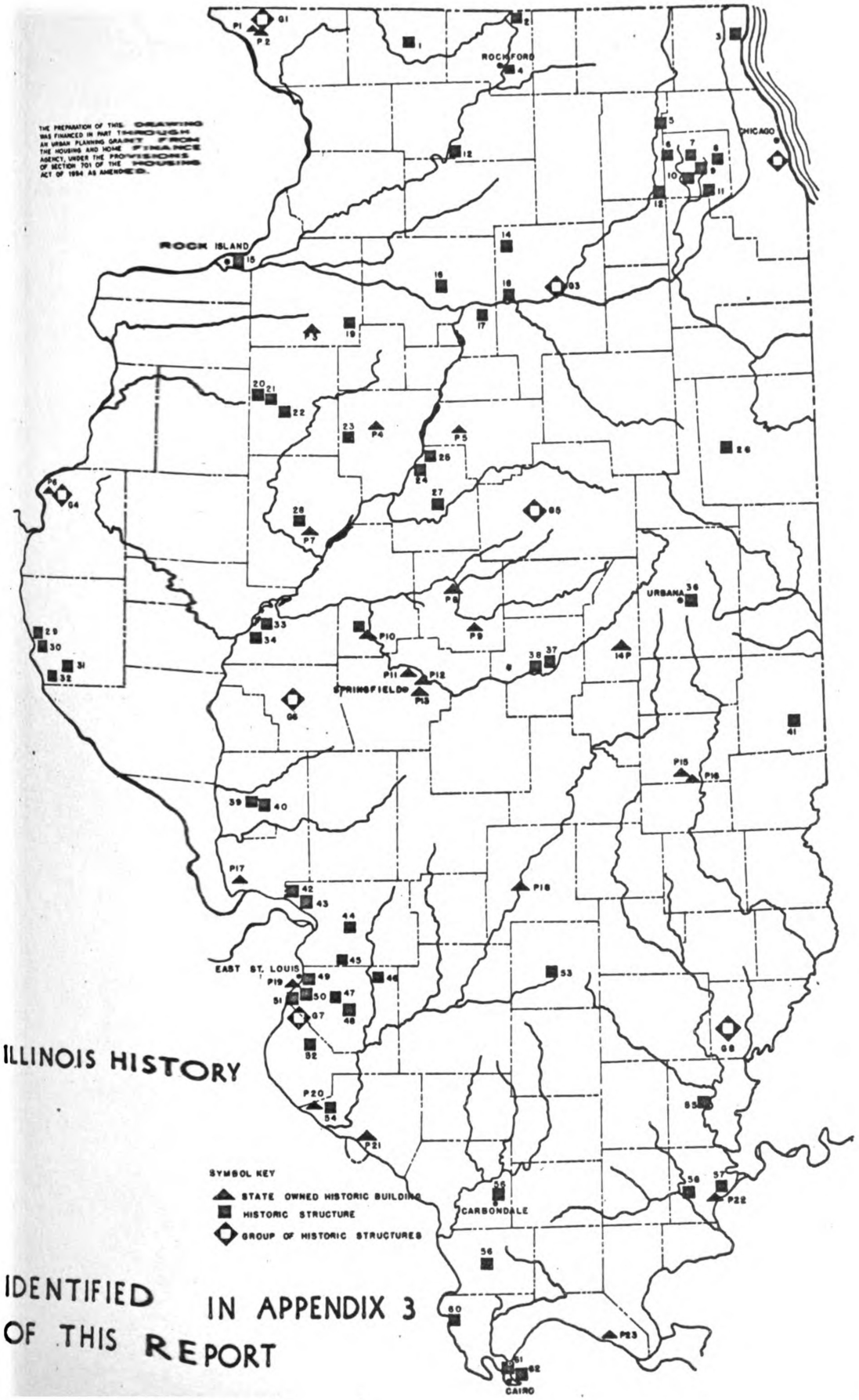
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[8]William B. Smart, Exploring the Pioneer Trail (Salt Lake City, Utah: William B. Smart). [The quote as used is taken from the back cover of Historic Trails for Happy Hiking (Indianapolis, Indiana: Sam White & Associates, 1961).]

of the paper. Every region of the United States, and especially Michigan, has an abundant heritage from the past. The background of some areas is more rich and varied than others. This should be studied and taken into account as a source of finding possible trail routes. Some of this land of historical significance may already be in public ownership.

The background to study for potential locations may take many forms, such as early pioneer trails, portages, areas of settlement, battlegrounds, routes of the underground railroad and early traders' routes. The settlements, battlegrounds and spot developments may serve both as sources and termini for these trails. Any of these routes may have been well chosen for the purpose initially and would add interest for the traveler upon them. A number of these areas are now in uses that would exclude their potential use as recreation areas. But those that are not in urban areas or covered by roads and commercial developments should be examined for potential usage. Some of these have been preserved by state and local agencies in addition to public and private historical societies. Many of these historical sites of lesser significance lend themselves to being tied together by a trail system such as proposed here. Since the historic users of some of these areas arrived either on foot or on horseback, it is not only beneficial but appropriate that present or future recreationists avail themselves of the same mode of travel.

This aspect of route location lends itself to some



ILLINOIS HISTORY

IDENTIFIED IN APPENDIX 3

OF THIS REPORT

FIG. 29

of the greatest cooperation between public and private agencies. The major reason for this is that many private individuals and groups have an interest in preserving these areas or sites of past significance. A great many of the trails that have been or are now being developed under the auspices of non-public groups are being done for historical purposes. The Boy Scouts of America is one of the primary organizations doing much along this line.

This leads then to cursory study of sources of this information. Many statewide and local area histories of Michigan exist. In these, significant areas of importance may be traced and plotted on a map, then studied as to their potential use as trail routes. There are few maps that have been made of the history of the state that are satisfactory for this purpose. Many of the earliest explorers of the region traveled by water around the perimeter of the peninsulas and used then existing Indian trails when coming inland. These trails will be more fully covered under the section on the study of archeological features.

A booklet listed in the bibliography on "Historic Trails for Happy Hiking" has valuable information on trails of this type that are already established all over the United States. The section on the state of Michigan is reproduced in the appendix. A booklet on "Wilderness Trails" is available from the Boy Scouts of America. Numerous private individuals in the nation have worked on trails of this type. Existing trails of this type should be located and further

trail development should tie to these where possible. What has already been done may suggest further work in the same direction or in a new direction.

Where a trail guide of any consequence is being provided for the trail, the form of some of the trail guide books for the Appalachian Trail may give suggestions and direction. These are very complete and usually give some historical background of a region. The following is a typical example of the type of thing these guides will contain.

> The region has an intensely interesting historic past. Along its western base was the greatest of all the Indian trails, "The Great Indian Warpath," extending from the Creek territory in Alabama to Pennsylvania. It is a valley or lowland counterpart of the crest-line Appalachian Trail. Along its streams, the Holston and New Rivers, the pioneers from Pennsylvania made their way to settle Kentucky and Tennessee. It was a barrier to immigration from the east; it determined the route of the resistless immigrants and the destiny of the Trans-Allegheny states.
>
> As early as 1671, Batts and Fallam, on one of Colonel Arthur Woods' expeditions, reached New River from Appomatox, Virginia. A century later Daniel Boone, on his journeys to Cumberland Gap, the gateway to the Kentucky wilderness, crossed these ranges by at least six different routes. Gradually the frontier receded under the unceasing pressure of the immigrants, but this region was to be the scene of the most desperate and destructive of all the Indian warfare. The southwestern trend of settlement was in violation of the Indian treaties and was resisted by the British authorities, as far as they were able to exercise any prohibition; but, by 1770, a considerable settlement had developed on the Watauga River, near the present site of Elizabethton, Tennessee. These settlers were too busily engaged in securing their precarious footholds in the East Tennessee wilderness to participate actively in the Revolutionary War; yet the two campaigns of these frontiersmen had most far-reaching effects. In October, 1780, when Tarleton's threat to bring fire and sword to their doors alarmed the trans-montane settlements, the frontiersmen gathered at Sycamore Schoals and marched east. Then followed the desparate battle of King's Mountain and the surrender of the

> British troops. Again, in March 1781, the frontiersmen assembled and John Sevier led them across the ranges, destroyed the villages of the Middle Cherokees and completely broke the power of that nation. This campaign ended, for all time, the threat under British instigation of the Indian invasion of the Southern States. Sevier's route crossed The Appalachian Trail near the Nolichucky River. The last flare of this frontier spirit was the little-known independent state of Franklin, which, under Colonel John Sevier, maintained its sovereignty from 1784 to 1788, before yeilding to the claims of North Carolina.[9]

Survey of Horticultural Features

In any normal area where trails would be located it is necessary to pass through areas where plants of one type or another exist. This seems too obvious to mention, though many people traverse an area with no cognizance of anything more than the fact that the plants are there. No recognition is given to the individual characteristics of the plants themselves or their relationship to each other and their surroundings.

If some of the inherent attributes of the area are taken into account in the initial planning and route location of the trail, more may be brought to the attention of the user.

Any distinctive horticultural features that are in the region should be cataloged and mapped out ahead of time so that their possible effect on the route may be decided upon. Rare examples of presettlement vegetation groups that

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[9] Guide to the Appalachian Trail in the Southern Appalachians (Second edition; Washington,D.C.: The Appalachian Trail Conference, 1942), pp. 46-47.

have remained undisturbed could certainly be included in this study. Unusual items, specimens, or groupings in the countryside may be included on the trail route. The phenomenon of something such as the tulip fields in Holland, Michigan, in the spring would draw a good many through the area on such paths. These attractions could possibly be of enough import and interest to dictate trail route location. As such the horticultural study would be one factor in the study of potential trail route location.

In addition to going out of the way with the paths to observe unusual items, it is necessary to call the attention of the rider or hiker to such horticultural phenomena as exist adjacent to the trail in most places. Many horticultural or ecological groups characteristic in Michigan are encountered in a variety of places and as such could be identified to the advantage of and for the education of the hiker. Much writing has been done on the further use of trails for "nature study" and many devices have been invented to get across this message. One interesting short reference on this is the Michigan State University Cooperative extension pamphlet on "Nature Trails" (see bibliography).

References to phenomena of this type may be made in a guidebook such as the following.

> Years of National Forest management have left their impression upon the forest type. No scars of forest fires are visible. The timber is mature and one has a vague impression of continuously traveling thru a well-cared-for park. Rhododendron, laurel and azalea, ranging in color from white to the vivid flame azalea, the glory of the southern woods, frequently transform the

> Trail into a flower-shaded bower. The beauty of the southern forests with these shrubs in full bloom creates an indelible impression.[10]

Multiple purpose and use of these trails should be sought after whenever possible so that physical exercise may be coupled with educational possibilities and increased awareness on the part of the user.

Study of the Archeological Features

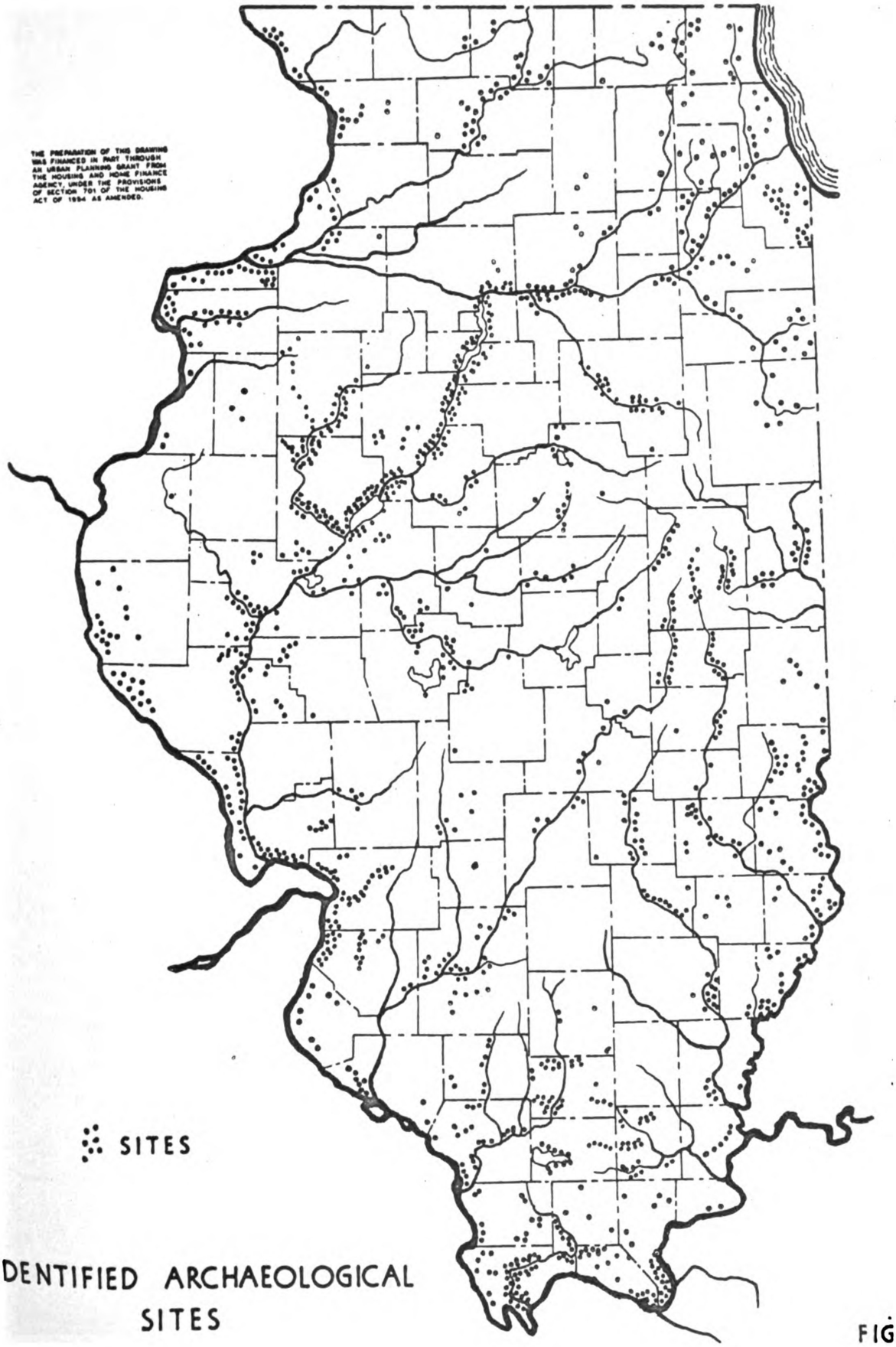
As mentioned before, archeology in this context refers to the study of the human culture in the land prior to the advent of European settlers. These cultures and people range all the way from prehistoric man to the native American Indians inhabiting the continent at the advent of the white men.

The remains of these cultures may still be visible in various forms and at numerous places in any given region. These may consist of the remnants of burial grounds, villages and campsites, mining operations, gardening areas, and trails. All of these should be of interest to the planner of present day trailways. The sites may be of interest, if they still exist to any degree, as termini of trails. The trails themselves may be of greater interest since they suggest present-day routes.

Michigan was the terminus of some trails and in addition was crisscrossed with Indian trails of all types and

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[10] Ibid., p. 313.



IDENTIFIED ARCHAEOLOGICAL SITES

FIG. 28

sizes in all directions. Some of these, due to their excellent route choice, have been used as guides to the location of present day highways and expressways. However, the routes of some are still available for public use and access. Therefore the original locations of these should be uncovered and considered as possible route locations.

An excellent archeological atlas of Michigan has indexed these and traced their original routes. In addition large scale maps of multi-county areas show nearly all of the archeological features within the state. This is written by Wilbert B. Hinsdale (see bibliography) and would be nearly the only source needed in this state to determine all of the information available concerning this factor.

This is another very important aspect because of the usual natural excellence of the trail routes and because of the historical interest inherent in their location. Before trails are established in any region, the above source should be carefully read, examined, and studied, for additional potential trail route locations.

Interpretive facilities should be considered on the trails once again to point out some of the salient features of archeological interest.

Survey of Topographical Features and Conditions

Topographical features are largely the result of the geological phenomena of past ages. Therefore part of the section on geological factors applies in this area of

topography.

The area that should be explored in a study of this type would be the assessment of the topography of a region by a designer sensitive to the aesthetic and design possibilities inherent in land forms. The engineering problems of maximum grades best suited to footpaths and bridle trails, not to mention bicycle paths, would come up in this area. These things in themselves would restrict the possible routes of such paths.

The effect of topographical conditions on the hiker is shown in the following quote.

> Springer Mtn. is the southernmost limit of the Blue Ridge chain, but the southern terminus of The Appalachian Trail is not reached here. Projecting some 23 miles south of Springer Mtn. is the Amicalola Range, terminating at Mr. Oglethorpe, and this is the end or beginning of the Appalachian Trail, depending upon one's point of view. Mt. Oglethorpe, the southern terminus of The Appalachian Trail, is an object of considerable interest. It is a wooded dome, 3,290 ft. in elevation, forming the southern terminus of the Amicalola Range. It was formerly designated as Grassy Mtn. on the Georgia Geological Survey Tate topographic sheet. On its summit is a visitors' registration cylinder, an appropriate Appalachian Trail terminus sign, and a marble shaft, a memorial to the founder of Georgia. At. Mt. Oglethorpe one realizes that he has reached the end or is at the beginning of the Trail. Below, to the south, for 180 degrees, is an unbroken level expanse of fertile farming land. Hardly a significant hill rises from the plain. The mountain range has come to an end. This impression of an abrupt and complete termination of the 2,050-mile Trail System is in curous contrast to the norther terminus at Katahdin, which appears as an isolated mountain only from the south, while at its northern end two ranges reach out toward the Penogscot East Branch Valley.[11]

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[11] Ibid., pp. 312-313.

Granted all regions do not have such a dramatic natural conformation, but each area should be assayed to find what is there. To know what may be taken advantage of, a thorough study should have taken place previously

A study of a topographic map of the Appalachian Trail reveals how carefully this route has been placed in its setting. At places the route follows the ridge tops, at others it "dog-legs" to the valleys, then follows the contour lines around a rise in the ground to another peak. One can almost see the panoramic view thus afforded. This leads to another use of information on the rise and fall of the earth's surface. There are design potentialities that may be exploited by leading the hiker through a variety of spaces that exist in nature apart from those created by plant materials. The confining nature of a ravine or gully, the aforementioned panorama from a hillock, or the expansiveness of an open plain all may be exploited by the trail designer to give to the hiker a variety of enjoyable recreational experiences. This may suggest only a few of the possibilities of what may be done by a knowledgeable use of earth forms as they exist. It might be an interesting future topic of study to develop a method of evaluating a potential trail route as to its inherent aesthetic characteristics. Topography would certainly be one of the more important aspects in such an evaluation.

Usually the necessary information for such a study is available from the United States Geologic Survey Map, though in some cases local or regional maps are available

Riding and Hiking Trails

Trails and horses have played a dominant role in California's colorful history. To our early pioneers the horse was the best means of travel; the trail was the route of travel. Since the pioneer period, the use of trails has gradually changed from transportation utility to a use primarily by the increasing number of people seeking outdoor recreation. In 1945 the Legislature approved the California Riding and Hiking Trails Act. Responsibility for the project was placed with the California State Park Commission, which later appointed a Riding and Hiking Trails Advisory Committee.

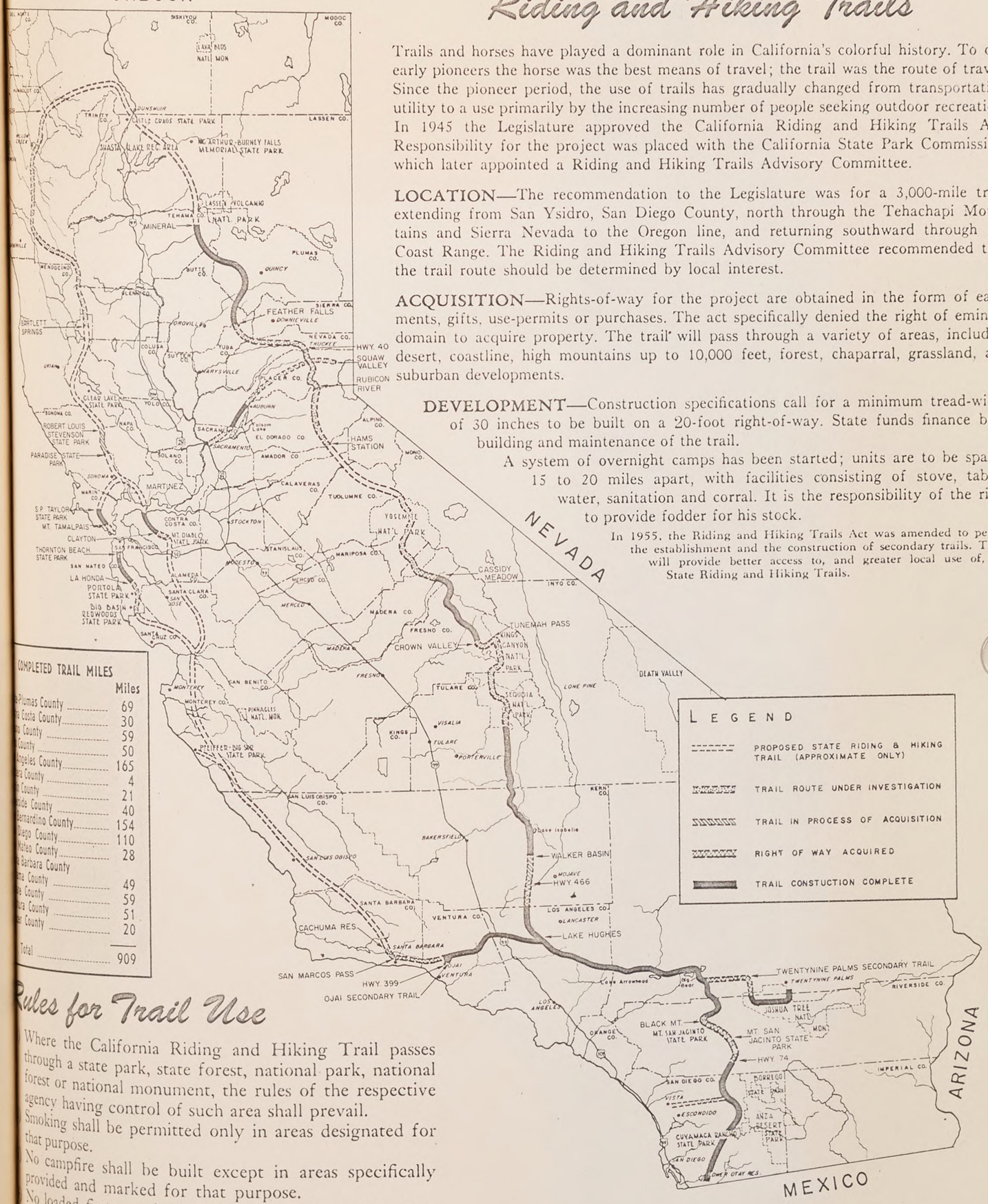
LOCATION—The recommendation to the Legislature was for a 3,000-mile trail, extending from San Ysidro, San Diego County, north through the Tehachapi Mountains and Sierra Nevada to the Oregon line, and returning southward through the Coast Range. The Riding and Hiking Trails Advisory Committee recommended that the trail route should be determined by local interest.

ACQUISITION—Rights-of-way for the project are obtained in the form of easements, gifts, use-permits or purchases. The act specifically denied the right of eminent domain to acquire property. The trail will pass through a variety of areas, including desert, coastline, high mountains up to 10,000 feet, forest, chaparral, grassland, and suburban developments.

DEVELOPMENT—Construction specifications call for a minimum tread-width of 30 inches to be built on a 20-foot right-of-way. State funds finance both building and maintenance of the trail.

A system of overnight camps has been started; units are to be spaced 15 to 20 miles apart, with facilities consisting of stove, tables, water, sanitation and corral. It is the responsibility of the rider to provide fodder for his stock.

In 1955, the Riding and Hiking Trails Act was amended to permit the establishment and the construction of secondary trails. These will provide better access to, and greater local use of, the State Riding and Hiking Trails.



COMPLETED TRAIL MILES

	Miles
Plumas County	69
Costa County	30
County	59
County	50
Angeles County	165
ra County	4
County	21
side County	40
ernardino County	154
Diego County	110
teo County	28
Barbara County	
ma County	49
e County	59
ura County	51
er County	20
Total	909

Rules for Trail Use

1. Where the California Riding and Hiking Trail passes through a state park, state forest, national park, national forest or national monument, the rules of the respective agency having control of such area shall prevail.
2. Smoking shall be permitted only in areas designated for that purpose.
3. No campfire shall be built except in areas specifically provided and marked for that purpose.
4. No loaded firearms shall be carried on the trail and no firearms shall be discharged from or across the trail at any time.
5. No vehicles, other than those for emergency or maintenance purposes or those especially designated by the State Park Commission shall be permitted to use the trail, unless the trail traverses a common right of way.
6. No person shall molest livestock encountered along or adjacent to the trail.
7. No person shall ride any saddle animal in a manner that
(8) All persons using the trail shall respect the rights of property owners along the trail and shall not trespass on their property or privacy in any way.
(9) Any person noticing a fire along or adjacent to the trail shall immediately make this fire his whole concern and promptly communicate the position of the fire to the proper authorities and then take immediate action to extinguish the fire.
(10) All persons opening a closed gate shall close the same

with a greater quantity of information and a greater degree of accuracy. The Army Map service, or other Federal agencies have detailed topographic maps of certain sections. State or regional planning groups will also have accurate maps and further information as to what is available.

Survey of Existing and Proposed Roads

These at first glance would seem to have little relation to the proposed trails, since they should be little used for non-vehicular traffic. They do tend, however, to act as dikes or levees for pedestrian, horse, or bicycle traffic. Each time one of these trails is required to cross a motor vehicle artery, provision must be made to separate the traffic so as to protect the trail and not interfere with the motor traffic. Due to this fact roads of all types will act as possible negative indicators of where trails ought not to go. This is one of the main purposes of a study of this type. The presence of numerous roads is inevitable in a populous state such as Michigan. These roads are not absolute barriers except in some cases such as expressways or major restricted access highways. Roads should also be classified as to type, size, and amount of traffic. This will enable the planner to see which traffic routes will tend to restrict the trail locations and which will not.

Some roads may be utilized to give motor access to a trail terminus of some interest. From that point the auto occupants may begin hiking on the trail network. This in

most cases is to be relegated to a minor position since the primary purpose of this trail network is to serve to bring people from crowded urban areas on the trails themselves.

Another aspect that enters in under the general subject of roads is the opportunity to use abandoned road rights-of-way as possible trail routes. In certain sections of Michigan unused logging, and existing fire or maintenance roads may have some further utility as trail routes. During a general survey of the roads of a region a check may be made as to what of this type exists in a region.

It is also possible in this respect to survey the roads in an area to determine if any may have sufficient right-of-way adjacent to them for satisfactory trail location. Many parkways have scenic easements immediately on either side of them. These are quite often of sufficient size to be able to place a trail paralleling the roadway and yet be able to shield the pedestrian way from direct confrontation with the omnipresent auto all along the route. An excellent opportunity for this sort of thing is now presenting itself in the 300 foot right-of-way on each side of the "Great River Road." This is a parkway system on either side of the Mississippi River from Canada to the Gulf of Mexico. There is ample room in this system for a long distance trail which could serve as a major artery for the center section of America, much as the Appalachian Trail does for the East, and the Pacific Crest Trail does for the West. This "parkway-side" trail could give rise to or serve to encourage the

establishment of a system of subsequent "capillary-like" feeder trails connecting to it.

In general, the neglect of a thorough study of the present and future roads in a region will act as a handicap in doing the best possible job in locating potential trailway routes. Usually state and local road maps are easily available and these may yield the needed information. Occasionally it may be that parkway or area recreation authority materials may be studied for routes that are suggested by lands owned or controlled by these groups, and which now serve vehicular traffic only.

All of the factors that would influence route location must be studied thoughtfully, thoroughly and sensitively before making any recommendations on this basis. These aspects, along with the considerations of economics, population factors, and land acquisition feasibility, will have to be "fed" into the aesthetically sensitive computer mind of the one who is to make the decision as to the actual route. A neglect to study or a superficial study of any of these locational factors may result in an inferior, unused and unappreciated trail that would not meet the desired aim and would in effect waste any other time, money and effort expended on all parts of it.

Mississippi River Parkway Commission

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J. W. CLARK, Pilot Pro-Tem - St. Paul 1, Minnesota
CHARLES H. YOUNG, Pilot Emeritus - Muscatine, Iowa
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RAY ECKSTEIN, Finance - Cassville, Wisconsin
RALPH D'OENCH, President, Parkway Foundation - St. Louis, Missouri
EDNA BOWEN, Public Relations Director and Editor of News Letter
1000 Main St., Dubuque, Iowa

The Story of Progress

By Charles H. Young

THE MISSISSIPPI RIVER VALLEY IS RICH IN HISTORIC, SCENIC, CULTURAL, ECONOMIC AND RECREATIONAL VALUES which if interwoven into a definite Master Plan which will utilize these natural gifts and assets, using coordinated effort of all the states and provinces involved, something will be developed that will be of lasting benefit not only to the valley but to the whole nation.

SO OUR MISSISSIPPI RIVER PARKWAY PLANNING COMMISSION IS WORKING HARMONIOUSLY AND PERSISTANTLY to develop the Great River Road on both sides of the river as the backbone to which will be attached many existing and proposed parks, historic places, magnificent and breath-taking lookouts and vistas, roadside parks and rest areas, public launching ramps for boats, wild life preserves, fine fishing and hunting, floral adornments, recreational areas, thousands of lakes, peaceful vistas of rural scenery, palms and pines, corn and cotton fields, beautiful cities and towns and many places where our people can lose themselves among nature's gifts and away from the tension and problems of life.

ENCOURAGING PROGRESS REVEALS THAT CONGRESS created a Federal Aid Parkway or Great River Road by appropriating $250,000 for a complete study of factual information which when completed was presented to Congress and a second $250,000 was appropriated by Congress for detailed plans for each state and for supervision by the Bureau of Public Roads and the National Park Service. These plans show a recommended route through each section of land and provide for scenic easements and embellishments that will make our Parkway not just another road but something different and unique.

THE TOTAL NECESSARY AREA, 300 feet wide on each side of roadway right-of-way from Canada to the Gulf of Mexico, is equal to only 10% of the area of Yellowstone National Park.

THE CHANNEL OF PROCEDURE IS THROUGH THE FEDERAL AGENCIES, the state legislatures and Highway Commissions of each state who utilize primary, secondary and urban money as it accumulates each year to work on an adopted plan. Other agencies, federal, state, county, city, Chamber of Commerce, Service Clubs and many other organizations are contributing their energy and finances to do their part.

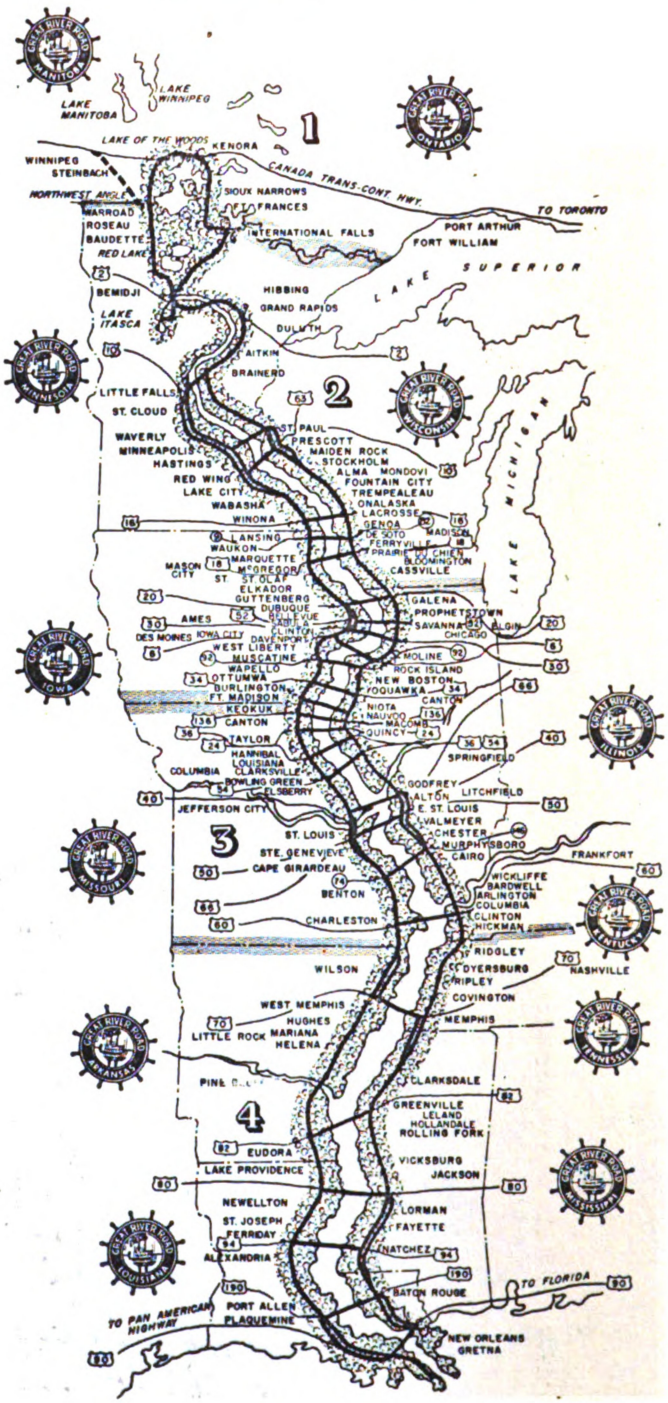
MANY OF THE STATES HAVE SELECTED THE PERMANENT ROUTES through their states and have marked it with Parkway Markers. Other states are either in progress or planning to fix permanent and temporary alignment and mark the Parkway.

A TABULATION OF FEDERAL REPORTS REVEAL 3,287 miles total in United States of which 736.4 miles will be new roads, 410.3 miles are local, 1,715.5 miles trunk highways, 336.5 miles interstate and 41 miles Natchez Trace Highway. The total population in the 10 states bordering the Parkway, in the 1950 census is 32,006,393 in the United States. About 60% of the existing highways in the United States are to Parkway Standards except embellishments. Ontario and Manitoba in Canada have 360 miles of trunk highways suitable for Parkway Standards and are energetically developing and marking them.

THE MAP SHOWS THE LIMITS OF EACH DISTRICT, the officers of which are shown on the reverse side of this sheet.

THE MAP ALSO SHOWS THE HIGHWAYS ON EACH SIDE OF THE MISSISSIPPI RIVER, of which many sections and feeder roads have blossomed into completed stretches and many other sections are contemplated or in progress.

THE MAP SHOWS AN OUTLINE OF OUR OBJECTIVES WHICH WILL DEVELOP AND PRESERVE HISTORICAL AND SCENIC VALUES - A PARKWAY FOR EACH SIDE OF THE MISSISSIPPI RIVER, FOR THE PLEASURE AND GENERAL WELFARE OF OUR PEOPLE.



Economics

Establishment of Enabling Budgetary Legislation by Governmental Units

Enabling legislation will have to be instituted by the various governmental agencies to provide funds for projects of this nature. This will not alone be for land acquisition of all types, but also for study, planning, coordination, consultation, design, administration, and maintenance. No one agency or group must undertake all of these duties and functions simultaneously in one situation unless they so choose, but at various times, places and situations, most must be willing and able to undertake parts of the implementation of this proposal if it is to be instituted. As it is a mosaic of locational factors, land acquisition methods, design and administrative responsibility, just so it is a fitting together of the economic responsibility of the various segments of government.

Existing recreation funds, personnel and land acquisition methods can be used in instituting what is here proposed, in most cases only if the way is opened to it by legislative groups. We see in California the passing of economic legislation of this type in 1945 along with the bill of proposal. This, in most cases would have to be an expansion of existing legislation to enable it to cover the cost of developments of this type. Any of this type would have to result from an increase in funds to the existing recreation agencies or the establishment of a separate fund to cover the cost of

this. Such a fund could accept contributions from outside sources, with the governmental agency contributing the additional amount necessary to fill the required need.

Basically there are two aspects to this approach. Various governmental legislative groups could recognize the need for such a trail system and appropriate additional money to existing agencies thus enabling them to bring it into being. The other approach would be to pass laws to implement such a program, and with it designate the source of the money. Also any budgetary regulation will have to allow for various methods of rights acquisition and the procuring of these rights in a variety of places and sizes. It should also make provision for cooperation with other governmental agencies of various jurisdiction. Cooperation with private groups for development, land acquisition and maintenance costs should be allowed and encouraged in any such law or provision. This act does not have to be expensive or undertaken by any one level of government but the consent must either be expressed or implied to either provide enough funds or to cooperate with anyone else who will contribute a portion.

An enlightened public that desires such a system is important in stimulating such legislative action. At times, though, recreation agencies should take some of the responsibility and propose such a system for the good of the public and their future recreation needs.

Many states have recently passed large bond issues for land acquisition for outdoor recreation areas. It would

be a travesty if after this happened in a state some of the land so obtained was not in such form as could be used for such trail routes.

Once the need for such a project is shown to exist, decisively, by a large enough group of enlightened citizens and legislators, the necessary financial means of support will usually be found. The initial guidance and concern is necessary and if it is not forthcoming from the interested citizens, the responsibility then rests with the professionals who may see more clearly the need and the potential for such a system.

The only alternative to the establishment of enabling budgetary legislation by various governmental units would be to extend by administrative decision the scope of the present respective recreation agencies to include this type of program. This may be possible in some cases, though it may lead to confusion and later difficulties if additional legislation is not passed to cover the need, responsibility or budgetary considerations. Adequate provision in law should be a primary concern at some stage or other in the implementation of this proposal, no matter who the implementing agency or group may be.

Relative Costs of Various Potential Sites

This will have a decisive influence upon eventual site or route selection, so at this stage it should be studied carefully and recorded accurately. The eventual methods

of route acquisition will be determined to some extent by the respective costs of the various individual sites. Long narrow strips of land such as needed for trail routes will be difficult to obtain in fee simple. Therefore the other less than title rights acquisition methods will have to be examined as to their economic consequences. At times it may be possible to acquire land for more than one use and thus pare down the respective costs for any one purpose. Where a land acquisition problem occurs or where excessive prices exist for the land that would be used for trailways it may be that a park of a larger size or scope is proposed. In this case the land for the complete park may be acquired and the trail route be designed to traverse it, thus accomplishing two purposes with the same piece of land. This would reduce the respective costs of each of the uses.

A study, recording, and mapping of various land costs may yield definite patterns. A graphic indication of this type, which is seldom done, may be used by the eventual decision maker to great advantage to weigh the several values of different sites. This cost factor of various areas of land is undoubtedly tied to many things, such as agricultural use, ease of access, and industrial, commercial or residential potential of the land. These land cost patterns may suggest possible route locations, though concern ought not arise if they do not, since costs for the many parcels along a trail route will vary. This is to be expected since the network should have branches into high land cost residential

and commercial areas as well as routes through the less costly sections of the countryside. To make an effective route, the trails must go into these high cost areas no matter what the expenditure may be.

This brings up the final point in this section. Costs, per se, should not be an overwhelming consideration in site selection. The best routes should be chosen primarily for other factors, while keeping in mind the costs only as a pivotal item, which could swing an otherwise suspended decision one way or the other. The best route or best land when thus chosen should be then acquired regardless of the cost and by a variety of methods.

Extensiveness of the Development Budget

This is a definite concern in this section of the study since it determines the overall costs, present and future, and the degree of involvement necessary for various agencies. Since there is very little precedent for this type of trail system, there is little information as to the costs of various aspects of it. Where this has been done or proposed in the past, it has been either absorbed into the budgets of the existing recreation agencies or has been financed separately. In the former the cost of this particular program would be difficult to separate from that of other programs. However in the latter we have a number of precedents.

The "Hoch Bill" (see appendix C) as entered in the

House of Representatives of the United States in 1944 and 1948 proposed ten thousand miles of foot or horse trails in a nation-wide network. The appropriation requested at this time was $50,000 per year for three years "and such sums as may be necessary for each fiscal year thereafter."[12] In Great Britain we have no estimate of cost but a method of preparing an estimate.

What is the Cost?

> The commission submit to the Minister an estimate of the cost and they ask the assistance of Highway Authorities in the preparation of that estimate. This estimate covers both capital and annual outlay for both existing and new paths, and provides for any necessary repairs and improvements, e.g. new gates and stiles, footbridges, stepping stones and signposts. The estimate of compensation payable when new rights of way are created is made for the Commission by the District Valuers.
>
> It is most desirable that the simple character of these paths should be preserved. It would, therefore, be contrary to their character for any formal work to be done upon them. Nevertheless, a certain amount of work will need to be undertaken as described above; and it is this minimum amount of necessary work which is covered by the estimate.

Who pays the cost?

> The Minister is empowered to defray expenditure incurred by a local authority in the payment of compensation and for the construction, maintenance, or improvement of a way if that empenditure is incurred for the purpose of approved proposals. The grant for this purpose is 100 per cent . . .[13]

(for remainder see appendix B)

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[13] "What is a Long Distance Route? Some Questions Answered." (A mimeographed sheet received in personal correspondence from National Parks Commission, London, Eng.)

The cost of maintenance is borne by the local highway authorities in England, who then may lay claim to an annual maintenance allowance of five pounds ($14.00) per mile from government funds.

In California no exact figures are available as to the precise costs of their trail system since it has been integrated into their overall recreation system.

To a large degree the complete costs of such a system will have to remain as a future problem of study and assessment. However, estimates may be made with great accuracy as to the actual costs in a specific area when the route and sites are decided upon. The agencies that can do this exist already and could be modified so as to be able to submit an accurate development and maintenance budget for consideration. This should be done in a preliminary form to encourage the necessary enabling legislation, then, in a complete manner when the actual implementation is at hand.

The degree of private participation in such a program should be anticipated and taken into account as a possible method of alleviation of certain parts of the financial burden of governmental agencies. The Appalachian Trail is a good example of this, since the Trail is available as a recreation resource in the states which it traverses with little or no burden upon the state recreation authorities. Private individuals and groups formed expressly for that purpose have facilitated the layout and maintenance of the trail route, except in certain instances in National Parks and National

Forests. This relieves to a great degree the governmental financial responsibility otherwise necessary. Private contributions of this type and in the form of direct financial assistance should be allowed for.

The next problem that arises in this context is the scope of what the development budget should cover. Planning, design, actual layout, land acquisition, construction, administration, and maintenance should all be considered. Some provision should be made for each of these aspects. What relative weight each should carry and who should assume it will have to be decided at a later time, but the total cost estimation should include all of the factors necessary to implement such a trail system.

The direction of growth, centrifugal or centripetal, of such a program is of importance as a final consideration in this section. If the growth is from a public agency to the people, the degree of the total burden retained by the public group is greater than if growth is from the citizens toward the government. Therefore as the numerous private groups associated with the Appalachian Trail Conference illustrates, the more efforts that come from the citizens the smaller is the necessary total public development budget. This encouragement for private citizens to take the lead in such a project may pay sufficient dividends for recreation agencies to explore its possible use.

Governmental Unit Fiscal Responsibility

There are many levels of decision-making in the implementation of a proposal of this type. This section illustrates one of the initial and basic of these. Fiscal as well as jurisdictional and administrative responsibility must be decided at some point. Each level of government has some part to play in bringing into being a trail system as proposed here. The necessary decision is to ascertain what part each has to play and how they may best do it.

In the light of existing governmental planning and organization it appears that logical delegations of responsibility ensue. This will be more completely covered in the section on jurisdiction, though certain delineations must be made also in the financial burden each must bear. The interagency assistance each of them may receive from the other is covered in the next section.

The regional planning agency in any state seems to logically take the key role in the implementation of a trailway system. Trails, to be effective, as mentioned before, must cover a regional area and the agency best equipped to plan, design, and lay out such a system is the regional planning commission in any area. Therefore the major fiscal responsibilities must be theirs also. This is not to say that it is theirs alone, but the coordination and requests from other agencies must be undertaken by them.

Other larger and smaller governmental units may assume or be given various segments of the economic respon-

sibility. City and county governments may assume the coordinating aspect and the Federal Government may advise, but the regional agency, through its recreation section, should propose and coordinate the overall project. The ideal type of group for such work would be a group such as the Huron-Clinton Metropolitan Authority. A unit such as this could assume the primary fiscal responsibility for the complete project, then obtain off-setting financial assistance from various other agencies above and below them on a hierarchy of responsibility. Some sources of this will be pointed out in the following section.

Potential Economic Assistance Available

The Federal Government through the publication of the Outdoor Recreation Resources Review Commission reports has stimulated interest and encouraged certain types of planning in outdoor recreation. This encouragement in various forms plus the study of various national facets constitutes an important phase of the Federal Government's share in the implementation of a proposal as suggested here. Federal grants-in-aid may be used to finance some of the basic studies of a region that could lead to identification of possible route locations. Grants of this type are also available for land acquisition and development of facilities, and more of these grants will become available in the future. The donation of trail access rights on Federal lands of all types is another way in which the National Government may help. The

dissemination of information and the experiences of other agencies will enable the United States Government to act as a clearinghouse which is needed between other recreation agencies. Direct financial assistance may be available from some of the myriad Federal groups concerned with recreation to finance various phases of the trail planning and development. The recreational potentialities in the P.L. 566 program have yet to be completely explored and it may hold great promise for Federal subsidization of private lands used in this way. The new Civilian Corps proposed recently could be used to develop and maintain such trails. The watershed recreation projects of both the Soil Conservation Service and the Rural Areas Development program offer many previously unobtainable opportunities for public access to private lands in the countryside. The possibilities and methods of making these lands available for trails of this type would be subject matter for a thesis in itself. An excellent resume of some of the new legislation passed by the 87th Congress in this regard is contained in the December issue of Parks and Recreation magazine (see periodical bibliography).

Existing state agencies that are concerned with recreation already have the necessary tools to assist the primary planning groups. These agencies could advise and coordinate the work of the various regions so that the systems would tend to create one unified state-wide network. Some studies done by the state for each area could be given to

the regional planning group to assist in various aspects of the implementation. The right of trail access to state owned lands should be granted to any system that proposes to cross them. Some state land acquisition may be necessary but should be avoided unless the local counties and cities are not able to make the rights available. Assistance in locating necessary financing may be helpful, even if state funds would have to be used to underwrite borrowing on the part of the regional agency to effectuate parts of the trail system. Some parts of the actual development costs may be able to be borne by various state agencies, especially in parks, forests, or game areas already in state ownership.

The central place of the regional planning group in the planning, study, and coordination of a trail program has been pointed out in some detail previously.

The assistance that may be given by city and county agencies is similar except in the matter of scope and extent. Cities usually have municipal parks departments, whereas county recreation is usually administered by an agency only incidentally interested in recreation. Both city and county may loan the use of their land for trail rights access across it. Both may acquire land or rights for public access when trails are proposed within their respective jurisdictional areas. Development and maintenance costs may be borne by them where the paths traverse the region under their control. All of these aspects carry with them a good deal of the fiscal load since these two agencies will carry much of the

actual on site implementation problem.

With the fiscal responsibilities of each of these interested divisions differentiated and allocated, the burden carried by any one is not excessive but the result accomplished by the whole is effective in carrying out the desired purpose.

Many of these economic decisions will have to be made and carried out in the field by the agencies involved when the actual implementation is undertaken. The broad economic guidelines are here set down in conjunction with the overall jurisdictional and developmental plan. More study of this problem will undoubtedly be made in greater detail in the future.

Route and Site Selection

Taking into account all of the factors of existing recreational areas--existing population plus the various route locational factors, and the effect of the economic determinant--the decision as to definite route locations must be made. The obvious question then arises as to what individual, what group, or what series of groups should make any such decisions. In view of the fact that the system proposed may traverse lands and recreation areas of many jurisdictional agencies, it is advisable to establish an inter-agency coordinating committee to work out various mutual problems and assist in making decisions. To the regional planning commission will fall the major portion of

the decisions, but if its members could be advised by a group made up of representatives from each of the agencies directly involved, their work would be more effective and realistic. This council should have representatives from city, county, regional, state, Federal, and private agencies, with the power to approve at least some of the decisions that affect their respective areas. If this group does not make the actual decision, it should have the power and authority to advise and counsel so as to effect the best decisions.

What relative weight each of the above-mentioned factors will have in the final decision is difficult to tell. Some are much more important than others, and involved are some absolutes, though not many, and some variables. To be able to differentiate which is which is difficult and may be the key to the best decision. A careful consideration of the possibilities and factors of each area should be made while keeping the overall view of the region in mind. One voice of warning must be kept uppermost in the arena of practical recreation politics. This is the small voice of future Americans. This voice has been heard by many people, some of them recreational planners, in the past. It was heard in the 1850's in New York City when reservations in the "countryside" were needed and Central Park was acquired. It was heard by a group of California citizens in the Valley of Yosemite which was consequently preserved for us, "the future Americans." This voice says many things, among them "Don't be swayed too heavily by present 'practicalities'

alone. The long view is sometimes more pragmatic than the economic astigmatism in modern recreation planning." It revives old platitudes remembering the problem stated in Part One of this paper, "Economy now may be expense later," and "If you're going to do it, do it right!" The voice may seem too often with us when faced with practical bargaining with an obstinate landowner or highway engineer, but the future success of a recreation plan will depend to some extent upon the amount of listening to and heeding done that voice.

Other questions also arise that may assist in adjusting the mind to make the best possible decision. Some of these are: where may trails be most effective in preserving the desirable qualities in the land while controlling the smallest amount? What effect will a trail system have on the future uses of the surrounding landscape, will it be deleterious or beneficial? Where will trails work and exist where parks would probably not have a chance or could not be placed? What will happen to the areas not chosen? Will this be bad or good, and is there any other way to change this? Can routes be chosen on a continuum? That is, if number one is not acquired or able to be acquired then could number two, or number three, four or so on?

Many tools not mentioned above may be able to be used. The trained eye of the photo-interpreter is to be considered an essential factor in assisting in the cataloging of factors with which to more carefully bring about a decision. Some examples of how air photography may be used

are contained in the Outdoor Recreation Resources Review Commission report on "Potential New Sites for Outdoor Recreation in the Northeast." This, incidentally, is an excellent report and it would be of value in this section of this paper if works of this type were available on every section of the nation.

The analogy may be drawn between the person or groups who make the decisions as to the correct trail routes, and the accomplished organist at the keyboard. The keys of the trail route decision-maker are:

1) The many potential locations
2) The many economic methods of implementation
3) The many land acquisition methods
4) The many design possibilities
5) The many areas of planning and administrative responsibility.

The actual decision requires the skill and sensitivity of the true artist. The weight and strength of each of these "notes" must be decided upon and orchestrated in any particular situation in such a way as to produce a trail system and an implementation procedure that create the effect of an outdoor symphony upon the future trail users.

Land Acquisition

After all of the factors of route location have been considered and assessed, and the route or routes have been chosen in accordance with the factors mentioned above, the actual implementation of a land acquisition program begins. This is necessary to maintain the routes of public access across the lands chosen. There must be some form of perpetual agreement with all concerned as to the continued right of the public to traverse the areas so chosen. This is necessary under the system of laws peculiar to the United States and is not the case in other nations. This difference is illustrated by a quote that explains the situation in the British Isles.

> For instance in Hampshire, one of the counties in the vicinity of London, there are estimated to be 4000 miles of public paths.
>
> You will appreciate that there is no such thing in this country as "public land" in the sense of land owned by the State. A public path is a public right of way i.e. a legally enforceable right of public passage on foot (in the case of a footpath) or on foot or on horseback (in the case of a bridlepath) on a defined route over land in private ownership. Until quite recently, no machinery existed for making an official record of which public rights of way exist, and in any case when the public's right was disputed, the matter had to be settled by the Courts. One of the things for which this Society campaigned for many years was the making of an authoritative survey and this is now being done (by county councils) under the provisions of the National Parks and Access to the Countryside Act, 1949. Local authorities (parish councils, rural and urban district councils, borough councils and county councils) have various powers to repair and to prevent the obstruction of public paths which was conferred on them by legislation largely promoted by the Society.

If the landowner permits the public to use a defined

> path across his land for a period of at least 20 years, this gives rise to a presumption in law that he has intended to dedicate a right of way to the public: Thus new paths are still coming into existence. Once a public right of way has been dedicated, the public cannot be lost by non-user or by deliberate obstruction or obliteration of the path, and the right of passage remains.
>
> Powers exist to create new public rights of way by agreement or if necessary by compulsion and these are relevant to the movement to establish "long-distance paths" in the wilder parts of the country or round undeveloped sections of the coastline.
>
> An important consideration of our public path system is that the right which the public enjoy is a right of passage only and is confined to the width normally required for this purpose. The preservation of these rights enables the public to traverse and to enjoy areas of farmland, forest or coast over which no public rights exist and which would not otherwise be open to them . . . .[14]

The part of this excerpt concerning the long-distance paths is of a more recent origin and more has been said and will be said concerning these. The traditional ways in America of guaranteeing continued public rights of access across a parcel of land is by means of land or access acquisition. However, the implementation of a proposal such as suggested here would have serious budgetary consequences since all of the land so chosen would be purchased outright by one single governmental agency. Therefore, just as a mosiac-like conglomorate of varying parcels of land should be chosen to make the trails most effective, just so multifarious methods of acquisition must be used by many areas of governmental responsibility to obtain this land most judiciously and with

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[14]Letter from Miss B. K. Searle, Secretary, Commons, Open Spaces and Footpaths Preservation Society, London, Eng., February 25, 1963.

the least imposition of any one agency. The route proposal after being laid out must be brought into actuality, and one of the most important steps in this is the acquiring of the privilege of perpetual public trespass over the route so chosen. Certain methods have been recognized in the past as the standard operating procedure for doing this. Certain more contemporary methods are continually evolving, and a combination of these may be used by the inventive recreation planner to achieve the desired public rights.

This facet of the implementation of the concept of a network of pathways through the countryside is called by many recreation planners and leaders the most thorny and problematic of all the steps toward achievement. Yet on closer examination and in the light of recent legislation this is seen to be much less a problem, though requiring more imagination, inventiveness and skill, than once was the case. Concerning this new legislation Mr. William H. Whyte says in his report to Outdoor Recreation Resources Review Commission on "Open Space Action"

> Last year will probably go down as the breakthrough year in the saving of open space. Even the optimists could hardly have foreseen the wave of legislation that was put through in 1961, and a notable quickening in the number of pilot programs indicates that the momentum is building up. The amount of land that has actually been secured so far is not particularly great; the importance of the new programs is in the groundwork they are laying for much greater efforts ahead.
>
> Here are the major developments:
>
> The passage of the first large-scale State open space programs in New York, New Jersey, and Wisconsin, combining direct acquisition by the State and grants-in-

aid to local governments.

> The passage of State enabling legislation strengthening the power of local governments to acquire open space.
>
> The passage of State constitutional amendments to keep assessments low on open space land--legislation that may open Pandora's box but which seems likely to get increased support.
>
> The beginnings of a major shift in suburban land use: from the typical sprawl enforced by large--lot zoning to a more "clustered" pattern--houses grouped more closely, larger open spaces between.
>
> Most important of all, the last minute passage of the $50 million Federal open space grant program of the Housing Act of 1961--seed money that should be multiplied fivefold in State and local action.[15]

The effect of this new legislation cannot be fully realized, comprehended, or analyzed as yet, and shall be only to a limited degree in this section of the paper. The net result of this legislation is however to heighten and broaden the land use or public access, rights enumerated in this paper. All of these new possibilities should be constantly brought up to date and continually explored in the case of the actual application of a trailway proposal as contained herein. In the future many ramifications will undoubtedly be found to the acquisition methods described herein. This serves to substantiate what has been said earlier in the paper, i.e., that the proposal and a definite volitional act are of primary importance in bringing a porposal

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[15]William H. Whyte, Open Space Action, (Report to the Outdoor Recreation Resources Review Commission, Washington, D.C.: United States Government Printing Office, 1962), p. 1.

of this type into being. Many of the tools exist and need only to be applied to this particular type of problem. This is not to say that all of the various tools have been explored, examined and utilized to their fullest. This undoubtedly will be a source of further investigation by the determiners of America's recreation facilities, potentialities and needs during future studies. That which is presented here is an investigation into the means that are now available, with a suggestion that these means be used to bring into being a new source of recreation by a more careful use and sensitive structuring of the American landscape for the good of its future citizens.

The series of reports by the Outdoor Recreation Resources Review Commission are invaluable in this study of methods of the acquisition of public rights-of-way for these trails. The reports on "Outdoor Recreation for America" (primary report), "Land Acquisition for Outdoor Recreation," (Report No. 16), "Open Space Action" (Report No. 15, and "Potential New Sites for Outdoor Recreation in the Northeast" (Report No. 8) are especially helpful, and present the most up-to-date thinking and methods available to guide in the processes of obtaining public access rights across land. The basic theory behind these procedures, along with some of the methods, can be presented here as a guide for more detailed study for application at a particular time in a more precise spot on the earth's surface.

The fundamental legal tenets as to the determination

of recreation as a human need, the providing for it as a public responsibility, and the acquiring of land for this purpose as a public right will possibly be considered to be self-evident. Nevertheless they are quoted here only to serve as an introduction and so that they will make the judicial basis of later explanations more clear.

Many authorities on the subject of public recreation planning and land rights acquisition begin with the work of state and local governments, and thence to the work of the Federal government apparatus. To mention these in a given order does not dictate the order or degree in which they shall act. Therefore since much coordinating work has been done in Washington, and the majority of this applies to the nation as a whole, the first consideration will be given to the overall rights of the national government and its agencies.

Though neither the Constitution nor the Bill of Rights expressly states the need for recreation and the responsibility and right of the government to provide it, these have logically arisen through a series of interpretations of the entire scope of the nation's basic law. The basic right of land acquisition has evolved from the section of the Constitution which gives the power:

> To make all Laws which shall be necessary and proper for carrying into Execution the foregoing Powers, and all other Powers vested by this Constitution in the Government of the United States, or in any Department

or Officer thereof.[16]

The power of taxation and spending later is coupled with land acquisition as shown in the following quote.

> If, however, the projects in question are in the interest of the general welfare, the power to tax "in aid of the general welfare" presupposes the power to condemn lands to carry out the projects.[17]

Federal power of supremacy over inconsistent state policies, and the finality of Federal judicial decisions as to public need and propriety of use, both serve to enlarge the national government's role in recreation planning decisions, as well as in other fields. The many public agencies of the United States government have, over the years, grown up as a result of these rights and powers. The government has now acquired a good many rights and agencies of land acquisition. Some of these agencies have been mentioned previously, and their power runs the full gamut of land acquisition capability.

The needs, responsibilities and rights of other, less than Federal, government agencies is set forth in the following quotes.

> American State and local governments have the constitutional power--and, in most cases, the statutory authority--to provide recreation facilities, in the form

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[16]Norman Williams, Jr., Land Acquisition for Outdoor Recreation--Analysis of Selected Legal Problems, (Report to the Outdoor Recreation Resources Review Commission; Study Report No. 16; Washington, D.C.: United States Government Printing Office, 1962), p. 10.

[17]Ibid., p. 11.

> of parks or otherwise, and to acquire land needed for this purpose. And, of course, they have done so, extensively, for many years. Few propositions of constitution law are more thoroughly settled than this one.
>
> . . . . . .
>
> The public purpose of adequate parks and recreation facilities is now so clear that, understandably, there is no issue as to the fundamental legal power to spend money for land acquisition, or to condemn land, for such programs. Public parks and playgrounds, beaches, swimming pools, zoos, golf courses--none presents a constitutional problem.[18]

A "Digest of Laws Relating to Local Parks and Recreation as of January 2, 1940," which is listed in the bibliography is helpful but quite outdated by now.

Therefore it is quite certain and plain that all of these rights do exist and exist at various levels of government. With this firmly in mind, an examination of some of the myriad methods of application can begin.

Acquisition of Full Rights

The methods are divided in many ways, but one of the first one concerns whether the public agency acquires full rights and ownership to the land, or merely certain rights of less than full ownership. The obtaining of full rights to the land, the acquiring of land in fee simple, is and has been the most common and sometimes most expensive way for a public agency to acquire land for recreation purposes. This requires that the land be either given to the agency, purchased from the owner, or received by the agency through the

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[18] Ibid., pp. 2-3.

exercise of the power of eminent domain. In all cases the land is taken from the tax roles and is public land in every sense. This is a very expensive, unsophisticated and usually short-sighted method of acquiring land for trails or paths. This should be used as a last resort and should consequently be at the lower end of the acquisition methods continuum, though it is here treated first because of its frequency of use. This is not to say that land that is already in public ownership should not be utilized fully just because the full rights are already owned. This refers to the addition of more land to public ownership for a pathway network. Even though more imaginative and less expensive ways do exist, nearly all of the methods (and some of their consequences) of receiving full rights should be understood and examined in case of possible need.

Gift

There is a great variety of ways that land can be given to public agencies for outdoor recreation, some voluntary and some involuntary.

Voluntary gifts of land or rights for outdoor recreation.--The most common and most storied of this type would be the bequest of areas of great natural beauty to the people by philanthropic individuals or groups. The legendary work of John D. Rockefeller and his descendants is well known in his gifts (to the National Park Service) of sections of the Grand Tetons, the coast redwood forests, Colonial Williamsburg, the Virgin Islands, and Yosemite, among others. In

some states, such as Connecticut, much of the park land has been donated to it. The land or access rights donated by individuals may be land already owned by the individual or may be land purchased by him for the specific purpose of donating it for public use. It is possible, if the land given is not in the location desired, to trade it for that area which is needed. Land given to the public but not suitable for recreation or not usable due to location, may be sold and the proceeds used for land or access rights included in that route which is desired for a public trailway system. Great care must be taken in assessing a piece of land given for recreation purposes to see if prohibitive clauses are included with the gift so as to make it usable for the use desired or needed in the public interest. Many instances of this exist, and sometimes because of this, the parcel has minimal utility or effectiveness. Land use and land needs change, and it is impossible at one stage to foresee the possible uses or needs for the land in the future. Use restrictions on gifts should be examined carefully to ascertain that they do not negate the usefulness of the land for trailways or pathways.

At times gifts of land may be fostered and encouraged by preferential tax assessment and thus the land is given in fact though there is a semblance of duress exerted by the agency desiring and receiving the land. This will be more fully covered in the section on assessment policies in land acquisition. Private individuals, groups or agencies may

grant (in writing) perpetual rights of public access across their land. In many cases these are easements and shall be covered as such. Industry such as the power companies will quite often voluntarily grant access rights to land owned by them. These are nevertheless gifts to the public and are many times unsolicited, and as such should be encouraged by any group or agency planning a network of pedestrian trails. They are a valuable source of needed land or rights which does not tax to any degree the finances of the coordinating group. One of the recommendations of the Outdoor Recreation Resources Review Commission dealt with this aspect.

> Public agencies should stimulate desirable gifts of land and money from private individuals and groups for outdoor recreation purposes. The work of private, nonprofit organizations in providing and enhancing opportunities should be encouraged.[19]

Involuntary gifts of land or rights for outdoor recreation.--This may consist of tax delinquent land that reverts to a public body or agency upon non-payment of taxes, or land that is required by public agencies of subdividers to be allotted for outdoor recreation purposes. This land or these rights, though given to the public, is done so involuntarily. The tax delinquent land may either be used or traded for more suitable land such as the case may be, or the access rights retained and then other rights to the land

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[19] Outdoor Recreation for America. (Outdoor Recreation Resources Review Commission Report), p. 9.

either sold or leased back to other developers. Part of this area will be covered in the salebacks or leasebacks section of this paper. Transfer of the land acquired due to tax delinquency may be made to agencies which may be able to put the land to more effective recreational use. The legal restrictions placed upon potential or actual subdividers of land, as the public recreational land that must be provided by them, serves also to give avenues or pathways of land through new residential developments. Direction from public agencies should be given these private groups to make certain that the public is given the land it needs and not the land that is left over. Such donated land can be arranged to fit into the overall trailway or pathway network as proposed, and can give valuable access points for the residents of the subdivision to the pathway network.

Eminent domain

This actually is not a land acquisition procedure alone but also the basis upon which condemnation and purchase takes place. The knowledge that this power exists makes some of the other rights of acquisition more effective. As is mentioned in regard to the authority of the government's right of eminent domain "and it is often employed not to 'take' land but to clear clouded titles."[20] The most succinct description of eminent domain is here given:

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[20] Ibid., p. 148.

> Under eminent domain the state may take any private property within its jurisdiction for public use without the consent of the owner, subject to the condition of payment of just compensation in accordance with the methods prescribed by law. . . . The power of eminent domain is limited in that private property shall not be taken except for a "public use," a term which has changed its meaning as new conditions have produced new needs for public action.[21]

This authority can be considered as the base of the pyramid of land acquisition power. Starting at the top, we have some of the newer, less used and more sophisticated rights acquisition powers of recreational agencies. At the base we have these well-substantiated and time-tested legal avenues of acquiring needed land. The powers at the apex are effective primarily due to the maximum efficiency of the powers at the base. In choosing the power to use in a given situation, it is best to begin with the choice of powers to use at a point above the pyramid. That is, examine the situation to see if there is not some new way to acquire the rights of access across private land, other than those that have been used already. This pyramid is not static or stationary but is constantly growing in height and width. Therefore any new way (proven effective) of obtaining land will be added to this pyramid. If there is no new way to secure the right of access to the land, a system of "working down the pyramid" is then begun, ending, if all else fails, in the application of the law of eminent domain and the

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[21] "Retaining Open Spaces in Maryland," Studies in Business and Economics, (Vol. XV, No. 1; College Park, Maryland: University of Maryland, 1961), p. 10.

subsequent condemnation and acquisition. All of this foregoing is mentioned in connection with the acquisition of public access for trails and paths, not in the general context of land acquisition, or even land or rights acquisition for general recreation purposes. Aside from these comments of clarification and application to the particular problems of land acquisition for paths and trails, the uses of the power of eminent domain are well covered in real estate and legal literature. This power can be used and has been used to procure the rights of access for trails, but should, due to economy and discretion be used with restraint and only after other means have been investigated and have proven ineffective.

It should be noted though that the right of eminent domain is not always granted by state legislatures to acquire land for trails. In the California "Riding and Hiking Trails Law" of 1945 the use of eminent domain was denied to acquire trail land. The section in the appendix on the "California Riding and Hiking Trails Project" has more information on this.

A bill, however was introduced into the 1957 session of the California legislature pointing out the need for this right to be available. The following quote points out the more current need and feeling even in California.

> The committee proposes that the right of eminent domain be extended to acquisition of riding and hiking trail easements under certain conditions and adopted the following resolution at its November 27th meeting:

> "That the right of eminent domain be extended to the acquisition of land and rights in land for the riding and hiking trails where 75 percent of the area ownership of the lands in question over which the trail is to pass within a given county have signed agreements for riding and hiking trail easements over such property."[22]

Negotiated Purchase

This is another very obvious and common method of gaining the full rights to a parcel of land. This is a case of the agency stepping out, so to speak, of its role as government with its attendant privileges and entering into the free enterprise system to bargain or barter for a parcel of land on the open market. This is quite often the most expensive way to acquire the necessary real estate. Primarily the agency is desirous of full rights, and secondly the competition for the land may be industry, transportation, commercial enterprises or residential interest. Any one of these groups is willing and able to bid high to possess land rights desired. If full rights to land are not needed, it is unnecessary to stand the prohibitive costs to win them. Quite often full rights are not necessary for trailways, pathways, and pedestrian traffic. This, nevertheless, is a valuable tool that can be called forth if needed to bring into fruition a regional trailway proposal. Many agencies maintain a reserve fund to purchase land within their overall planning concept as it becomes available. They are

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[22] Recreation and State Parks (Fourth Partial Report of the Senate Interim Committee on Recreation, State Beaches, and Parks; [n.p.]: Senate of the State of California, 1957).

quite often aided in this by groups of interested citizens who raise the money when needed to obtain prime land, and then allow the recreation agency to purchase it from them as it is at a later date. This aspect of private endeavor will be touched on briefly in the appropriate area later in the paper. In some cases certain areas of land are kept on record for acquisition as they become available. In other cases real estate brokers are consulted as to the availability and quoted price of certain tracts. The owners of these tracts are then contacted as to whether the wanted parcels are for sale. "Owners can point out important items influencing values that might otherwise be overlooked by appraisers."[23] The appraisals are then made as to the worth and the offered price of the land. These appraisers may be staff appraisers from the agency, private appraisers employed specifically for this purpose, or appraisers from other or related public agencies used for whatever work of this type the recreational agency may have. The general procedure from this point on may be best summed up in the following quote:

> When only one appraisal is made, the offering price is usually somewhat below the appraisal price. This allows some room for bargaining with the owners. When two appraisals are made, the offering price is usually set at or slightly below the lower appraisal price.

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[23] Potential New Sites for Outdoor Recreation in the Northeast, (A Report to the Outdoor Recreation Resources Review Commission by the Economic Research Service, U.S. Dept. of Agriculture, Study Report No. 8, Washington, D. C.: U.S. Government Printing Office, 1962),p. 89.

> The agency may be willing to raise its offer to equal the higher appraisal. If the owner asks for it, and if a formal appraisal was made of the property, most agencies will tell him the items included in the appraisal on which the offer is based.[24]

It is not usually possible to buy narrow strips of land through the countryside of the types that such a trailway would require. However, the purchase of nodular-like parcels of land along the way to be used as rest stops, is possible. These areas may be purchased as an only recourse to obtaining the land in that particular area. As mentioned before, unless dual use can be made of these areas, it is unduly expensive to use negotiated purchase as a mode of access rights acquisition.

Acquisition of Rights Less Than Full Ownership

> The traditional methods of obtaining land for outdoor recreation purposes--acquiring the land in fee simple; i.e., in full ownership, and retaining it in public ownership for public use--will necessarily remain the basic method for developing outdoor recreation resources. Yet substantial areas of privately owned land offer supplementary opportunities for certain types of outdoor recreation without interfering with the private owner's use of the same land. This potential is recognized in the statute establishing the Commission, which specifically states that its studies shall be concerned with outdoor recreation resources "irrespective of ownership."
>
> The possibility of protecting open space by public acquisition of some type of legal interest in land which is less than a fee interest has attracted substantial interest in recent years. The question here is to what extent the same technique may be used to provide such open areas specifically for outdoor recreation use and

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[24] Loc. cit.

> what legal problems are likely to result. To state the problem more generally, there are various ways in which the rights involved in ownership of land may be divided between private landowners and public agencies with certain rights allocated to each. Substantial studies have already been made on various aspects of this problem, and others are under way now.
>
> The principal advantages of obtaining rights less than a fee in this context may be briefly stated. First, under such an arrangement the land is left in private ownership, normally continuing with the existing long-term land use. The land thus remains in productive use without either requiring considerable public maintenance or becoming scraggly as the choke cherries take over. Second, the land remains on the local tax rolls, although presumably at a reduced valuation. Third, in some situations the acquisition of easement rights may be substantially cheaper than acquisition of the fee; only experience will tell how much.[25]

The above quotation states quite succinctly the derivation and advantages of this method of rights acquisition as opposed to land purchase. It is not necessary for the public to buy the full fee simple in all cases merely to have the right to traverse the land on paths or trails. This then is one of the advantages of all methods of acquiring rights less than full ownership. It is possible to gain only the rights you desire on more land with the same amount of expenditure. There are numerous disadvantages, it is granted, in acquisition of less than fee and these are generally administrative, but for a development such as trails or paths these newer methods have great promise, and must be considered. This quote from William H. Whyte's excellent

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[25]Norman Williams, Jr., op. cit., p. 37.

report on "Open Space Action to the Outdoor Recreation Resources Review Commission shows how all of these methods must be used in concert.

> It must again be stressed that the potential of any tool lies in combination. If we examine each device in isolation, as if it were to do the whole job, we are bound to arrive at futility. We can prove that agricultural zones are susceptible to commercial pressure, that tax deferral is too complicated, and so on. If we explore how each might complement the other, however, we can see opportunities that otherwise would remian invisible.[26]

Easements

> An easement is an incorporeal right imposed on a corporal right in the same piece of land, which may be acquired by purchase or gift from the landowner who, in his own name and that of his successors, gives up one or more specific rights. "Scenic easements" for parkways, for example, are a "servitude devised to permit land to remain in private ownership for its normal agricultural or residential use and at the same time placing a control over the future use of the land to maintain its scenic value for the parkway."[27]

> By the ancient device of the easement, the public does not have to buy the full bundle of property rights to land. It can acquire only the right that it needs--the right that the land be kept in its natural state or be open to the public for certain purposes like hiking.[28]

> A brief preliminary explanation of easement law is in order here. An easement is a limited right over land owned by somebody else. Easements are of two types,

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[26]William H. Whyte, op. cit., p. 19.

[27]Retaining Open Spaces in Maryland, (Studies in Business and Economics, Vol. XV, No. 1, College Park, Maryland: University of Maryland, 1961), p. 10.

[28]Outdoor Recreation for America. (A Report to the President and to the Congress by the Outdoor Recreation Resources Review Commission, Washington, D.C.: United States Government Printing Office, 1962), p. 149.

> affirmative and negative. An affirmative easement is a limited right to make use of land owned in fee by someone else: the familiar case is a right of way across someone else's land. A negative easement is a right to prevent a nearby property owner from using his land in specified ways; normally for specified types of land use and activities.[29]

Easements have been mentioned in this regard as a sort of cure-all with the aura of a magic wand that opens all doors for access across public land. This is not quite an accurate view since effective as they are, they still have shortcomings and there are other rights acquisition methods that achieve the same end more economically and effectively. The Outdoor Recreation Resources Review Commission report on land acquisition divides easements into both affirmative and negative easements. Under affirmative easements are listed: hunting and fishing rights, highway easements, flowage easements, and aviation easements. The negative easements are listed as flowage easements, safety easements, clearance easements, protection of wetlands against agricultural development, scenic easements, and protection of agricultural land against residential development.[30] Many times paths and trails of the type that is being proposed can be worked into areas where negative easements have been obtained. Primarily, though, the right of the public to move across land in private ownership would be considered an affirmative easement. Though negative, scenic

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[29]Norman Williams, Jr., op. cit., p. 39.

[30]Ibid., pp. 40-46.

easements may be acquired immediately adjacent on either side of the proposed trail. There are many questions regarding various easement laws that have not as yet been decided upon, and further study and test will have to be made to ascertain with any degree of finality their degree of applicability to trail network development. Certain things are known at present, though and further investigation may be made at the time of desired application of this proposal to the current status of easement legislation.

The primary use of easements is as a method of acquiring public rights of access across privately owned land. These rights must be negotiated for between those desiring rights and the owners of the land they desire to traverse.

Affirmative easements may be obtained on trailways and their abutting properties to such an extent as to protect all of the views from the path, but by using more of the possibilities of this method a more efficient way may be implemented.

Appurtenant easements may be negative easement adjacent to an affirmative easement in gross. This is the type of easement mentioned above adjacent to the trailway right-of-way.

> A scenic easement along a highway is a typical example of an appurtenant easement, for the right to limit land use in the strip adjacent to the right of way is clearly appurtenant to the ownership of the

highway itself.[31]

This means that first of all the trailway easement must be obtained through negotiation across a parcel of land. This will only be wide enough for the pathway itself.

This will be an affirmative easement in gross which will be for a set consideration. Then if it is desired to protect the views and environment through which the trails will pass, an appurtenant easement is obtained for less cost than the original consideration. This type of insulation for trails has been instituted on some parts of the Appalachian Trail.

The relative cost of easements as compared to that of obtaining rights of fee ownership is explained more fully by Mr. Whyte.

> The cost? The rule of thumb in easements is that the price should be the difference between the fair market value of the land with the easement and without it--in other words, the money value the landowner is giving up. This depends on the time and place: in an area predominately in farming the landowner is giving up very little (scenic easements along the Great River Road in Wisconsin, for example, cost an average of $15.06 per acre, less than a third of the fee cost). In built-up areas near the city, however, the speculative value of the development rights is such that easements could cost as much as the fee simple. It is not a device, in short, that can save an area that is already overrun.[32]

The secondary use of easements is that of taking

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[31] Ibid., p. 50.

[32] William Whyte, op. cit., p. 17.

advantage of existing easements for other purposes across private land. These routes, forming a network as they quite often do, are ideally suited to serve as pathway routes. This has been admirably set forth by Mr. Karl Belser and his staff in the Santa Clara (California) Planning Department. They plan there to use as pathways a combination of the areas under the powerline easement of the Pacific Gas and Electric Company and the existing waterways to form a complete network of "greenways" throughout the county. This proposal in the form of the pamphlet they have produced is shown more fully in the appendix. This group has worked out one of the most comprehensive regional networks, as herein proposed, of any area of the United States. Much could be learned in this regard by studying also their publication "A Plan for Parks, Recreation and Open Space" as revised in February 1962. This scheme nearly epitomizes what is being proposed in this paper.

Rights

The acquiring of "rights" of public access across private land can be done without the use of an easement provision. These are merely the "rights" to do this thing (traversing or walking) across the owner's land from one point to another point.

> These rights should therefore be referred to by some other term, as "conservation rights and interests" or "statutory rights and interests, as herein defined." Rights and interests are not only legally correct descriptions for all three alternatives, but they are neutral terms without any special technical implications. In choosing the name, consideration should be given to the

> effect on standard provisions in real estate contracts which refer to rights and interests of various kinds.
>
> In any event, specific provision should be made to disclaim the more important and troublesome rules deriving from common law easement doctrine. In particular, it should be explicitly provided that none of the rights involved are to be automatically extinguished without compensation, and the rights should be made transferable, both between private parties and between different levels of government.[33]

This right can be granted gratis or can be negotiated with the owner for a consideration. The continuity of this agreement between subsequent owners and government agencies must be assumed in any agreement to make it worthwhile. This is seen in the following quote as to suggestions for future proposed legislation.

> The statute should require that the division of rights be recorded in order to bind subsequent purchasers of the privately owned rights. If such rights are not recorded, subsequent purchasers in the absence of actual notice should take free from whatever interests are involved in the unrecorded rights, as bona fide purchasers for value.[34]

The obtaining of these rights is one more of the legitimate tools of implementation for a regional system of pedestrian hiking or walking trails, bicycling paths, or bridle trails.

Leases

A lease can be signed between the recreation agency desiring the land or the access through it and the owner of

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[33] Norman Williams, Jr., op. cit., p. 54.

[34] Ibid., p. 55.

the land for the guaranteed acces of the public. This may e given in consideration of a remuneration or in lieu of ax deferrment. This lease can be a long term one and thus ive the effect of being valid in perpetuity. This should a legal document drawn up guaranteeing both parties their ntinued rights.

It should also take into account future use of the d and also future recreation needs. This serves to point the need for a well-planned and well-located trailway em since these routes will of necessity be confined and ted to that location for a considerable length of time their original designation. This is due to the need long term committment and the probably prohibitive of adjacent land areas in the future. A lease agree- though, for rights of travel over private land can be o complete a trailway network--at times better than ner method available.

There are certain limitations in this method as the following quote.

> cense provides revocable permission to come on land to use it for specified purposes. Because it is cable, it provides no protection at all. A license ed with interest is, for all practical purposes need concern us, the same thing as an easement.[35]

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[35] Id., p. 38.

However, by placing this in the tool kit of the agency desiring to acquire the rights of access to land for trails, it adds another possible method of implemation that may be used. Even with the weakness of revocability this means may be used to acquire certain useful temporary rights.

This method may be valuable to acquire land or rights or a temporary route due to the inavailability at that time the primary route location. Until such time as the land routes for the primary trail could become available a ss than perpetual rights acquisition power such as this be useful. There may be other uses of this tool that ld arise and it certainly should not be overlooked merely use it is revocable. It has, though, limited use and ld be utilized with discretion.

packs

This is a very radical method for merely obtaining rights across private property. It and the following may be used effectively though, with the proposing acquiring fee title to more land than they might lly desire. The basic idea of this method is to pur- he title to the land, thereby obtaining complete to it. After this is done the land is then resold e access or trespass rights needed for trail pur- The resale price may be more or less than the pur- pending on the real estate market of the area. though, the land will have less value due to the aken from it by the recreation agency. This requires

the investment of part of a reserve fund of finances initially to purchase the land, though part of this is recouped when the land is later resold minus the desired rights. This may be done by interested private groups on behalf of a trailway commission. Access rights of this type are donated in perpetuity by the private group, then, to the appropriate gency when the land is resold by the private acquiring gency. This is one of the newer methods and certainly ould not be forgotten if the situation arises in which is could be used.

asebacks

The relationship between this and the above method quite obvious though there are dissimilarities. A greater l expenditure of funds is necessary in this type of arement, since only a portion of the initial purchase is recouped by leasing the land for certain purposes. it gives the purchasing agency a plethora of land in ght ownership and releases it from the tax roles. One most effective ways of using this is as a temporary of holding the land for later sale.

This resultant sale would be minus the trail rights. od real estate market the subsequent price of the nus the trail rights could equal the initial price of l, thus giving a low cost "path right." During the period the land could be leased for non-conflicting . At the time the land is sold the process then a saleback. This method may also possibly be used

to dictate the use of the surrounding land while deriving some remuneration for the initial investment. Thus it is used much as an easement though with a much greater initial expenditure and with more land in public lands which is not always desirable. As before this method is applicable to path rights acquisition as it is to all recreation land uses.

Excess Condemnation

In some communities (Minneapolis, for instance) this ethod is the backbone of adjacent land use control. This thod does preclude the fact that it is necessary to hold e title to the primary land of the trailway. As such this be used in conjunction with that method of rights acquiion. The rationale behind this method is that since the ernmental agency is empowered to acquire land by condemna-, more land than is needed for a specific right of way be acquired. This land may then be sold at a later time certain rights withheld by the agency. This may have ame effect as a scenic easement immediately adjacent to ondemned land. Trailway or trespass rights could be those retained when the land is later sold so that or trails could be developed on land immediately ad- to the land held in fee. The resultant rise in price immediately around land condemned for recreation pur- sometimes enough to offset the original purchase all of the land. The legality of this method is question in some areas of the country and therefore uld be examined before contemplated use. This has

used to protect rights-of-way along highways and could fore protect areas adjacent to trails. The keeping of rights of access or trespass may diminish the potential of the excess land to the point that the return from sale would be too small, making the cost of the develop- too high to use this means. It has not been recorded aving been used to acquire the land rights for trails. ver it is one more means that has the possibility of ctiveness is needed.

latory Devices

The police power, or the general legislative power to regulate for the promotion of the public health, safety, order, convenience, morals, prosperity, and the general welfare, is the basis of governmental activities in the fields of planning, zoning, subdivision control, and advisory and educational work. The scope of the police power has been expanded considerably since the beginning of this century under the impact of changing factual conditions and in accordance with changes in public opinion. However, it is subject to certain limitations of due process of law, and the guarantee of the equal protection of the laws. Moreover, any exercise of the police power must be reasonable and in the public interest.[36]

These are not in effect rights acquisition methods are as stated regulatory powers of government agencies. se can be used, though, to reserve open land and guarantee right of public access through it. This is not an abately effective or lasting method but one that can be and been used with good results. Basically this is the use

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[36]Retaining Open Spaces in Maryland, op. cit., p. 4.

ıe police power of the governmental agency to regulate
ıses of public land for maximum public benefit. The
rnment's right to do this in urban areas has long been
gnized by the courts. In recent years this concept has
expanded and applied to larger areas by regional plan-
agencies. Optimum land use patterns with their con-
tant open spaces and their inherent recreation possibil-
s may be controlled over a regional area by this method.
e devices cannot dictate specifically the uses of the
eation lands, but they do make provision for its inclu-
ı in the regional plan. Furthermore, they can provide
ı (recreation lands) in the areas where needed and in
ı a pattern as to be most effective in the future.

These regulatory devices can best be used in a total
nning program and in conjunction with other land acquisi-
n methods. They are an important and vital method of
ignating land usable for trail routes and as such should
thought of immediately and used more widely.

ıing

Zoning is the major tool in land-use control. Although zoning cannot always withstand the pressures for development and does not necessarily produce land for public outdoor recreation as does purchase, it can help preserve existing land features. Agricultural zoning, for instance, has been a means of preserving excellent agricultural land and preventing its loss to urban development in Santa Clara County, California. Floodplain zoning can protect valleys from unsafe developments and preserve natural areas. Even within built-up areas, zoning regulations can provide for more outdoor recreation if greater flexibility in setback requirements permits the clustering of dwelling units, with increased open space in between the clusters.

Subdivision regulations, another form of zoning, can xpand opportunities for a community by requiring devel- pers to reserve a certain percent of subdivision land or recreation purposes or, in lieu of land contribution, o pay a fee to a local park fund.[37]

Use zoning is the division of a community into zones r districts by type of use for the purpose of achieving rational land use pattern, and is a device which has been recognized for 35 years as a legitimate exercise of he police power. Other recognized types of zoning regulate population densities and the size of yards and courts, and limit the height and size of buildings. Zoning ordinances have been adopted by most of the central cities of metropolitan areas with a 1955 population of 100,000 or more. But many small municipalities lack zoning ordinances and the existing ordinances are often poorly drafted and seldom enforced.

Originally, zoning statutes provided only for zones for residential purposes, and for trade and industry. Subsequently, zones for community projects were added, including zones for recreation.

The provisions of zoning ordinances concerning use for residential purposes, business, and industry have a considerable impact on the amount of open land available.[38]

On the basis of preliminary studies into various sting conditions of land use, climate topography, trans- tation and communication facilities, etc., a proposed d use plan is made of an area. To bring this into actu- ty, the regulatory powers of the government are brought bear on private land owners and developers. To maintain optimum density, land use and relationship between land areas, the regulatory authorities have the enforcement er of zoning. This is a gross over-simplification of this

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[37] Outdoor Recreation for America. (Outdoor Recrea- n Resources Review Commission), op. cit., p. 150.

[38] Retaining Open Spaces in Maryland, op. cit., p. 4.

process and method, though it brings up the point of how this power may be used to implement a regional trailway system. Due to some of the land and route locational factors brought up previously we see in the dendritic pattern of rivers and adjacent flood plains, a natural pattern suggested for recreation areas. In any region where a pathway system is planned either topography or water patterns suggest potential natural land use area and subsequent regulation. Since nearly all of these areas are tied together, it would take very little effort to see that the recreation areas do have a certain degree of cohesion or flowing together. If this type of land is zoned open or recreational it is a small matter to work a trailway system into it. The method then does not actually obtain land or rights specifically for a trail route but merely guarantees to some degree the existence of open space. For the individual or group who desires to bring into actuality a system such as proposed here, this plans should be examined at the time the land use or zoning map is prepared and the necessary steps then taken so as to insure such a pattern of open land that would lend itself to the later establishment of such a pathway system.

Cluster System

This is a form of zoning and is, in effect, a change in the pattern of development itself. Until recently, communities thought big lot sizes would guarantee open space, but, in the typical subdivision, this hope proved to be an illusion; big enough to have to mow, too small to use, and a perfect amplifier of sound. Instead of forcing subdividers to chew up all of an area with rigid lot sizes, some communities have suggested that they group the houses in a tighter, more cohesive pattern.

This saves money for the developer, for he does not have to provide as much asphalt and service facilities. It may pay him to leave anywhere from 40 to 60 percent of the land open and, as part of the bargain, this is deeded for common use of the residents. Instead of a miscellany of back lots, there can be bridle paths, playgrounds, wooded areas, and--that most desirable of community assets--a stream, flowing in the open and not buried in a concrete culvert.

The potential of a series of open spaces is great. The open space of each cluster development can be planned so that it can connect with others; by wise siting of publicly purchased land for parks and schools, there can be a unified network of open space in which each element contributes to the others.[39]

This new concept which is yet to be put into practice tested in any great degree in this country holds great ential promise for the future location of fingers of the ilway routes moving into residential areas. Like land aside by subdividers for the purpose of providing public n space this means bridges the gap in the trail systems n the open countryside to the urban areas. In years to this may give routes of access linking state and re- al trailway proposals to those plans of metropolitan s departments. If the open spaces of the cluster devel- nt are planned so as to connect and coincide with those lands of the surrounding region they could be used to t advantage. The main advantage is that of providing "nerve endings" or dendritic fingers for trail systems will penetrate to where people live and entice them on

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[39] Outdoor Recreation for America (Outdoor Recreation irces Review Commission Primary Report), op. cit., p. 150.

o the trails which in turn will lead them through the land-
cape on other more major trails.

This system has a number of basic appeals to dif-
rent groups. To the developer it makes the appeal of
onomy. With fewer utilities and streets to develop and
tentially a greater number of units, he stands to reap
eater profits plus the public good will attendant to the
rge amount of open space left. To the potential owner, a
aller amount of private area for his maintenance yet with
arge amount of public recreation space nearby and avail-
e has great appeal. The community and the region, though,
the greatest beneficiaries. Their gain is best shown at
end of the following quote:

> Now that the cluster principle is becoming a reality, planners are looking ahead to a further step. Could not these separate open spaces be tied together? It is no more trouble for a developer to have open space that fits the open space of other subdivisions as open space that doesn't. The prime requirement is a community plan that anticipates future development.
>
> This calls for an act of imagination. Santa Barbara County, California, furnishes a good example. In the area where new subdivisions are now poking, there is a series of dry ravines that run down from the mountains to the sea. The ravines don't look like much but partly for this reason, the county's open space committee saw an opportunity. To get plat approval, developers must set aside that part of any new subdivision which falls in a ravine area; since ravines are impossible to build anyway, the developers have been amenable. Under a new subdivision ordinance, the county can sweeten the deal by permitting the developer to reduce lot sizes if he will dedicate open space. It is not a full cluster plan, but without raising overall density, it has achieved the dedication of about 12 percent of the total acreage involved.

One question that must be resolved in any such plan
s who is to pay for the maintenance of the open space.

> The Santa Barbara plan takes advantage of a state law providing for the establishment of special public improvements in it. The county is saddled with no extra burden, a fact that goes well in selling the idea.
>
> At the moment, the result is unimpressive; the ravines remain so much wasteland, choked with weeds and underbrush and sometimes with tin cans and rubbish. A decade from now, they may be priceless. The interstices will fill up, yet without the expenditure of a cent, there will have been reserved a natural network that can provide picnic areas and paths and bridle trails--in the heart of a built-up area.
>
> Consider the potential if these devices are tied together. The open space of each cluster development can be planned so that they can connect with each other; by a wise siting of publicly purchased land for parks and schools, there can be a unified network of open space in which each element contributes to the other. In such a plan, the conservation of private land is all the easier, and flood plains and the farms, functional in themselves, furnish excellent buffers. Acquisition money goes much further; just a few strategic purchases of land for parks can tie a much greater amount of space into the overall recreation plan; to put it another way, a recreation system.[40]

To bring this into reality, though, will call for enlightened legislation and imaginative planning on the of local officials.

This appears to be a fertile source of land and rights in the future for implementing a trailway pro- as suggested here. Its further development and con- ons will have to be examined in the future at such time ls desired to implement this proposal in order to as- its applicability.

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[40] Whyte, op. cit., p. 15.

Assessment Policies

These again are not direct land or rights acquisition rograms. They are only in part regulatory devices. Chiefly hese are the relaxation of assessments on certain types of and use to encourage the continuation of these land uses. is well known that land that has been developed for res- ential, industrial, or commercial use has cost public encies more than has land that is underdeveloped and open. to this it is logical that the tax burden of developed d should be more than that of open land. Many owners of n land, however, find themselves in the midst of develop- or developed areas. They are not necessarily desirous eveloping their land or of selling it to someone who . But they find that their open land is taxed at the rate as the area around it. This, of course, forces to realize a greater profit on their land in order to he increased taxes. The best way to do this is through opment or sale. This accelerates the spiraling ravish- of the natural landscape. Since the owner of the open emands no additional facilities or services of the pub- t follows that the increased taxes are for the develop- otential. If the owner of this land which could be r recreation purposes agreed to leave it open, should burden not be either reduced or deferred until such he sells the land for development? Then may not this opened for recreation purposes or at least access by lic? This, then, is the manner of thinking behind

this mode of public access rights acquisition.

Preferential Assessment

It must be recognized that this land is still pri-
vate land and the owner is merely being taxed fairly for
keeping it open. Tax assessment then is on use of land
rather than on inherent or possible value. This gives great
impetus to owners of open land to keep it that way. This
preferred assessment does not automatically open up the land
recreational use. This is still up to the owner of the
nd. When open areas of private undeveloped land exist in
e midst of a built-up area, a greater possibility is there
t negotiations can be concluded with the owner as to
hts of access for trails and paths through the land. This
s not in any way change the land use, preferential tax
nt would not be lost, though it does give areas of open
through which trails could go. It also allows the
ls to go through agricultural as well as completely un-
loped land, thus giving the variety of landscape experi-
desired. It is possible that additional tax relief
be given if recreation rights, such as trailway access,
given by the owner to the public agency. This form of
encouragement should be tied to a zoning plan for the
te region so that some pattern exists in both the devel-
nd more natural areas of the unit of government. It
that the open land owner should be committed to a
minimum period of time during which he cannot sell
lop the land. This would also give a greater degree

permanency to any trail access agreement negotiated with owner. All of this points up the need mentioned before tying any trailway system and the various land acquisition hods to an over-all regional plan. Any trail system can- exist alone, or without adequate fore-planning of other tors.

Deferral

This leads us to the next logical step. The public no recourse to collect the taxes that are not paid on n land on preferential assessment if the land is later eloped. This means that the owner of the open land obtain the tax advantage of leaving his land open for a ber of years, then sell or develop the land. The public then paying greatly for open land for a short period of e, and the land owner is profiting unduly. This has led an alternate program of not outright forgiveness of tax onsibilities, but the deferral of these until such time he land might be sold or developed. At that time the re amount of the tax that had been deferred would become This is more equitable and binding and will have a ency to give public agencies greater security or income er way the land might be used. This, however, has great nistrative problems inherent within it. Mr. William H. e, as mentioned before in other acreas of land acquisi- , has noted two points in relation to tax deferral in report to the Outdoor Recreation Resources Review Com- ion on "Open Space Action." One of these is the fact

hat this type of relief to the open land owner should be
ied to an overall land use plan. This was just mentioned
n regard to tying the trails into an overall regional plan.
ne other suggestion Mr. Whyte has is that this type of
referential taxation should be used as a "supplement to
ther land use devices." This also is one of the key points
this section of the paper.

The possibilities of using this land are the same as
r the above point but contain less security unless some
pe of agreement is arranged to maintain the trail access
ghts under successive owners. Difficulties could be en-
ntered in this, and possibly other types of acquisition
thods could better solve this problem.

roachment Regulations

This is not a type of land or rights acquisition but
t as important or more so it is the way of keeping the
ds or rights once they are obtained. The importance of
s factor cannot be minimized with the competing land de-
ds of the rapidly expanding American population and economy
shown before. Once the lands or rights are in public owner-
the endeavor will begin of keeping them from the grasping
s of competing groups who feel that all public land is
game for easy acquisition. This has traditionally been
case with all public land and especially recreation land.
Minneapolis, Minnesota where there is not one empty lot
in the city limits the extensive public park lands are

stantly being assailed by everyone from private developers highway departments. This has progressed to such a degree t this defensive action is one of the major responsibili-s and duties of the parks department real estate officer. croachment in this case may not only be that of actual lzing of the right-of-way for the other purposes but also changing abutting land uses so as to take away the natural ndscape or scenic beauty which prompted the location of e trailway initially. This should be taken into account the time of the layout of the trail, but these things nnot always be foreseen.

Some examples of this type of encroachment in one mmunity is shown in this quote.

> In Toledo park lands have already been taken for Y.M.C.A. buildings, a Coast Guard installation, a police pistol range, a private yacht club, a sewage disposal plant, and a factory parking lot. If each generation hacks away at parks on the scale that is currently fashionable in most cities, the only uninvaded green spaces in congested districts are likely to be cemetaries. It will take the dead to protect the living from their own folly.[41]

Provision therefore must be made where possible to uarantee the continued public access rights the land chosen or trail routes. Future encroachment could destroy vital arts of even the best organized and located path routes.

In summary of the land acquisition methods it is

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[41]Edward Higbee, The Squeeze--Cities Without Space, (New York: William Morrow and Company, 1960), p. 245.

ell to remember Mr. Whyte's words in dealing with Open pace Action. "Which will work best only time will tell; t is urgent, however, that we get one with the trial and rror as vigorously as possible."[42] The site, the situation nd the problems presented by the land may in each case sug- est a different method of acquiring the access rights to he land. This should be done very carefully for each parcel f land along the route to guarantee continued access for uture trail users. On general nature of this summary of and acquisition methods it is worth mentioning that in the utdoor Recreation Resources Review Commission report on "Potential New Sites for Outdoor Recreation in the Northeast" s a chart of the land acquisition powers of each of the tates in that region. This chart indicates each of the gencies acquiring land for recreation use, their acquisition owers and the derivation of that power in the laws of each f the states. Something of this type could profitably be repared for all of the various agencies within the area where regional trailway system is proposed.

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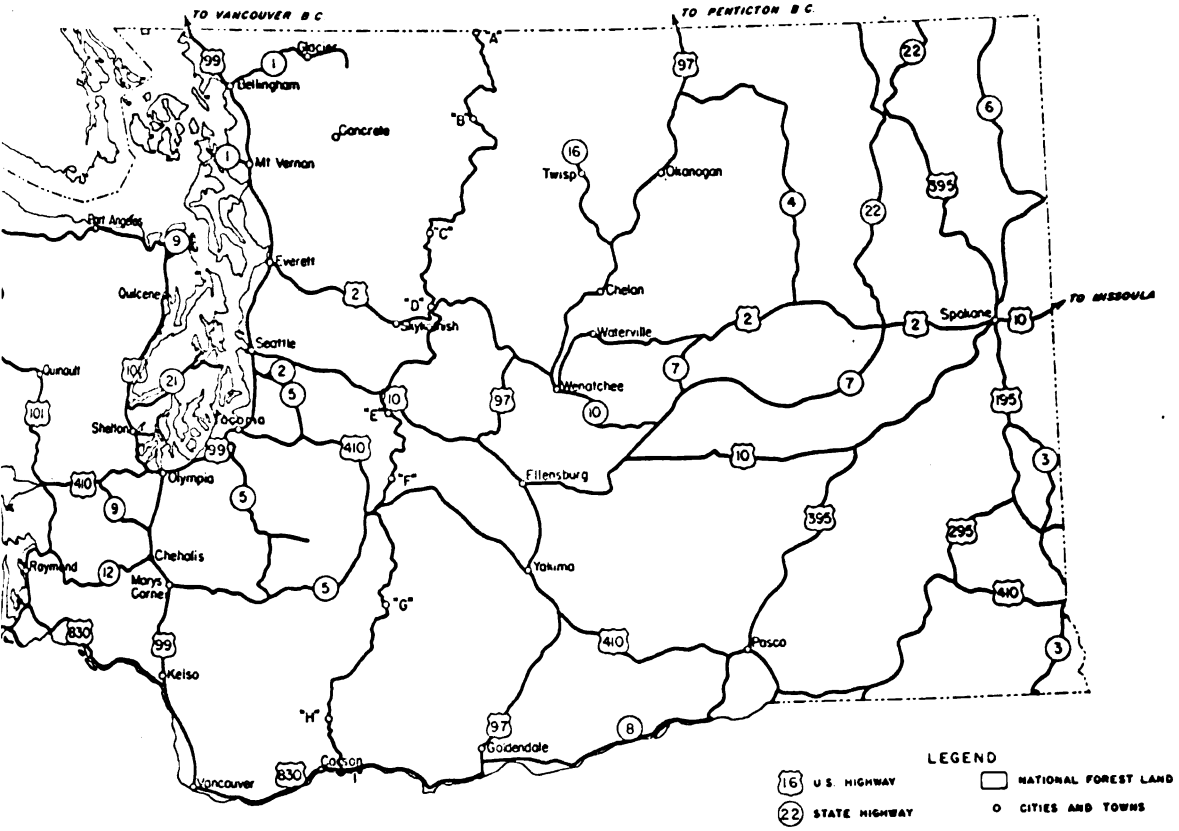
[42]Whyte, op. cit., p. 17.

Design

To bridge the gap between an abstract concept of a ail system that permeates the whole of a region and the tual placing of that pathway upon the slopes, hillsides d valleys of the landscape requires many steps of implementation. In the beginning these steps are somewhat removed om the land itself and are therefore applicable to a riety of sites and situations. During the course of bring- g into being of such an idea the scope of the work becomes ogressively more precise and more directly related to the nd and site itself. This process goes in successive steps rom a broad panoramic view of a region to the precise decision as to which two trees the trail should go between. ince some of the earlier study and planning steps have lready been shown, this section will cover the various etailed aspects of the trail design itself. This design n its many facets will be done within the area location nd the route or site selected as shown in the above step. Within the width of right-of-way acquired the best location will be determined early in this phase.

An aid that may assist in any decision making at this juncture is found in an Appalachian Trail Manual. This indicates logically a reference point to which decisions may be directed for clarification.

> The Appalachian Trail along the mountain ridges from Maine to Georgia is, in its nature, a skyline trail for foot travel. Its sole purpose is to afford pleasure and recreation. These considerations should therefore be



GENERAL TRAIL LOG

miles.
to Monument #78 or #83 open to foot
dual climb from #78 or #83 to Castle
mping spots and horse feed generally
his section. From Castle Pass to Mountain
ould use caution. Trail from Woody Pass
on a steep, shale rock, side slope where
occur. Trail is in high, subalpine timber
meadows and scattered patches of timber
untry east of the summit of the Cascade

miles.
good except some portions along Granite
ered during high water. Also, numerous
re caution here. Camp spots generally
feed very limited.

ail within Glacier Peak Wilderness Area.
of motorized travel prohibited within wil-

miles.
between Glacier Peak Mines and Sky-
ry until completion of trail construction
Water, campspots generally available.
at selected camps. Trail leaves Wilder-
der Meadows.

s to Wenatchee Pass section of trail
gh open meadows most of the way.

iles.
tion Pass, from Skeeter Creek to Deep
trail is in poor condition. Okay for
erienced horsemen only. Reconstruction
completion in 1963.

Goldmeyer Hot Springs and Snoqualmie
over Red Mountain. This trail is
travel. Horse travel to Snoqualmie
Lake Trail (#1013) a distance of 12

E — F 60 miles.

Numerous high mountain passes. Most of this trail is in fairly good condition. From Stampede Pass to Green Divide the trail is well graded except where game trails may confuse the main trail in the vicinity of Blowout Mountain. Water is scarce along this section.

From Blowout Mountain to Chinook Pass the trail has been reconstructed with no grade over 15%. Trail is well maintained annually.

Many very scenic vistas along this route.

F — G 56 miles.

Trail follows the eastern boundary of Rainier National Park for a distance of eleven miles. Many excellent views of Mt. Rainier offered here. As the Park does not maintain shelters along this trail, they do not issue fire permits. If an overnight stop is necessary, visitors are requested to use Dewey Lake which is outside of the park boundary. Horses are permitted. Motor driven equipment is prohibited on trails in the park.

Campsites are readily available but stock feed very limited along this section.

In Goat Rocks Wild Area there are sharp, alpine peaks and mountain meadows with a few small lakes and streams.

G — H 53 miles.

Near Midway are many huckleberry fields. Berry season is in September and October.

Round-the-Mountain trail is an easy-to-hike trail around the timberline area of Mt. Adams in Mt. Adams Wild Area. This trail is not a loop.

South of Cultus Creek the trail goes through Indian Heaven country. Many small lakes here and the ground is comparatively flat.

H — I 33 miles.

The trail intersects the Carson-Guler Road where the traveler can reach the Wind River area to the west or the Salmon River valley to the east. South of here the trail skirts the western edge of lava beds. West of Big Huckleberry Mountain is the Panther Creek Experimental Forest.

Plenty of horse feed in this area but drinking water is scarce. Wise to carry a supply. There is some logging but the trail is well marked. Trail from Columbia River to Dog Mountain is steady climb but not difficult.

aramount in determining its route.

It should connect as many high points, affording ide views of surrounding country, and as many places of beauty, as lie within its course, consistent with accessibility and practicable grades. These objectives will best be attained by making a careful examination of the field of operation by map and reconnaissance before definitely locating any section of the Trail. The general route thus decided upon should be scouted for springs and other sources of safe drinking water. The availability of this essential should be taken into consideration in determining the location of the Trail.[43]

The determination of the purpose of a trail which in guides in its location might prove invaluable in the or route selection are of the proposal.

In this section of the paper on design there is more cedent than there is in any other part of the entire con- t. This is misleading however, since the design of other evious trails is less able to be used as a model than would ecedents in any other area of this implementation. Any new ail will have to be designed specifically for and adapted rposefully to the particular site and situation chosen for e route location. Some of the reasons for this are obvious, d some may not be quite so apparent. It is evident that at which is right or best for a trail in one location or rea may not necessarily be best for another type of trail n another region. The variety of different landscapes hrough which such a trail system will pass is then one

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[43] Trail Manual for the Appalachian Trail (Fifth edition, publication no. 1; Washington, D.C.: Appalachian Trail Conference, Inc., 1951), p. 3.

for this. The multitudinous variety of trail types
be another reason for in the same system or network
could conceivably be paths through highly urbanized
s, suburban areas, agricultural land and possibly even
and through primitive wilderness areas. The path in
of these sections would take on a completely different
cter and would thus have to be designed individually
experienced, sensitive land designer with a knowledge
he countryside through which a trail moves.

One other, less obvious reason for the inadvisability
sing existing trails for anything other than a prototype
hat each trail will have somewhat different users who
be considered in the design. The word "trail" is used
denote paths used by a vast variety of nearly unrelated
ationists. These run the gamut from the experienced cross-
ntry hikers and mountaineers of the Cascade Crest and
alachian Trails to the short distance pleasure strollers,
rd watchers and nature lovers, of the trails in the local
boreta. In addition to these users will be the ubiquitous
rse-back riders and bicyclists who should be allowed to
e a good many of the trails. All of these potential var-
ables cannot be combined in just a limited number of ways
o end in but one or two possible trailway prototypes but
ust be weighed for their respective value in each specific
ituation to arrive at the best trail for a given site. It
s nearly impossible to have a stereotyped trail that would
fit every landscape and be effective for every type of user.

the components that make up such a system and a minimum
able standards may be specified ahead of time. The
ication and arrangement of these possible elements and
determination of how these standards should be interpreted
a particular situation must be decided for each individual
il by its designer. This as mentioned before should be
e by the landscape architect using a good deal of discre-
n and wise judgement.

These above points should be remembered as the sub-
uent aspects of this design are unfolded and explored.
y little can be included in this paper of a specific na-
e that has anywhere near universal application to all
ils. The steps to take and the elements to consider in
e design are the most that may be attempted in a work of
e general nature of this paper. These factors would have
eater weight in reality and in the actual execution of
ch a concept than they are given here, and would in fact
of secondary importance only to route location itself.
ch material is available on the method and manner of the
signs of many of the existing trails in the world. Some
this material is noted in the bibliography and is avail-
le from the sources listed. It is suggested that some of
ls prior design data be procured and studied before the
nplementation of this proposal is attempted. In a longer
ore comprehensive work of this type such information could
nd should be included to provide a complete handbook for
ne entire effectuation of this concept as proposed. However,

in the limited area and scope of this dissertation all of this could not be included.

Finally in this introduction to the design aspect of the implementation the citing of the definitions set forth by the Appalachian Trail Conference is appropriate.

> Trail: In general, a trail is a route passable for foot or horse travel but not for vehicles. On the Appalachian Trail, a trail is a route passable for foot travel only, without improving the footway.
>
> Path: In the White Mountain region a path is a route passable for foot travel only, with more or less improvement to the footway. However, in frequent usage, a route whose footway, although not worked, has become so trodden as to be its most salient feature, is called a path. The terms, trail and path, are often used interchangeably.
>
> Located Trail: A trail is located when its route has been determined and marked sufficiently to enable it to be followed even after a winter has intervened.
>
> Blazed Trail: A trail is blazed when it has been marked by blazing, but not cleared.
>
> Roughed Trail: A trail is roughed when the worst obstructions have been cut through but only slight work has been done on widening, bushing or removing cross-logs.
>
> Cleared Trail: A trail is cleared when it has been made passable by sufficient removal of growth so that a hiker walking erect, with a pack, will encounter no obstruction to any part of himself or his pack and can see the footing ahead.
>
> Marked Trail: A trail is marked when it has been made plain by blazes, cairns, markers, arrows, etc.
>
> Signed Trail: A trail is signed when its ends, forks and crossings have been marked by lettered signs.
>
> Standard Appalachian Trail: The standard adopted for the Appalachian Trail is a trail cleared, marked and signed in accordance with the definitions and directions

contained herein.[44]

Physical Layout

The question arises at first notice of this heading as to what it is, what it consists of and what is its relation to route or site selection. This is in actuality a more detailed step than route selection of the bringing into actuality the trail system. Within the area or site selected for the route the trail is then placed upon the land in the most advantageous way. The abstract realm is left almost completely at this point and the very real and concrete problems of determining the location of the pathway itself upon the land are explored. This involves the question of which the exact route upon the ground the designer feels would give the most recreative value upon the future hiker. This step is the very essence of the design of the trail system. Later design steps will merely enhance, uncover, mark and record this route so chosen.

This once again is the job of the landscape architect working in the field and on the site to determine the precise site. With the aid of all of the studies of the factors of trail location it should be possible for the experienced land planner to "walk the route" mentally during that phase of the study. In spite of this it will also be necessary to go over the actual proposed route at this stage of the design

[44] Ibid., p. 5.

process.

One of the most effective ways of doing this is the method suggested by the Appalachian Trail Conference.

> With the "First Principles" in mind, control points should be selected, such as summits, gaps, road intersections, bridges, etc. In determining the best route between these, locate by stringing rather than by blazing. This is done by carrying a cone of grocers' white string (which averages about a mile to the pound) on a short stick and letting it unwind as you advance. The route may be more easily followed if the string is occasionally hung on branches or bushes instead of laid on the ground. String can be quickly moved, whereas blazing takes longer to do and cannot be obliterated in case the route is changed. White or colored rags may also be used to mark the route temporarily.
>
> The best procedure is for an experienced leader and two assistants to start at the beginning of the proposed trail, the leader in the middle with an assistant on either side, all within calling distance if the terrain admits. All observe the ground as they proceed, coming together for consultation when desired. The string, which is laid as this group advances, is left in place to guide the construction party. This operation precedes construction over the entire section. It is advisable to check any route finally before the construction party reaches it.
>
> Reconnoitering can usually be more easily done in those months when vision is less restricted by foliage and there is least undergrowth to impede walking.[45]

This phase then is not concerned with cutting, clear- improving or marking the trail. These are carried out r. The concern here is merely with the ascertaining of hysical route location itself. Many factors must be into account even in this phase, that are of value in ting in a decision. Some of these are mentioned in the ving quote.

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[45] Ibid., p. 4.

At the time of the original location of the route, considerable thought should be given to the problems of future maintenance. Where there is a possible choice of route, sections of Trail passing through areas with dense annual growth, briers, scrub oak, or similar vegetation should not be chosen. The future as well as the present condition of the Trail is a matter for thought in Trail location. Preference should be given to open and mature timber with light undergrowth.

It is inadvisable to locate the Trail along the edges or bases of bluffs or slides, or through growth necessitating frequent heavy clearing.

By reason of its well-worn footway, resulting from its initial construction an abandoned wood road or tote-road often forms a desirable trail location. However, care must be exercised in the selection of an old road as a trail route. An open or exposed road, particularly in a lumbered or wet section, frequently develops into a dense growth of small bushes. The resulting serious maintenance problems offset the desirability of the road's worn and level footway. Unless the road has "aged" and manifests self-maintenance, a new narrow foot trail is preferable. Never attempt to utilize wide logging roads or to salvage a trail which has been widened for use as a hauling road.

Roads, passable by automobile or subject to heavy use, should, of course, be avoided wherever possible. To provide a continuous route, use of such roads is unavoidable in many areas.[46]

Many other on-site factors may be uncovered which l influence this primary design element. Physical layout ertheless must be the initial step taken to accomplish most satisfactory trail design.

ta Establishment

This may be a misleading term for this section of design process since it encompasses far more than does

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[46] Ibid., p. 4.

"vista cutting" usually done to insure views from
enic highways. Rather than making provision alone for the
oad panoramic vista so commonly associated with highways
park areas or in regions of great natural beauty, this
a broader connotation. This section refers to the ap-
lication of the designer's hand to the area adjacent to the
ail in establishing just what he wants the hiker to see,
serve or notice. At times when walking through a wooded
ea it may be desirable to have the trail user notice the
nutia of wildflowers, lichens and undergrowth of the for-
t. At other times middle distance views of features of
rticultural, geological, historical or archeological in-
rest may be desired. Still in other places and times the
oad sweep of the landscape or the selected view of some
stant object may be desired. All of these possibilities
d needs seen by the designer should be provided for in the
sign of the trail itself. A continuum or a sequential map-
ng of a route should be made to locate in advance any such
atures so that the view desired may be brought about on the
ail route.

The implementation of this trail proposal must not
thought of as the work of only the physical planner who
aces the "greenways" on the ground but also should be
dertaken by a landscape designer who creates, supplements
d enhances successive spatial experiences for the trail
er.

These trails do not have to merely cut through the

ountryside nor do they have to be only green tunnels of
notony taking the walker from one point on the earth to
nother. Where nature has formed certain spaced or areas
ese should be intensified; where she has not, they may be
eated. The designer should see the challenge in a design
oblem of this type. A walker or rider is moving through
e indigenous landscape with its natural earthforms and
getation masses at a more or less fixed speed. This should
ggest the possibility of creating a series of spaces (or
oms) and views (or vistas) of all sizes, shapes, and de-
ees. This need not necessarily be haphazard, or left as
ture has created it. These spaces, views and directions
attention may be consciously thought out ahead of time
the conscientious designer. The impact and drama inherent
the natural landscape should be exploited and enhanced to
e full. A greater appreciation of and reverence for the
rthly environment may be imparted to the hiker or rider by
is means, thus augmenting the re-creative value of the
ail.

This begs further study and indicates the possibility
a goodly return to the landscape architect who would under-
ke it. A notation system could also be developed to survey
e route for possible features worth emphasizing and to
alyze the existing spaces. Some studies of this type have
en done for urban areas but very little has been done for
e natural landscape.

The possibilities of progressive realization of a

int of interest or an outstanding view could also be ex-

ɔred in this same context. This method is best described

J. O. Simonds in this quote.

> The terminal feature may be revealed in progressive stages. If a vista can be seen from several stations along the approaches, the section seen from each station must be considered at a separate vista and so staged. Sometimes a terminus may be viewed along an entire approach. In such a case, it should be so revealed by its evolving spatial containment as to exact the full potential of its changing perspectives. If the approach is long, the vista becomes tiring and should be divided into stages by change of level by expanding or contracting the frame of reference, or by changing the character of the spaces through which and from which the focal point is seen. Often, as one moves toward a distant focal point, he can at first discern no more than the outline of the terminal feature. As he continues, the feature reveals itself progressively--the component masses, the texture and colors, and finally the details. Approaching a focal tower, for example, we perceive first its outline, then the general forms of base and tiers or soaring verticals. As we get nearer, we distinguish the shapes and colors of masonry, metal, and glass, and we recognize windows and doors. Finally, we are attracted to the rich handling of the entrances; and as we extend our hand at last to the polished door latch, we are invited inward by a glimpse of the pleasant lobby space beyond.
>
> Any vista may be staged satisfactorily in an infinite variety of ways. It is only necessary that, from all viewing stations or lines of approach, the vista is a pleasing visual entity.
>
> A vista may induce motion or repose. Some vistas are static, to be enjoyed from one fixed stage, and are seen in their completeness from this point. Others, by the promise of unfolding revealment, by interest in detail, or by the attraction of the terminus, invite movement and draw one from point to point. [All vistas subject the viewer to a compelling line of sight. A vista is insistent, a directional magnet to the eye. As such, a vista is a visual function of a plan axis.[47]]

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[47] John Ormsbee Simonds, Landscape Architecture--The aping of Man's Natural Environment (New York: F. W. Dodge rporation, 1961), p. 122.

It is granted that the orientation in this quote is toward the architectural object of the vista but the lesson is there that can be used to direct the attention of the hiker to a natural phenomena.

The landscape architect should not feel as though his work is complete at the time of route or site selection. His is also to some extent the actual design of the trail itself to gain for the user the maximum benefit available in the route while maintaining as much as possible of the integrity of the site.

inimum Standards

This is one section of the implementation where ecedent may be studied carefully and effectually. The andards established for one type of trail in one area may applied without much fear of mistake, to another trail of imilar type in a different area. A trail to be most ble by a majority of people during a greater part of the should conform to at least certain standards of con- ction along the majority of its length. Many different criteria are available for a variety of trails. Some he sources noted in the appendices of this paper should nsulted to find these standards. Some of the major nents in the establishment of these will be noted here. s may be found to apply to specific situations but the oted here constitute the major rules that will apply majority of such trails.

The general subjects or categories included under minimum standards vary somewhat but generally include the width of the pathway, extent of right-of-way, clearing, surfacing, and allowable grades, etc.

The width of the pathway suggested in the minimum standards of most existing trail systems is usually from three to four feet. The California Riding and Hiking Trail is suggested to be thirty inches wide while some of the European trails are four feet in width. The Appalachian Trail suggestions will be given in a subsequent quote. Usually the provision for a footway of four feet will be sufficient for hikers or walkers. This will vary due to the use that predominates; if it is primarily for bicyclists it may be able to be narrower, if it is for horseback riders a wider trail may work better. The width of the complete right-of-way is sometimes quite important since it is within that area that view may be controlled and the integrity of the adjacent areas maintained. California has a twenty foot right-of-way while the Appalachian Trail has an agreement with the National Park Service and the National Forest Service whereby an area one mile each side of the trail will be free of roads or uses conflicting with the purpose of the right-of-way. A copy of this agreement is in the Appendix of this paper. The most complete of the suggestions on clearing is one by the Appalachian Trail Conference.

Cross-Logs. Always remove. Make first a cut at side of trail. If the proper side is chosen, the end across the trail can often be moved enough to clear.

If not, cut again. When a run-around has been established around a blow-down, restore original route as soon as practicable. Avoid short-cutting wherein the ends of the log still impede the trail and narrow its width.

Small Trees. It is better to remove small trees growing close to the footway, since it widens the Trail; it is easier to cut them out entirely than to trim and throw out the branches. High stubs cause frequent stumbling and sprout more readily than low stubs.

Branches. Cut branches close to the trunk; it is usually easier and always neater. Cut all branches within reach, two-thirds of the way around the tree.

Brush. (Shrubs, bushes, locust, seedling trees, chestnut sprouts, etc.) Cut everything that obscures the footway and cut wide. A wide trail is less easily obscured by new growth.

Grass, Ferns, Low Bushes, Weeds. Remove wide enough to clear the footway and prevent wetting feet with rain or dew. Annual herbaceous growth must be removed from the Trail each summer.

Footway. Cut everything clear to the ground in the footway, to prevent tripping. Long-handled pruning shears do a closer job than ax or hatchet. Disturb the soil as little as possible, particularly on steep slopes, so as to prevent erosion.

Mowing. Mowing has three purposes:

a. To mark as well as clear a trail through bushy country.

b. To clear rapidly a trail growing up to bushes and small trees.

c. To cut grass, ferns, and low bushes in order to avoid slapping after rain or dew, and to make the footing visible.

Width of Trail. Depending on the type of growth encountered, the Trail should be from 4 to 6 feet wide. Cut wide enough so that nothing touches the hiker or will grow in for several years. In scrub, where rapid growth is particularly troublesome, cut double width, if possible.

Height of Clearing. Cut as high as can be reached. Branches will grow down or be weighed down by rain or snow. It is a hindrance to have anything obscure vision

on the Trail, and branches which will clear the head may still obscure the vision of one coming downhill. Be particular to guard against the tendency not to cut high enough when working uphill.

Cuttings. Cuttings must not be banked beside the Trail, on account of fire risk. They must be thrown well out and scattered.[48]

Types of surfacing for the pathway will vary the t of any of the general standards. This is because of variety of uses and situations where trails are found. is obvious that the wilderness trails will have the nat- l surface of the ground over which it moves. In more anized or developed regions where traffic is heavy on the n it may be advisable to use wood chips, sawdust, tanbark, small stones, gravel or sand as a surfacing material. may also vary if horses or bicycles use the trail to any nt. Horses need a softer, preferably wood base material, e bicycles need a harder smoother material. The eighteen wide asphalt paths used for bicycle traffic on the cam- at Michigan State University may have some possibility use on a trail system as proposed here, but the cost d make this nearly prohibitive. Another factor that rs into this area is that if the surface is wide enough smooth enough the "go-carts" currently popular will usurp trail routes.

The allowable grades to be considered maximum for any l should not exceed ten to twenty percent. The latter

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[48]Trail Manual for the Appalachian Trail, op. cit. -7.

re is for paths used by wilderness hikers while the
er should be considered for those areas where casual or
experienced walkers will predominate. Bridle paths and
ls used for horseback riders will of course have a lesser
e, while bicycle trails will be even less steep. This
ticality should be considered when locating the route
lf since it might disturb the surrounding landscape to
le the trail route suitably for pedestrian or horseback
ffic. The grade necessary for the hiker, walker, or rider
traverse will determine to some extent the enjoyment de-
ed from use of the trail. A trail that is too steep could
sen the pleasure, while one that is too flat may induce
edom or a sense of monotony in the user.

Minimum standards should be established for any such
stem as proposed here after examination of other networks
d determination of the needs of the users and the site in
e given situation where the trails are proposed.

lation to Motor Traffic

This is an extremely important item in trail design
r modern America where the automobile and its roadways are
emingly omnipresent. Unfortunately even though much has
een done to relate, but separate, the routes of pedestrian
nd vehicular traffic, both in Europe and in our own country,
ittle or nothing has been written about such work. This is
rue to some extent of all trailway endeavors, since much of
his type of thing is done in the field, on the site, and by

of mouth from supervisor to workers. This does not get rded and as it is not thought necessary to do extensive iminary drawings of trail routes and standards there is le or no record of what has been done.

In many places bridle paths, bicycling routes or ire trails may parallel parkways through recreation areas. some places in Europe it is said that an extensive system such routes are included in the expressway rights-of-way, ever, no information was obtainable as to where or how s was done. Where this is done it seems that it would be essary to protect the pedestrian from physical contact th and excessive viewing of the adjacent automobile.

The previous consideration was only concerning the ralleling of vehicular traffic ways which gives roads a sitive aspect as far as a trail system is concerned. Road- ys do however, serve a negative or damming function as entioned before. When the trail runs perpendicular to the oad, the vehicular route tends to serve as a dike in that t causes an impediment to safe foot traffic. There is some anger involved any time pedestrians are required to cross a notor vehicle way and the larger the volume of motor traffic that is on the roadway, the greater is the danger for anyone crossing. This was mentioned as a factor in route location and will have to be solved in this design phase. It is pos- sible that various ways may be used to allow the physical separation of these two kinds of traffic where it is neces- sary that they cross.

This will be a definite design problem where it curs and must be solved safely, economically and in a way at does not destroy the utility and beauty of either the ad or the trail. It is unfortunate that no more material precedent is available for inclusion in this paper but it s thought that the item should be mentioned as being necsary for consideration and solution at the time of design the implementation of this proposal. Bicycling paths as ch are opposed by some English cycling organizations since is problem has not been solved to their satisfaction, so e solution of this aspect could mean the ultimate success failure of the system for some segments of the society.

tegration into Urban Areas

To have any effectiveness at all a pedestrian trail- y network must have tentacles or branches extending into e highly populated urban areas of a region. To do this in manner that is most satisfactory the trailway and its adining area must be designed so as to blend into the urban ttern and yet to allow the city dwellers use of the paths move from the city into the countryside. This will not easy and will not be done without difficulty, either in nd acquisition or design methods. Each particular trail d situation with its problems will have to be met and signed individually, preferably by a landscape architect urban designer. There are, however, certain avenues that y be pointed out that may exist and be exploited in more

an one urban region.

It may be that the city itself through its park partment may design and construct such trails in and through e urban region. These could lead from the center-city rks through the residential areas to other city parks and om there to the suburbs and the countryside. These trails uld parallel parkways extending through the city or could developed along rivers that might flow through the city. me cities, such as Philadelphia, have developed a "green- y" system that structures and permeates the urban fabric. ese could be easily connected to other paths or trails to come part of the network. The possible routes suggested the use of easements under utility lines may also give e designers some trails of access from the city center to e countryside. The sidewalks or walkways that exist in ban areas may connect with those in suburban areas and en be joined to trails through the surrounding landscape. e continuous open spaces of the newer subdivisions and ustered residential development may also be so fashioned the landscape architect to extend these trailways ten- cles into the city. It may also be that suburban parks y be so planned as to link to the parks of the contiguous tropolitan area and thus give another avenue of bringing destrians, bicycle riders, and horsemen from urban areas paths of the same system that permeates the regional ndscape.

It is imperative that a good deal of design effort

dertaken to solve all of the problems involved in such posal. This is so since it will be necessary for the ıs to cross many city streets and move through a variety and use areas of the urban complex in addition to many s where other recreation activities will be taking place.

As mentioned at the beginning of this section nches of the trail system must go into the city to be ilable to the maximum number of people, and to do so will n the solution of many problems on a design rather than lanning level. This should certainly be considered when fecting a proposal of this type.

tegration Into Existing Recreation eas

Such a pathway network as has been discussed is a art of the overall recreation concept of a region it is ogical that some of the trails should lead to or connect ith the parks of a region. This has been mentioned as a locational factor and a planning consideration but in addition it is also a design factor. In this paper at various places are maps of trails that exist already in parks of various jurisdictions. These trails should be integrated into the network at a design level and in addition the existing parks should be surveyed by the landscape architect to find other good route locations for possible future development. These parks may be used for rest area development along the trail also. It will be a definite design problem to make the trails part of an existing park system

and to make the parks punctuation points along the pathways.

This has been done in California with the riding and hiking trail system and in the Appalachian Trail where the trail passes through state and National forests and parks. By doing this it adds greater impact to both the trails and parks. Merely to have the trails connect and pass through the parks is not enough; they must be designed in such a way as to blend into and give greater access and utility to the parks.

Trail Marking

From the time that man began making trails of any ort he has been identifying them in some way or other so at he and travelers may be able to retrace the route. This just as true now and in the future for recreation trails. re are many reasons for marking a trail, some of them ious, such as the need for a visual guide on the way or ysical identification of the route as differentiated from others. It is possible that there would be many trails system and it would be wise to indicate each of them as eir position in the heirarchy. These may be arranged as long distance routes or as minor feeder routes and be so indicated by appropriate markings on the trail

In addition to the trail identifications it might be ary in some cases to indicate features of interest ad- to the trail or that can be seen from the trail. trails or other paths that are designed primarily for

educational reasons make extensive use of this type of marking. However, on more primitive trails guidebooks may be used to give the same information.

The methods of identification are of definite interest to the designer of the system since they may be used to enhance and supplement the entire design concept. This, once again could be an excellent topic of further study for the landscape architect or any other trail system designer. Much more imaginative thought and consideration could be given to this aspect so as to coordinate the graphics for the parks and paths of the whole region. Once again this goes beyond the scope of this paper.

A copy of the proposed marker to be used by the Michigan Department of Conservation in a system of bridle trails in the northern part of the lower peninsula of Michigan is included in this paper. The form, shape and color of this sign will coincide with standard Department of Conservation signs.

The most complete marking experiment for a major trail system is the one undertaken by the Appalachian Trail Conference for the primary route and its tributaries. The suggestions for methods of doing this are contained in the "Trail Manual for the Appalachian Trail." The basic components of their method of marking are explained as follows.

The primary medium of marking the Appalachian Trail is four-fold: paint blazes, metal Appalachian Trail markers, signs and cairns.

The tree "blaze" is an immemorial symbol of a trail. It is the primary route-finding method of marking the Appalachian Trail. To assure permanency, blazes on the Appalachian Trail are painted.

The metal Appalachian Trail markers are the insignia of the Trail route which also serves for direction finding.

Signs are to convey direction information.

Cairns are a supplementary method of marking, resorted to under particular conditions.[49]

The four types of indication, then are the blaze, arkers, cairns and signs. These are each explained in more etail in the following quotes.

Proper blazing is a most essential part of Appalachian Trail technique. Too much care cannot be exercised. Particular effort should be made to avoid disfigurement created by over-large, improperly placed or too numerous blazes. On the other hand, undermarking, by reason of insufficient blazes, must be equally carefully avoided.

The blaze is the primary method of unmistakably and permanently indicating the Trail route. This marking should be continuous, even extending at proper intervals along dirt roads where they are utilized for the Trail route. There should be no gap in the marking.

Particular pains should be exercised to place blazes on trees which are prominently located and "strike the eye," while traveling along the Trail. A well-placed blaze is more effective than several badly made, improperly located blazes.

The Appalachian Trail marker is the insignia of the route. There have been three types of standard officially approved Appalachian Trail markers.

The initial Appalachian Trail insignia was a square opper marker, 3-3 3/4 inches square.

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[49]Trail Manual for the Appalachian Trail, op. cit., . 7.

The commonly used marker is made from 25-gauge galvanized iron, four inches square, with the words "Appalachian Trail--Maine to Georgia," surrounding the "A.T." monogram, printed in black on the bare metal.

The third type of marker is similar except that the insignia appear through perforations in the bare metal.

Cairns are used to mark the route of the Trail where trees are lacking and paint blazes cannot be used. A cairn should consist of a number of stones built one upon another in a manner obviously artificial. Do not err in building too small a cairn. Remember that in the localities where cairns are required, the growth of grass and vegetation often obscures small cairns. Likewise in fog they must protrude above the surrounding region.

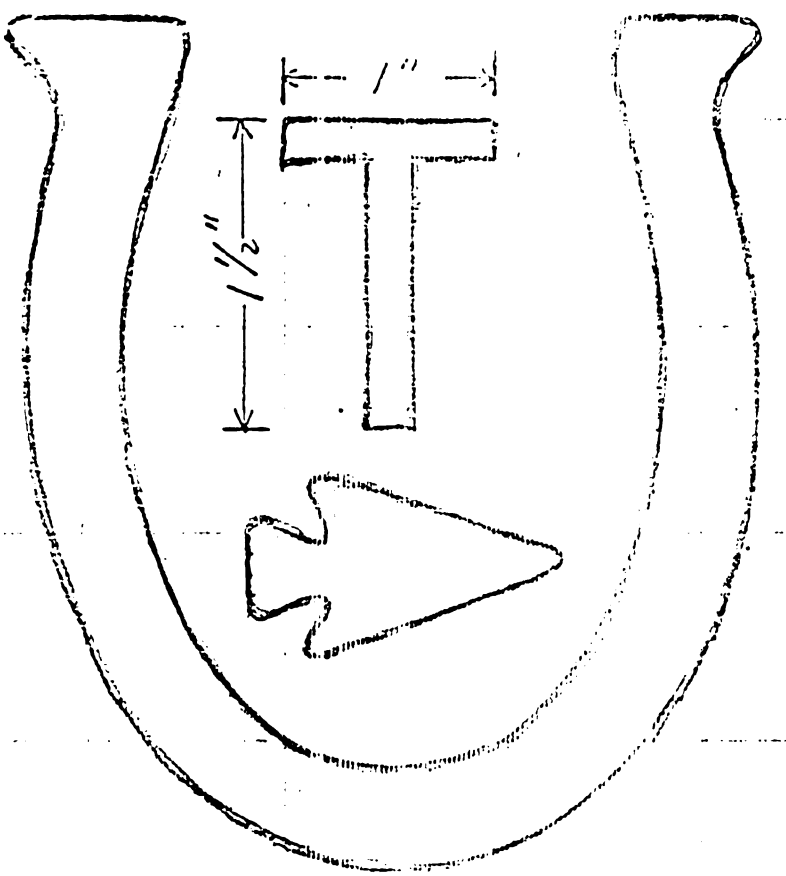
In addition to markers, blazes, paint and cairns, the local club in whose territory the Trail lies should put up and maintain signs at principal points on the Trail, particularly where highways cross it. The size of such signs will be governed by the data or directions required.

On many sections of The Appalachian Trail, the practice of putting in "Mile Markers" has been adopted. This indication serves a two-fold purpose of facilitating the orienting of one's location with the printed guidebook and also enables the walker to judge his pace. The mile markers run consecutively from zero from the terminus of each section, as they appear in the guidebook.

Mile markers should be prominently and conspicuously placed with an arrow pointing toward the zero point or terminus where the zero marking is started. To be of value, the numerals should be large and most conspicuously placed in a prominent location. Avoid rocks in the middle of an old tote-road which may be removed if the road is improved. For the sake of uniformity, it is desirable that the milages be accumulative in one direction, preferably from north to south.[50]

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[50] Ibid., pp. 7-12, 18-23.



(Leave 2" to horse shoe below)

DESIGN FOR
HORSE-BACK
TRAIL MARKER

N.F.S.
3/20/63

Area Development

It is only logical that along a trail of any length
system of any extensiveness that it would be necessary
make at least some provision for places where the trail
r could rest and be refreshed. These may be in many forms
their location may be determined by many factors, but
y should be allowed for in the planning phase and designed
this phase. It is not enough to determine or mark their
cation on a preliminary map and to indicate along the
ail route that a clearing or the area around a spring is
be a rest area. To be most effective these areas should
conceived, including necessary conveniences, to serve
ome of the design purposes of the overall trail as well as
ne physical need for periodic rest stops. Parks or other
ecreation areas through which a trail may pass could serve
his purpose when they are appropriately located. In addi-
tion there are many other types of areas that may suggest
their possible use as rest areas, such as scenic overlooks,
river portage places, trail junctions, naturally protected
spots in the landscape or places where other excursions off
the trail are possible and profitable. Many other places may
be suggested in a specific region upon further study.

Two other questions present themselves in this regard. The first of these is the spacing of such rest areas. The second concerns what elements they should contain. Generally both the spacing and the accommodations of such areas will vary with the region and the degree of difficulty of the

ail. In the California system overnight camps have be-
n to be developed at distances of from 15 to 20 miles apart
th facilities that consist of stove, tables, water, sanita-
on and corral. This latter of course indicates the orien-
tion of this trail toward the horseback riding public of
e state.

In the Appalachian Trail system a series of lean-tos
ave been built and are maintained by the various clubs along
e route. These may vary in spacing but they are nearly
iform in design and their location has been mapped by the
nferences. This makes possible adequate fore-planning of
itinerary.

> The existence of some form of shelter is an essential element of any extended or thorough trail system. For us by the through trail traveler, the most adaptable structure is the lean-to, an open front shelter, which affords protection from the elements. The user must bring cooking utensils, food and sleeping equipment. Because of the difficulty in making specific arrangements for their use, closed locked shelters, while affording much convenience, are not practical in affording the necessary assured elements of shelter.
>
> Considerable effort has been devoted to completing long, continuous, unbroken chains of lean-tos. The Appalachian Trail Conference has issued working directions with plans and photographs for a type of lean-to satisfactory for Appalachian Trail use. This is A.T.C. Publication No. 12, entitled PLANS FOR AN APPALACHIAN TRAIL LEAN-TO. Full working plans and directions are contained in this booklet. It also sets forth a list of the existing structures, authorized campsites, and a "master plan" to complete the entire chain.[51]

These rest areas just mentioned are primarily for
vernight stops on long distance routes. It is necessary on

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[51] Ibid., p. 23.

lesser trails to provide for rest stops for short distance hikers who are on the trail for less than a day. The development of rest areas should not be neglected in any trail network and their size, shape and facilities should be determined by a designer sensitive to the possibilities and problems involved in the various sites and the needs of the hikers.

Mapping, Guidebook Data and Records

The value of any trail system may be realized to the full only if adequate information is available concerning it in the form of maps or guidebooks. This assists in advertising the presence and route of the trail for potential users as well as guiding hikers who are already on the trail. Records may indicate the route location, method of route acquisition, maintenance schedule and signs, markings or rest areas. Greater use may be made of the system by the general public if the location of the trails and their facilities, and the views or experiences afforded are known beforehand. This may be done in many ways but the responsibility for the design and publication of such material should be undertaken by some group for each trail.

Once again the Appalachian Trail Conference publishes a series of both maps and guidebooks for the entire length of their trail system. These are very complete and extremely well written and drawn, and might be consulted by anyone else desiring to formulate such maps or manuals. This same group

also publishes a Manual of Technique for Appalachian Trail Guidebooks and Amateur Map Making (see bibliography) which is very complete and could be used as a guide in determining the needs for any other trail system maps or guidebooks. Following are some general quotes from this book on both the subject of maps and of guidebooks.

> The underlying theory and the function which the Appalachian Trail guides are intended to serve can perhaps best be expressed by quoting from the foreword of GUIDE TO THE APPALACHIAN TRAIL IN NEW ENGLAND:
>
> A word as to the format of this GUIDE may serve to increase its usefulness. The thru Trail description is divided into sections as determined by the major highway crossings. In addition to the essential data as to approaches, accommodations, and maps, in the description for each section of Trail, there is a generalized account of the route, followed by separate detailed trail data. In theory a guidebook should not only furnish the advance information required in planning an itinerary but, when actually traveling the Trail, if the marking should have become obliterated or if the Trail be inadequately maintained, by recourse to the detailed trail description of the Guidebook and the orienting factors therein contained, the traveler may nevertheless determine his course. The time required to check the route and orient one's location with the Guidebook description will be far preferable to the disadvantage of the mischance of completely missing the Trail. This is the theory on which the Appalachian Trail guidebooks are prepared. As the generalized description and the detailed trail data are distinctly separate parts of each section, a generalized impression of the route and its features may be obtained without resort to the detailed data.
>
> There are four major aspects of amateur map making to be considered: First, the needs of the people who are to use the maps; second, the abilities of the people who are to make them; third, the method to be employed in their making; and fourth, certain features of the maps themselves.[52]

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[52] Manual of Techniques for Appalachian Trail Guidebooks and Amateur Map Making (Second edition, publication no. 14; Washington, D.C.: The Appalachian Trail Conf., Inc., 1948), pp. 2 & 23.

There are many other good maps of trail systems that are published on the Cascade Crest Trail system, the California Riding and Hiking Trail system and various other trails in arboreta, forest preserves, and state and National parks and forests. Some of these are included in the text and some are noted in the bibliography. There are undoubtedly many others in addition to these, but the ones included and mentioned here will give some direction and guidance. A forty minute motion picture is also available on trail practices from the Appalachian Trail Conference.

Records as mentioned before should be kept on many facets of the trail system. Signs used on the trail, regarding their type and location, should be one of the factors cataloged. The method used to acquire access rights to the trail should also be indicated. This is necessary for a number of reasons. Sections of the route acquired in different ways may have to be maintained and designed in different ways. Also it may be possible at various times to acquire more sure and guaranteed means of access than was accomplished initially in the implementation phase of the project. Therefore a rights status record would be a constant reminder and guide as to areas of possible future action. The maintenance schedule of individual sections of the trail should also be kept so that regular periodic policing may be made ensuring that the entire route is continually clean and clear. Who should keep these records and attend to this maintenance is covered in the following section

of the paper.

Maintenance and Administration

In doing research for this paper a number of letters were written to obtain various information. Quite often for ease of reply the queries were organized into a series of questions to be answered. In one of these to Mr. Benton McKaye, the originator of the Appalachian Trail concept I asked the following.

Is it possible to have adequate trails or an adequate trailway system by itself or should they be tied to a comprehensive regional plan to be effective? His answer was as follows.

> Here are two questions: Can a trail system be conceived in a vacuum? Answer--yes, and this is just what should not be. Should it tie in with a more comprehensive structure? Answer--of course. A trail system, or any other single element of a human habitat, is a part and not a whole.[53]

This points to the need for any pathway network to be a part of some overall recreational program. To decide who or what group could or should administer and maintain these trails is the purpose of this section of the paper.

It would probably be worthwhile initially in this section of the study to show all of the alternatives as to possible agencies and groups that could and have undertaken the maintenance and administration of such trails and systems.

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[53]Letter from Mr. Benton McKaye, Shirley Center, Massachusetts, April 14, 1963.

As further sections of this part of the study develop, reference may be made to each agency on the basis of this preliminary introduction.

There are about as many agencies or organizations concerned with the planning, maintenance and administration of trails as there are combined trails and recreation authorities. These consist of many private organizations as well as every level of public recreation agency.

Chief among the private organizations concerned with trail development and maintenance are some of those that have been mentioned before. The Appalachian Trail Conference on the East Coast of the United States, the California State Horsemen's Association on the West Coast, the Commons, Open Spaces and Footpaths Preservation Society in the British Isles are some of the more aggressive and effective of these. There are a great many others of these private hiking or conservation groups both national and local that have or would undoubtedly work unstintingly to bring about various parts of the implementation suggested here. Some of these groups were recognized by the Outdoor Recreation Resources Review Commission in their initial recommendations in "Outdoor Recreation for America" as shown in the following quote.

> Recommendation 11-3: Government agencies should support the efforts of charitable, service, and civic organizations to acquire and conserve outdoor recreation sites which serve public needs.
>
> The role of private, noncommercial organizations in providing and preserving outdoor recreation opportunities is a major one. The Audubon Society, the Izaak Walton League of America, and the Boy Scouts are examples of

organizations which for many years have been acquiring significant recreation resources.

A wide range of organizations--youth groups, fraternal and veterans' organizations, sportsmen's groups, charitable and civic associations, and church groups--have an interest in fostering outdoor recreation. Many organizations of this type provide recreation opportunities for their members on their own land; others promote supervised use of public facilities. A large portion of the resident summer camps in this country are owned and administered by organizations such as churches, settlement houses, and other nonprofit agencies. These private efforts to provide recreation opportunities should be encouraged.

Through the establishment and expansion of hiking, walking, and camping clubs, private groups, in cooperation with public agencies and the private landowner, can promote greater utilization of outdoor resources. These groups are developing continuous, interconnecting trail systems and campsites, using private as well as public lands. The well-known Appalachian Trail has long been established in the eastern portion of the United States. A number of local groups now utilize this major trailway and are developing local systems associated with it. Members reach agreement with private landowners for the development of rights-of-way and construction and maintain walking and hiking trails under local supervision and control. In some cases, simple shelters and campsites are constructed along major trails.

In Europe, and particularly in England, systems of "walkways" provide a significant opportunity for outdoor recreation. It is a type of development which holds potential for the United States, particularly in areas of submarginal agricultural and forest lands close to major urban concentrations. Although hiking is not currently an important component of the total demand for outdoor recreation, it should be encouraged in the future. Government agencies should recognize the potentiality of the walkway system as a means of providing recreation opportunities on private lands and should assist in its expansion.

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[54] Outdoor Recreation for America, op. cit., p. 162.

Certain city park departments have developed extensive trails within their existing systems and certainly have all of the powers necessary to design, acquire land for, maintain and administer such a path network within the area of their jurisdiction.

A number of counties have extensive recreation plans and powers and these could be broadened if necessary to cover the development and care of such a trail system. In fact the county of Los Angeles, California has developed a 700 mile system which is explained briefly in the following quote.

> Riding and Hiking Trails are generally 6-foot pathways with gradients moderate enough to be usable by both men and horses. Trail Stops are small areas (1 acre minimum size) provided as rest points for trail users. These Stops are usually spaced a day's hike or a half day's ride apart and, whenever possible, should be incorporated within an existing park, campground or guard station.
>
> The system of Trails and Trail Stops shown on this Plan have been transferred from the Master Plan of Riding and Hiking Trails adopted by the Board of Supervisors in July 1956. The Master Plan indicates approximately 700 miles of Trails and Trail Stops in mountain and foothill areas and along natural water courses in the County.[55]

Also in California and mentioned before in this paper is Santa Clara County's proposal for another county-wide system of such trails. This quote gives some idea as to their concept.

> All of us have a need for adventure. And even though we can no longer be pioneers in a strange new land, we can experience a measure of adventure as long as there

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[55] Regional Recreation Areas Plan--Los Angeles County, (Regional Planning Commission and the Parks and Recreation Department of Los Angeles County), p. 71.

> is a trail inviting us to see what lies around the bend. The plan proposes a system of riding and hiking trails which pass through the most scenic areas of the county. Along these trails parks provide overnight camping facilities at intervals of a day's hiking distance or less. Loop trails permit shorter, circuit trips. As a part of the State of California system of riding and hiking, may of the main trails proposed here can be built with state funds.
>
> Trails suitable for bicycling groups are suggested along water conservation canal rights-of-way. Here, protected from automobile traffic, and on a gentle gradient, cyclists can ride and enjoy panoramic views of the valley.[56]

Where such powers and initiative exist on the county level it would be logical and wise to utilize these agencies' authority to maintain and administer such a system for the residents of their region. In one county in England there exists over 4,000 miles of paths of this type, so there is precedent in both this country and abroad where the counties are responsible for such a network.

A few regional planning groups have brought up proposals of this sort for their areas also. The Huron-Clinton Metropolitan Authority here in Michigan has trails in its parks but at this time visualizes nothing of the type suggested here to further give access through the countryside. In Illinois the Fox River Valley Pleasure Driveway and Park District has suggested something of this type.

> A countryside nature hiking trail, bicycle and bridle path is planned to originate in Aurora and extend in a northwesterly direction through pleasant farmland. This

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[56] A Plan for Parks, Recreation, and Open Spaces, (February 1962 revision; San Jose, California: County of Santa Clara Planning Commission, 1962), p. 26.

> naturalistic trail will be located on a strip of abandoned railroad property 100 feet in width. Trailside shelters and picnic areas will be placed at intervals along the route. The trail will start at Terry Avenue in Aurora, immediately south of the Country Club.
>
> Where the trail crosses Blackberry Creek a replica of a covered bridge could be constructed and a small cascade dam built. Picnic areas will be established throughout the length of the trail. It is recommended that the Park District acquire the adjacent property to the creek.[57]

The regional planning group for any area has been suggested before as the logical group to conceive and plan any such system. In not many cases, however, do they have the power and authority at present to go farther than this in the acquisition of land or in providing of funds for maintenance and administration. It is possible that this is not necessary since most of the recreation agencies at other levels have the necessary powers and could undertake the implementation if the regional agency would be responsible for the concept and suggestions as to possible route location within the area.

California once again is the only state which has undertaken such a system but the powers of effectuation are in the hands of most state recreation agencies if they should desire to bring such a network into being. The following quote shows some features and recommendations of that system.

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[57] The Fox River Valley Pleasure Driveway and Park District (Southern Kane County Sector), (Winnetka, Illinois: Fox River Valley Pleasure Driveway and Park District, 1949), p. 25.

In 1958, there were 2.3 million man-days of use recorded on the 900 miles of designated hiking trails, and 2.2 million man-days of use recorded on the 17,000 miles of combined riding and hiking trails. A large majority of this 4 1/2 million man-days of use was on a one-day ride or hike, fairly close to home. Surveys show that for a ride of one day or less, riders will travel an average distance of 15 miles to gain access to the riding trail, whereas for hiking the party will travel an average distance of 30 miles. For weekend riding and hiking, these groups will travel an average distance of 75 miles to reach interesting trails.

A study of the over-all statwide picture of riding and hiking indicates that there are enough trails to satisfy present needs as well as the 1980 anticipated needs of riders and hikers, which will be about 10 million man-days of use. Even though this total supply is adequate, there are serious deficiencies now of trails, in and close to the major metropolitan areas of the state. The existing use per trail-mile emphasizes this. In far northern California, the annual use is but 9 to 15 man-days per mile of trail, while near Los Angeles the annual use is about 6,900 man-days per mile of trail.

In 1945 the California Legislature enacted the "Riding and Hiking Trails Law," to encourage riding and hiking in the interest of public health. The law provided for a 3,000-mile loop trail from San Diego to Oregon, of which about 900 miles has been designated or constructed. In 1955, the Legislature amended the law to provide secondary and feeder trails. Thus the trail can be used in short sections as well as in its entirety.[58]

The Outdoor Recreation Resources Review Commission report on "Public Recreation Areas--Acreage, Use, Potential" gives an excellent picture of the quantity of such trails that exist in recreation areas in different states and regions in the nation. Also from this information it is possible to discover that over half of the milage of trails

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[58]California Public Outdoor Recreation Plan, (Part I; Sacramento, California: California Public Outdoor Recreation Plan Committee, 1960), pp. 44-45.

that exist in designated recreation areas are on Federal lands.

This leads then to the possible role of the National government in the administration and maintenance of such cross-country trails. This type of trail exists in only a few places in our country under Federal control. One of these places is on the Chesapeake and Ohio Canal towpath through the District of Columbia and Maryland. In England the National Parks Commission has proposed, acquired access rights for, and begun development of a series of Long Distance Routes (see Appendix B for further information) and it is conceivable that a similar type of system could be brought into being in our country if the demand were sufficient.

So we see from this that as mentioned in the beginning of this section every level of government has at some place or in some instance undertaken to plan, develop, maintain and administer trails of this type. In addition to this we have a myriad of private organizations attempting and accomplishing practically the same end. Therefore there is abundant precedent for any of these groups taking any part of the responsibility of such a system. It is then necessary next to point out guidelines for the optimum division of this responsibility so as to be most efficient and effective in a given situation.

Jurisdiction

The delegation of responsibility for any trail system

or any segment of the system should be decided upon early in the implementation of this proposal. Some of the ways this could best be done have been pointed out previously in the section of the paper on economics. Any jurisdictional relationship that is applicable in one given situation may not be used universally, but may have to be revised under different circumstances. It is necessary for each of the areas of responsibility to be carefully "spelled out" to guarantee the continued maintenance and administration of the network.

In consideration of the present delegation of powers in American government it is logical as mentioned before that the regional planning agency in any area be at the center of the conceptual and planning phases of this implementation. The city, county, and state governments plus private organizations would bear the major load as to route acquisition, administration, and maintenance. The state government would also act as a coordinator of the network proposal for various regions. The Federal government, besides giving research guidance and grants could assist with encouragement and grants for route acquisition. This is not an absolute arrangement and in different areas other orientations would be suggested. However, it is vital that each group be willing to accept part of the load and that it be firmly decided in any area as to who does what.

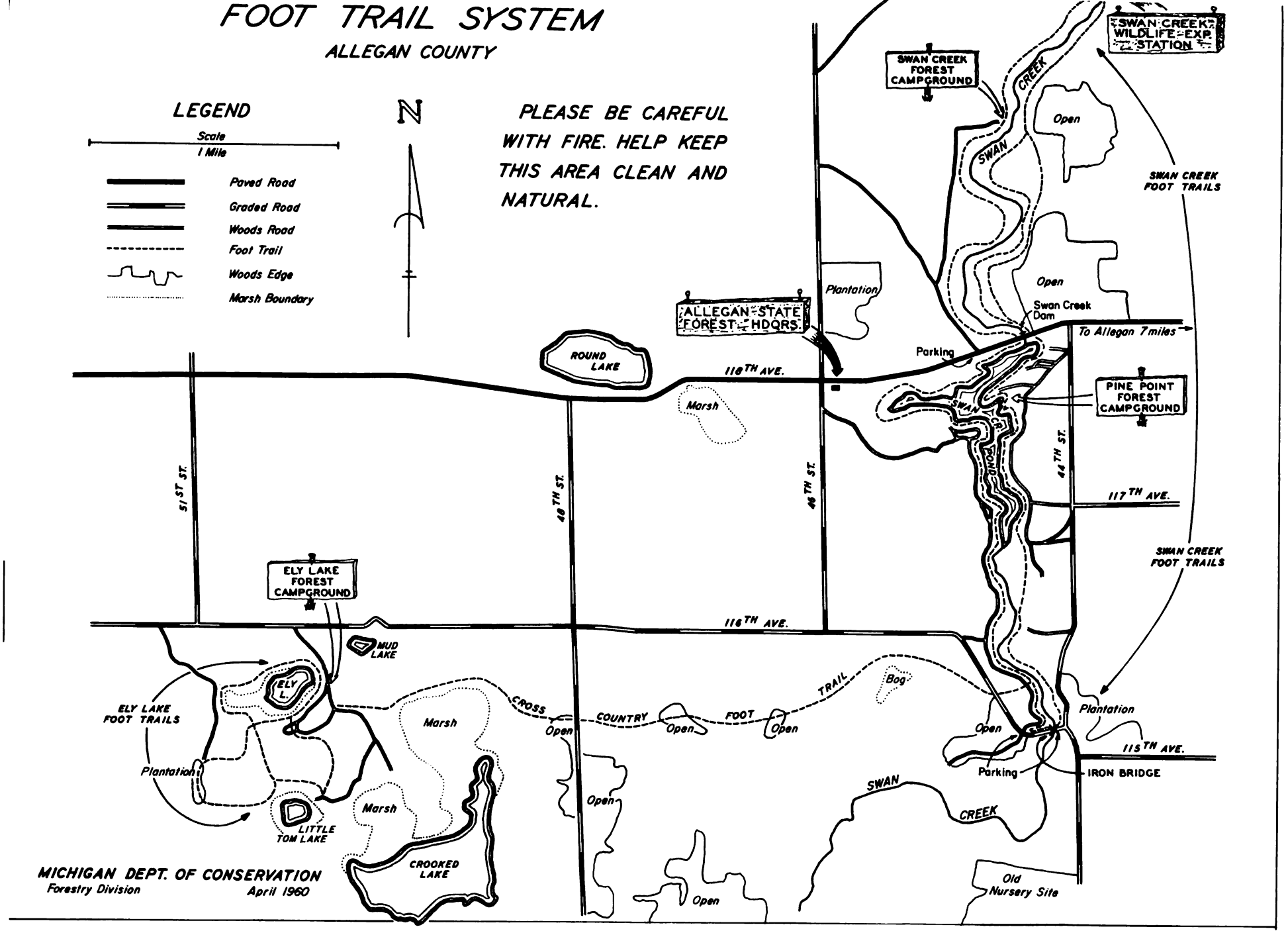
The question of liability for any accidents which might be suffered by hikers while on the trail must be

clarified for each section of the system. This presents one of the most thorny of the practical aspects of this proposal. It is difficult, to the point of being nearly impossible, to find information on how other agencies with such trail systems handle this problem. Where the trail traverses lands already in public ownership it may be assumed that the agency which owns the land will extend its responsibility to cover the added use of part of the land for trails. Where new land is acquired or rights are obtained for trails this liability will have to be delegated or assumed. In very few cases should private individuals whose land is crossed by public paths be asked to assume this responsibility unless due consideration is given in return. This whole area has been inadequately investigated and reported not only in this paper but generally in trailway literature. This could be a worthwhile future study, probably best being done by a lawyer or someone exclusively in the recreation field. There are a number of books listed in the bibliography which have sections on public liability that among others could be consulted for further information when this problem arises. This once again could be one of the key factors in the success or failure of the trail system depending upon how carefully and wisely it is handled.

There are many reasons for the assignation of jurisdictional responsibility for each section of a trail system to one of the public or private groups that are available for such purposes. No matter what the reason care should be

FOOT TRAIL SYSTEM

ALLEGAN COUNTY



ALLEGAN STATE FOREST AREA INFORMATION

The original forest cover of the Allegan State Forest area was mainly a mixture of oak and white pine with lowland hardwoods on the bottom lands. The last large local stand of white pine was cut in the 1890's just east of Swan Creek pond. Following logging there were repeated forest fires. Land clearing and farming followed the timber cutting but most soils were too poor to support normal agriculture. In the late 1930's the Resettlement Administration purchased most of the land which is now within the boundaries of the Allegan State Forest and the Wildlife Experiment Station. The former owners were assisted in obtaining better farm land if they so desired. In 1940 the management of the area was turned over to the Michigan Department of Conservation. Later, actual ownership of the land was obtained through a land exchange with the U. S. Forest Service. In addition there have been some land purchase to block in state ownership for more efficient administration.

The Allegan State Forest contains about 33,000 acres of state-owned land. This is equal to 52 square miles. It is managed for timber production, recreation, and wildlife. There are four campgrounds and picnic areas on the forest which are provided with picnic tables, stoves, toilets, and drinking water. No permit is required for camping. The area is open to hunting during the open seasons. The State Forest ownership is not indicated by boundary signs but can be determined from available maps.

The Swan Creek Wildlife Experiment Station conducts research on wildlife problems. Its 7,000 acres are open to managed public hunting under permit. It is noted for its "high banks" goose hunting and wildlife refuge.

The Fennville State Game Area is located just west of the forest. Part of its 3,500 acres is open to public hunting under permit. There is a centrally located game refuge where, in the spring and fall, large flocks of Canadian geese can be viewed from county roads.

Forest fire protection for the area is provided by a fire lookout tower and by equipment from the Allegan Equipment Station located at the northwest end of Lake Allegan.

Stream improvement for trout has been carried out on Swan Creek upstream from the Iron Bridge and on several other streams in the area.

These are the leaf outlines of common trees found along the forest trails.



White Oak Red Oak Sassafras Elm Red Maple Dogwood Pine

Animals and birds commonly seen in this forest: Fox Squirrel, Red Squirrel, Chipmunk, Great Blue Heron, Black Duck, Blue Wing Teal, Blue Jay.

Animals and birds sometimes seen in this general area: Cottontail Rabbit, Muskrat, Woodchuck, Deer, Red Fox, Opossom, Raccoon, Wild Turkey, Canada Goose, Mallard Duck, Ruffed Grouse, Red Tailed Hawk, Little Green Heron.

taken so that a definite jurisdictional responsibility relationship is established to plan, control, maintain and administer a trail network in any given area. The fact must be taken into consideration that may governmental agencies will not relinquish their rights to facilities that are financed by them and are in their area of responsibility.

A profitable arrangement for the initial conceptual and early planning stages that could be expanded into a permanent decision making body would be the formation of an inter-agency regional trailway council. This group could consist of representatives from each of the agencies or organizations with recreational facilities within a given region. These might be from the cities, counties, regional, state and national governments or recreation agencies plus those representatives from private organizations concerned with trailways and their development. This group could assist in the delegation or assumption of responsibility not only in the early stage of planning but also later when the maintenance, administration and liability questions arise.

Planning Responsibility

This question was dealt with to a small degree also in the section on economics, but a more complete discussion might be worthwhile at this point to show the relationship between planning and maintenance and administrative responsibility. Every agency that has had anything at all to do with trails has at some time or other taken the planning

function into their own hands. So there is ample precedent once again for any of these groups to do this. There is, however, an agency among all of these that may be best qualified to do the planning due to its scope of interest and type of work already being done by it. The private groups should be consulted and brought in on all phases of the planning by any public agency that is charged this responsibility. The following quote shows how this was done in California.

> Very early the Advisory Committee recommended that the route of any particular segment of the trail should be determined by local interest, subject to review and approval of the State Park Commission. Therefore, each county was asked to form a local advisory group which would pick the route, and secure the approval of the County Planning Commission and Board of Supervisors. This group then submitted a Master Plan for the County which was studied in detail by the staff of the Division (Division of Beaches and Parks) and an appropriate recommendation made to the State Park Commission.59

The agency doing the planning of such a trail system should be large enough to be concerned with a synoptic view of an area while still small enough to know and understand the needs of the people of a region and the specific landscape with which they are dealing. It is questionable if a state-wide agency can have these qualities. Therefore it is proposed that where possibly a regional agency is not equipped to take over this design responsibility the state itself may undertake the design of that area. In other sectors private

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[59]Mimeographed sheet received in correspondence from the California Riding and Hiking Trail Project (See Appendix D).

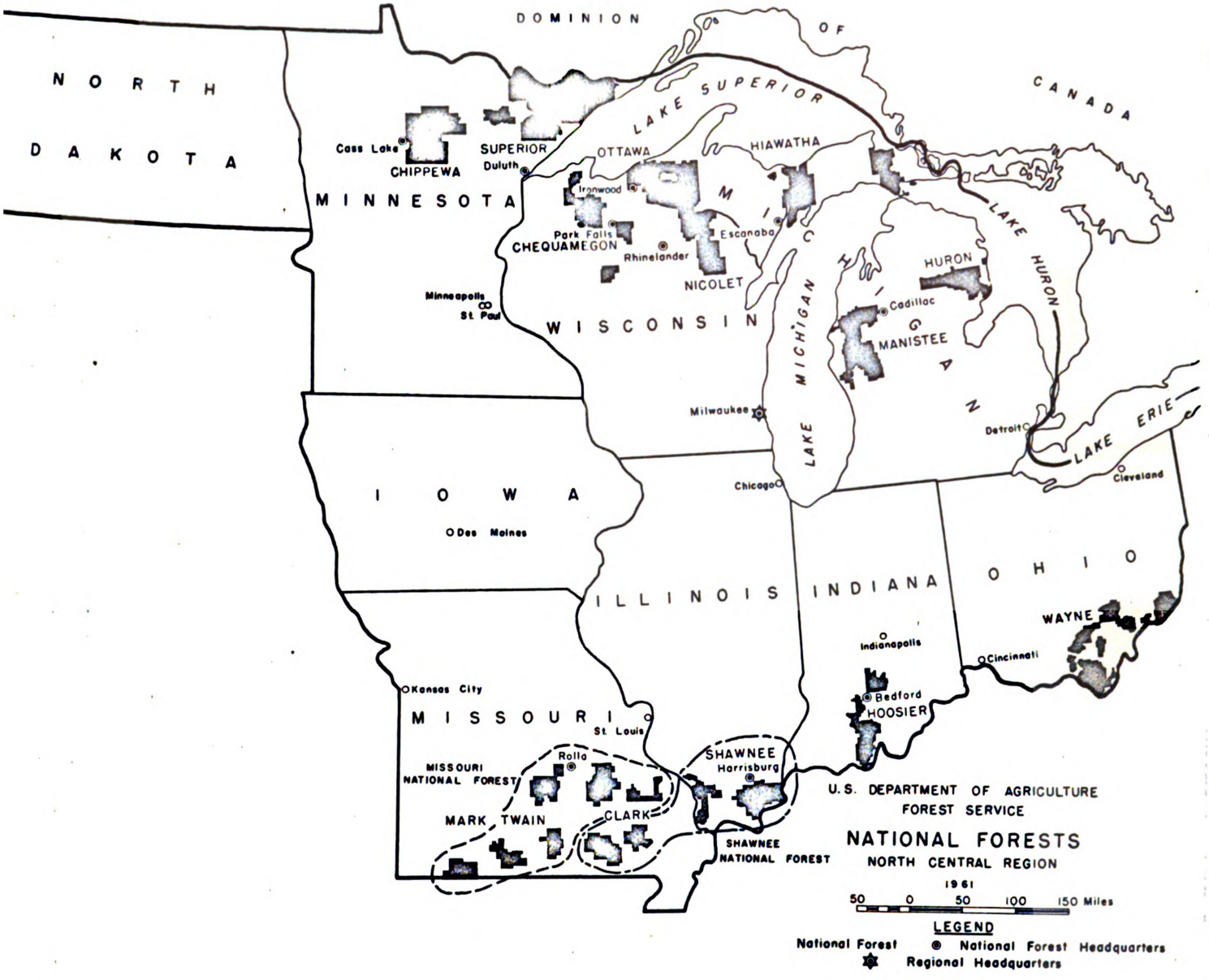
organizations may take the responsibility for trail development. In those cases they may want to engage a private landscape architectural office to assist with the design of that part of the path network in which they have an interest. In any case this design should be undertaken by someone with the necessary background and training to understand and accomplish all of the aspects mentioned in the design section of this paper.

Maintenance Responsibility

This would consist of the perpetual housekeeping of the trailway and the area immediately adjacent to its route. Included in this would be the trail route, clearing, litter removal, maintenance of the rest areas, upkeep of signs and identification and assuring of a supply of clean water where possible. The responsibility for this cannot be left to chance but must be assigned or assumed to some agency either public or private. The oft-mentioned Appalachian Trail Conference is made up of a group of intensely interested private citizens organized into local clubs who undertook the planning, layout and design of the trail and who now voluntarily maintain the whole length of it. This role of private organizations cannot be overlooked and its potential utilized by governmental agencies whose recreation budget is hard pressed and yet who need this additional form of recreation. More will be said concerning this in the later section of the paper on the private role in development and maintenance.

Generally the maintenance will be undertaken by the recreation agency in whose jurisdiction the trail route exists. If the trail passes through regional, state or national parks or forests it is assumed that the governmental units responsible for these areas will undertake the maintenance of the trail in their parks or forests.

Some of the burden of maintenance can be left with the trail users. This is logical since the future existence of the trail itself may depend on the burden of maintenance that governmental units can bear. If this expense becomes too heavy and the number of users too few and their concern too little there is little reason to continue to maintain the trail. This fact, and the users own responsibility, may be pointed out in a number of ways. The Appalachian Trail Conference issues a folder addressed "To Those Who Walk In The Woods" which covers the recognition of private land rights, fire and litter control, camping rules, etc. The California system suggests Rules for Trail Use which may be seen on the map included in this paper on the riding and hiking trail system in the state. The National Park Commission in England has adopted a "Country Code" which is a reminder to park and trail users of their responsibility to help keep the countryside neat, attractive, and safe, plus the need to respect private property.



The following abbreviations are used in the camp and picnic ground listings:

FACILITIES AVAILABLE

C	--	Camping	STR	--	Stream
P	--	Picnicking	L	--	Lake
DW	--	Water Supply	W	--	Well
SP	--	Spring	P	--	Piped
		R -- River			

ACTIVITIES AVAILABLE

S	--	Swimming
F	--	Fishing
B	--	Boat access or landing
WS	--	Winter Sports
SC	--	Scenic

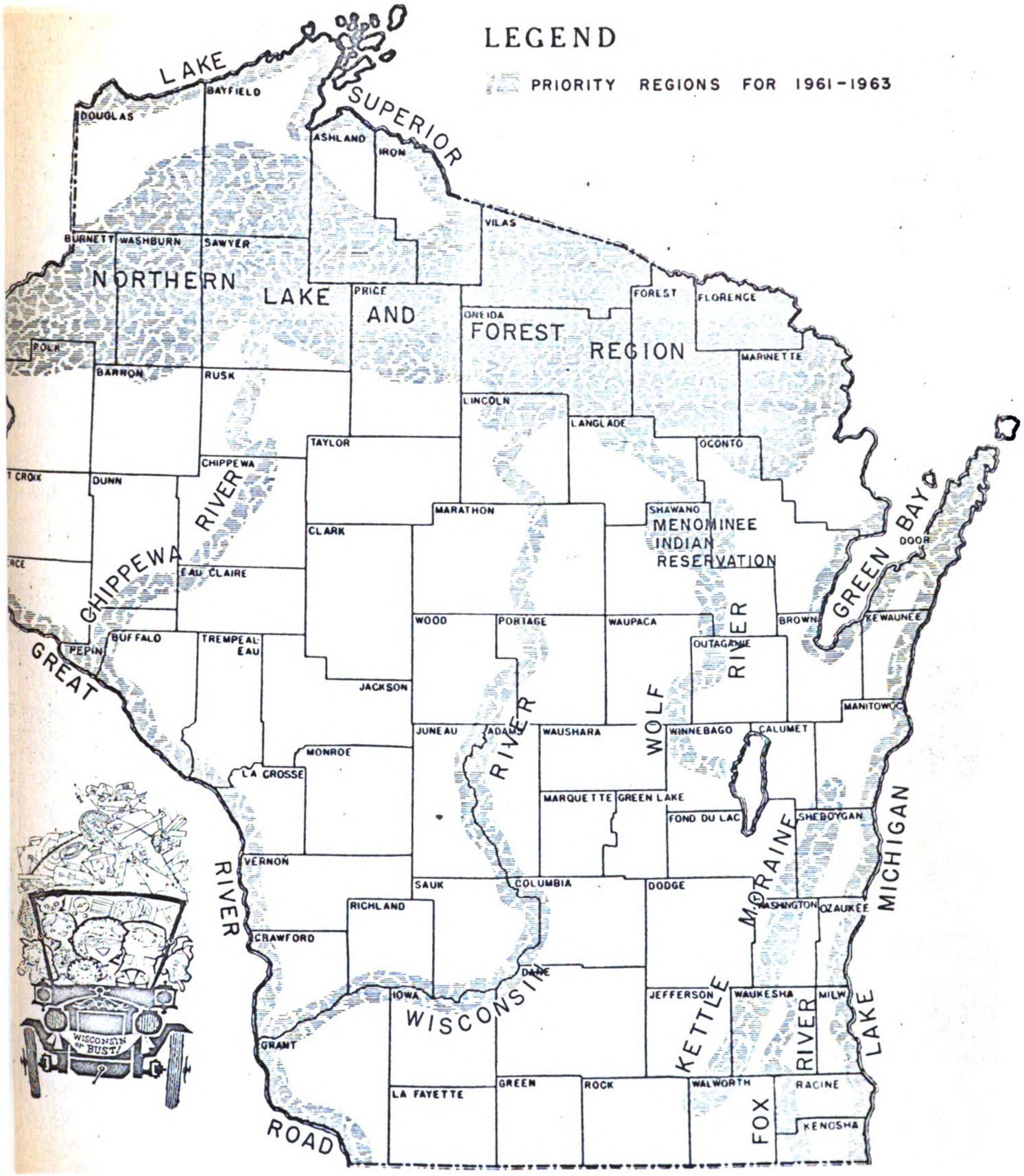
ROAD DESIGNATIONS

US	--	Federal Highway
ST	--	State Highway
CO	--	County Highway
FH	--	Forest Highway
FR	--	Forest Road

The Governmental Role In Development and Maintenance

This has nearly been completely covered in previous sections but one final word is appropriate here. This is once again to differentiate between centrifugal and centripetal origin and development of the trail system in a region. The network should be conceived and developed as a result of a need by the inhabitants within the region. This need may or may not be known or understood by them. It is desirable that it is and that the impetus for the trail development originate with a large group of citizens. Then whether it is developed by them with the encouragement and guidance of the public agency or whether in response to their demands it is developed by the governmental unit is a decisive factor. Both ways have been used and there is much to be said for either but it seems that the more responsibility assumed by private citizens the more successful is the trail system. Any public agency can assume all phases of implementing of such a proposal as shown here but it must be careful not to create such a system in a vacuum. It may be that since the recreational needs of the people are a concern of some public bureaus they will be more perceptive in seeing the need for such trails before the public is aware of it. In this case the government may strive to guide the expression of the desires for such a trail system by the people of the region. To show the possibilities of such a system to private groups and to encourage their support and help may be a valid duty

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of public recreation agencies. The government's role then should be both as leader and follower of the public's needs and desires in this as in every phase of its responsibility.

The Private Role In Development and Maintenance

Without public support as just mentioned any trail system will not be successful, therefore it is desirable to have a good deal of it either before or after its development. Various private organizations, many of them mentioned profusely in this paper have and may further be enlisted to plan, develop and care for such trails. These groups at times may do a more effective job on this type of thing than could any governmental agency. In Michigan at present a Mr. Havens Spencer, who is a publisher's representative from Ann Arbor and Mr. Fitch William, an attorney from Traverse City are both working as private citizens to establish trail routes for horseback riders and hikers. These men are meeting with a good degree of cooperation with land owners and governmental agencies. It is nearly axiomatic that the greater the citizen support in all phases of the inception and implementation of a trail network the more effective it will be as a recreation medium.

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*For additional map see page 271.

Persons and Places Contacted

Australia:

Miss M. T. Davis, 174 Beach Road, Victoria, Sandringham.

Austria:

Garten und Landschaftsarchitekten, Wein 9, Alserbachstrasse.

Edouard Maria, I.H.M. Landschaftsplaner O.G.P., Dipl. Ingenieur, Wein 9, Alserbachstrasse.

Belgium:

Association Belge des Achitectes de Jardin, Berchem-Anvers, 620 Grand Chaussee.

Canada:

Canadian National Park Service, Ottawa.

Canadian Society of Landscape Architects and Town Planners, 6435 West Boulevard, Vancouver 13, B.C.

Denmark

(Agency for Preservation of Nature) Danmarks Naturfredningsforening, Solvgade 26, Copenhagen K.

Jacob Bergmann, Vester Volgade 83, Copenhagen V.

(Danish Cycling Union) Dansk Cyklist Forbund, Vesterbrogade 3, Copenhagen V.

(Directory of State Forestry) Dviektoratet for Statssprovbruget, Frederiksgade 19, Copenhagen K.

Dansk Havearkitektforening, Frederiksberg, Runddel 1, Copenhagen.

Eywin Langkilde, Havearkitekt M.D.H., Sankt Peders Stroede 30, Kobenhavn K.

(Ministry of Agriculture) Landbrugsministeriet, Slotsholmsgade 10, Copenhagen K.

(Ministry of Housing) Boligministeriet, Nyropsgade 51, Copenhagen V.

(National Travel Association of Denmark) Turistforeningen for Danmark, 5-7 Banegaardspladsen, Copenhagen V.

(Outdoor Recreation Association) Friluftsradet, Malmogade 7, Copenhagen O.

(Regional Development Council) Landsplanudvalgets Sekretariat, Ostergade 16, Copenhagen K.

(Danish Society for Preservation of the Countryside) Naturfredningsradet, St. Kongensgade 47, Copenhagen K.

C.T.N. Sorensen, Kunslakademiet, Kongens, Nytorv, Copenhagen.

Stradsingeniorens direktorat, Radhuset, Copenhagen V.

F. Wodschow, Cycle Touring Department of Dansk Cyclist Forbund, 48 Lyngvej, Kgs. Lyngby, Copenhagen.

England:

British Cycling Federation, 21 Blackfriars Road, London S.W. 1.

British Information Services, British Consulate General, 200 S. Michigan, Chicago, Illinois, U.S.A.

British Travel and Holidays Association, 39 S. LaSalle Street, Chicago, Illinois, U.S.A.

Camping Club of Great Britain and Ireland, 35 Old Kent Road, London, S.E. 1.

Central Council of Physical Recreation, 6 Bedford Sq., London W.C. 1.

The Commons, Open Spaces and Footpaths Preservation Society, 11 Kings Bench Walk, London, E.C. 1.

Councils for the Preservation of Rural England and Wales, 41 Hobart Place, London S.W. 1.

Cyclists Touring Club, 3 Craven Hill, London W.C. 2.

Institute of Landscape Architects, 1 Park Crescent, London W. 1.

Lincolnshire Naturalists Trust, Town Clerk, Lincoln.

London County Council, The County Hall, Westminster Bridge, London S.E. 1.

Mr. K. L. Morgan, Institute of Park Administration Inc. Lower Bosildon, Reading, Berkshire.

National Park Commission, 1 Cambridge Gate, London N.W. 1.

Norfolk Naturalists Trust, Chamber of Commerce, Norwich.

The Rambler Association, 48 Park Road, London N.W. 1.

Leslie Warner, Secretary, Cyclists Touring Club, 3 Craven Hill, London W. 2.

Yorkshire Naturalists Trust, Information Bureau, York.

Finland:

Finlands Tradgaardsarkitekter, Messeniusgatan 10 B, 35, Tolo., Helsingfors.

France:

Comite National Des Sentiers De Grande Randonnee, 65 Avenue de la Grande Armee, Paris 16.

Direction Generale des Eaux et Forets, 1 ter. Avenue Lowendal, Paris (7), France.

Federation Francaise de Camping et de Caravanning, 22 Avenue Victoria, Paris (1).

Federation Unie des Auberges de la Jeunesse, 5 Avenue Porte-de-la-Chapelle, Paris (18).

French Government Tourist Office, 610 Fifth Avenue, New York 20, New York, U.S.A.

Haut-Commissariat a la Jeunesse et aux Sports, 34 rue de Chateaudun, Paris (9).

Office du Tourisme Universitaire, 137 Boulevard St-Michel, Paris.

Societe Francaise d'Architecture de Jardin, 67 Avenue de Segur, Paris 7e.

Germany

Bund Deutsche Garten-und Landschaftsarchiteken, Beethovenstrasse 25, Beuel/Bonn.

Bund Deutscher Radfahrer, Gutleutstr. 89, Frankfurt am Main, West G.

Deutscher Camping Club, Ainmullerstr. 25, Munchen 13, West G.

Der Direktor Des Landschaftsverbandes Rheinland, 50 Koln-Deutz, Landeshaus, Constantinstrasse 2, Rheinland.

(Friends of Nature Society) Touristenverein "Die Naturfreunde," Friedhofstr. 25, Stuttgart, West G.

Gert Kragh, Landesoberwaltungsrat, beim Landschaftsverband, Koln-Deutz, Constantinstrasse 2, Rheinland.

(Young Ramblers) Deutsche Wanderjugend, Hospitalstr. 21 B, Stuttgart, West G.

Israel

Association of Landscape Architects in Israel, P.O.B. 4899, Haifa.

Italy

Associazione Italiana degli Architetti del Giardino e Paessaggio, Piazza di Sienna

Japan

Architectural Institute of Japan, 1 Nishi 3-Chome Ginza Chuo-Ku, Tokyo.

City Planning Department, Tokyo Metropolitan Government, Marunouchi, Chiyoda-Ku, Tokyo.

City Planning Institute of Japan, c/o City Planning Sect., Planning Department, Ministry of Construction, 2-1-Chome, Kasumigaseki, Chiyodaku, Tokyo.

Japan Architectural Society, Kenchiku Kaikan Bldg., Ginza-Nishi, Chuo-ku, Tokyo.

Japan National Recreation Association 4, 3-Chome, Marunouchi, Chiyodaku, Tokyo.

Japan National Tourist Association, 1 Marunouchi, Tokyo.

Japanese Institute of Landscape Architects, Building No. 1, Faculty of Agriculture, Tokyo University, Bunkyo-ku, Tokyo.

National Parks Association, 1, 2-Chome, Kasumigaseki, Chiyodaku, Tokyo.

National Parks Division, Ministry of Health and Welfare, 1, 2-Chome, Kasumigeseki, Chiyodaku, Tokyo.

Planning Section, Road Bureau, Ministry of Construction, 1-1 Kasumigaseki, Chiyoda-ku, Tokyo.

Youth Hostel Association, Shimonake Bldg., Akasaka Hitotsugi-Cho, Minato-ku, Tokyo.

Netherlands:

A.N.W.B., Wassenaarseweg 220, 's-Gravenhage, Inst. Stad en Landschap van Zuid Holland, Delfsestraat 15b, Rotterdam.

Bond Van Nederlandse Tuinarchitecten Vereniging Voor Tuin-En Landschapskunst, Middenweg 66, Amsterdam.

Prof. Dr. Ir. J. T. P. Byhauwer, Landbouwhogeschool Studierichting Tuin-En Landschapsarchitectuur, Bennekom.

Mr. M. T. Klerks, M. L. A., Adjunct-Director of Parks, Amsterdam.

Provinciale planologische dienst, Riouwstraat 178, 's-Gravenhage, Staatsbasbeheer, Museumlaan 2, Utrecht.

Norway:

Olav Kvam, Norske Hagearkitektlag, Motzfelptsgt 1, Oslo.

Portugal

Centro de Estudos de Arquitectura-Paisagista, Instituto Superior da Agronomie Tapada da Ajuda, Lisboa.

Sweden

Foreningen Svenska Tradgaards Arkitekten, Gombrinusgatan 5, Stockholm.

Switzerland:

Bund Schweizerischer Gartengeslatter, 7144 Krahbuhtrasse 114, Zurich.

United States:

Appalachian Trail Conference, 1916 Sunderland Place N.W., Washington 6, D.C.

Dudley C. Bayliss, Chief of Parkways, United States Department of the Interior, National Park Service, Washington 25, D.C.

Karl J. Belser, Director of Planning, County of Santa Clara, California, 70 West Rosa Street, San Jose, California.

Grady Clay, Louisville Courier, Louisville, Kentucky.

Clinton Valley Council, Boy Scouts of America, Pontiac, Michigan.

Cook County Forest Preserve District, 536 N. Harlen Ave., River Forest, Chicago.

Charles A. DeTurk, Director of Parks and Recreation, The Resources Agency of California Department of Parks and Recreation, Division of Beaches and Parks, 1125 Tenth Street, Sacramento 14, California.

Director, Department of Parks and Recreation, State of California, Sacramento, California.

Felix Dhainin, City Planning for Parks, Minneapolis, Minnesota.

Garrett Eckbo, 8442 Wonderland Park Avenue, Los Angeles, California.

Charles H. Foster, Commissioner, Department of Natural Resources, Boston, Massachusetts.

Robert Grunwald, 422 North Douty, Hanford, California.

Gordon Hall, 380 Cannery Row, Monterey, California.

Lawrence Halprin, 1620 Montgomery St., San Francisco 11, California.

Lynn M. F. Harriss, Exec. Director, American Society of Landscape Architects, 2000 K Street N.W., Washington, D.C.

U. W. Hella, Director of Parks Division, Minnesota Conservation Department, St. Paul, Minnesota.

John Kirkpatrick, c/o SOM, Crown-Zellerbach Building, San Francisco, California.

Philipp H. Lewis, Jr., Department of Natural Resources, Madison, Wisconsin.

Librarian, Graduate School of Design, Harvard University, Cambridge 38, Mass.

William Lipman, California State Office of Planning, Sacramento, California.

Benton MacKaye, Shirley Center, Massachusetts.

Donald C. Mathews, Director, Connecticut State Park and Forest Commission, Hartford, Connecticut.

Charles Moore, Kalamazoo Nature Center, Kalamazoo, Mich.

James T. Morgan, Lake States Forest Experiment Station, National Forest Service, St. Paul, Minnesota.

Dr. Lewis Mumford, Amenia, New York.

National Campers and Hikers Association, 7172 Transit Road, Buffalo 21, New York.

Outdoor Recreation Resources Review Commission, Washington 25, D.C.

Bert Perrin, State Trail Planner, The Resources Agency of California Department of Parks and Recreation, Division of Beaches and Parks, 1125 Tenth Street, Sacramento 14, California.

William Pond, Director of Recreation, County of Sacramento, County Building, 7th and I Streets, Sacramento, Calif.

Donald K. Rippel, Box 238, Ames Municipal Airport, Ames, Iowa.

Wilbur Rush, County Recreation Coordinating Officer, Department of Conservation, DesMoines, Iowa.

Harold Schick, Parks and Recreation Division of the Oregon State Highway Department, Salem, Oregon.

George Schwenk, 1450 South Huron, Ypsilanti, Michigan.

The Sierra Club, 1050 Mills Tower, 220 Bush Street, San Francisco, California.

T.V.A. Information Office, Knoxville, Tennessee.

United States Department of the Interior, National Park Service, Eastern Office, Design and Construction, 143 South Third Street, Philadelphia, Pennsylvania.

Western Office, Design and Construction, United States Department of the Interior, National Park Service, 1000 Geary Street, San Francisco, California.

Wilderness Trail Committee, 3501 Briarwood Drive, Flint 7, Michigan.

Fitch R. Williams, Traverse City, Michigan.

Charles Young, Pilot Emeritus, Mississippi River Parkway Planning Commission, 1610 Mulberry Ave., Muscatine, Iowa.

Harry Ziminski, Forest Service Recreation Officer, Midwest Regional Office, United States Forest Service, 710 N. 6th Street, Milwaukee, Wisconsin.

Additional Map:

*United States Department of Interior, United States Including Territories and Insular Possessions, Showing the Extent of Public Surveys, National Parks, National Forests, Indian Reservations, National Wildlife Refuges, and Reclamation Projects, 1953.

TABLES

TABLE B-1.--Percent of persons 12 years and over participating, days of activity per person, and days of activity per participant during June-August 1960 for the United States and major regions by activity

	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Fishing	29	21	33	33	30	1.99	1.76	2.05	2.20	1.88	6.8	8.5	6.2	6.6	6.4
Canoeing	2	3	3	2	1	.07	.09	.07	.06	.07	3.0	3.1	2.1	3.4	*
Sailing	2	2	2	1	2	.05	.06	.05	.03	.08	3.0	2.5	2.9	*	*
Other boating	22	21	27	19	23	1.22	1.38	1.48	.86	1.08	5.5	6.7	5.6	4.5	4.8
Swimming	45	53	42	40	48	5.15	6.82	4.63	3.97	5.36	11.5	12.9	11.1	10.0	11.3
Water skiing	6	4	6	6	9	.30	.29	.21	.34	.43	5.1	6.5	3.8	5.8	4.7
Camping	8	5	7	8	17	.46	.33	.40	.38	1.05	5.7	6.9	5.5	5.0	6.0
Hunting	3	2	2	5	3	.19	.22	.16	.27	.15	5.6	8.9	4.4	5.1	*
Bicycling	9	9	10	7	10	1.75	1.47	2.00	1.72	1.84	19.4	16.3	19.5	23.4	18.3
Horseback riding	6	4	5	5	11	.42	.29	.32	.43	.88	7.5	6.8	6.0	9.0	8.2
Playing outdoor games or sports	30	34	35	21	28	3.63	3.91	4.15	2.95	3.37	12.3	11.6	12.0	13.9	12.0
Picnics	53	57	58	43	54	2.14	2.81	2.34	1.31	2.09	13.1	15.1	12.6	11.8	11.4

TABLE B-1--Continued

	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Walking for pleasure	33	43	29	27	34	4.34	6.46	3.66	3.18	3.88	13.1	15.1	12.6	11.8	11.4
Driving for pleasure	52	54	58	45	56	6.68	7.23	8.02	5.62	5.21	12.7	13.5	13.8	12.4	9.4
Sightseeing	42	39	47	35	55	2.20	2.00	2.71	1.60	2.79	5.2	5.2	5.7	4.6	5.1
Attending outdoor sports events	24	22	28	21	26	1.32	1.15	1.61	1.34	1.03	5.5	5.2	5.8	6.5	4.0
Attending outdoor concerts, drama, etc.	9	13	11	3	11	.21	.33	.25	.07	.22	2.4	2.5	2.3	2.4	2.1
Mountain climbing	1	2	1	1	1	.04	.06	.02	.04	.05	3.7	3.6	*	*	*
Hiking	6	7	5	4	9	.26	.28	.21	.17	.49	4.4	4.2	4.2	3.9	5.4
Nature walks	14	15	15	12	16	.75	1.14	.60	.55	.69	5.2	7.5	3.9	4.6	4.3
Miscellaneous	5	7	5	2	7	.40	.71	.46	.07	.36	8.4	10.8	9.8	3.0	5.3

* Omitted because of insufficient sample size.

TABLE B-2.1--Bicycling: Percent of persons 12 years and over participating, days of activity per person and days of activity per participant during June-August 1960 for the United States and major regions by selected socioeconomic characteristics

National Recreation Survey Data

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
All Classes	9	9	10	7	10	1.75	1.75	2.00	1.72	1.84	19.4	16.3	19.5	23.4	18.3
Male (age in yrs.)	9	10	9	7	8	2.04	1.76	2.37	2.19	1.57	23.6	17.1	27.3	30.2	*
12 - 17	40	52	41	31	40	11.68	10.44	14.20	11.42	9.19	29.0	20.1	34.8	37.2	*
18 - 24	7	5	6	5	20	.65	.97	.09	.69	1.17	*	*	*	*	*
25 - 44	3	2	4	5	#	.40	.04	.61	.75	+	*	*	*	*	*
45 - 64	3	6	2	1	1	.22	.47	.09	.15	.17	*	*	*	*	*
65 and over	#	#	#	#	#	+	+	+	+	+	*	*	*	*	*
Female (age in yrs.)	9	8	12	7	11	1.48	1.23	1.64	1.26	2.07	15.8	15.5	14.0	17.0	18.2
12 - 17	42	43	46	34	49	8.29	10.51	7.77	7.94	6.57	19.6	24.3	17.0	*	*
18 - 24	12	11	17	11	5	.58	.13	.39	1.22	.30	4.8	*	*	*	*
25 - 44	6	5	7	3	11	.82	.13	1.01	.22	3.23	13.7	*	*	*	*
45 - 64	1	1	1	1	#	.03	.01	.02	.06	+	*	*	*	*	*
65 and over	#	#	#	1	#	.01	+	+	.04	+	*	*	*	*	*
Residence in SMA	10	9	11	8	11	1.67	1.27	1.84	2.08	1.71	17.4	14.8	16.5	25.1	15.8
Urban (Over 1,000,000)	10	9	8	15	11	1.37	1.00	.89	3.92	2.20	14.3	10.7	*	*	*
Urban (Under 1,000,000)	8	6	10	7	7	1.12	1.37	.92	1.29	.63	14.4	*	*	*	*
Rural	12	10	17	7	15	3.06	2.37	4.20	2.51	2.19	24.7	*	24.8	*	*

TABLE B-2.1--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Not in SMA	8	10	9	7	9	1.86	2.12	2.26	1.44	2.04	22.8	20.0	25.9	21.7	*
Urban	10	9	9	12	10	2.77	2.45	3.77	2.08	3.16	26.6	*	*	17.5	*
Rural, Farm	5	*	6	3	7	.57	*	.92	.27	.93	*	*	*	*	*
Rural, Non-farm	8	12	11	4	9	1.89	2.19	1.95	1.74	1.68	22.5	*	*	*	*
Family Income															
Less than $1,500	2	#	1	3	#	.48	+	.01	.93	+	*	*	*	*	*
$1,500 - $2,999	6	2	8	5	11	1.52	.58	1.47	1.41	3.61	25.3	*	*	*	*
3,000 - 4,499	12	12	8	13	20	2.68	2.33	2.62	2.52	4.04	22.3	*	*	19.4	*
4,500 - 5,999	9	9	11	7	9	1.95	1.81	2.71	1.32	1.86	21.7	20.1	*	*	*
6,000 - 7,999	12	12	15	7	11	1.83	1.41	2.87	1.80	.54	15.3	*	19.1	*	*
8,000 - 9,999	11	9	13	13	8	1.86	1.10	1.74	3.65	.51	16.9	*	*	*	*
10,000 - 14,999	9	7	13	6	8	1.36	.83	1.39	1.57	1.85	15.1	*	*	*	*
15,000 and over	12	20	9	*	*	1.18	.53	1.96	*	*	*	*	*	*	*
Education, age 25 or over	3	3	3	2	3	.34	.12	.39	.26	.82	12.3	*	*	*	*
4 yrs. or less	#	#	#	1	*	.01	+	+	.02	*	*	*	*	*	*
5 - 7 yrs.	2	2	1	1	9	.18	.04	.02	.28	.56	*	*	*	*	*
8 yrs.	2	3	2	#	#	.19	.42	.20	+	+	*	*	*	*	*
H.S. 1 - 3 yrs.	4	3	3	6	1	.22	.04	.36	.38	.09	*	*	*	*	*
4 yrs.	4	4	5	2	3	.40	.13	.70	.20	.54	10.0	*	*	*	*
College 1 - 3 yrs.	4	#	4	5	7	1.19	+	.31	.80	4.30	*	*	*	*	*
4 yrs. or more	4	5	5	3	#	.16	.11	.82	.46	+	*	*	*	*	*

TABLE B-2.1--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
White	9	9	10	6	10	1.64	1.53	1.98	1.41	1.58	18.3	16.4	18.9	22.3	16.3
Non-white	10	5	7	12	16	2.67	.69	2.21	2.97	6.65	27.3	*	*	25.7	*
All employed, 14 and over	5	5	6	4	8	.62	.51	.40	.63	1.30	11.3	9.9	6.6	*	*
Professional, technical and kindred workers	5	3	7	2	8	.18	.11	.07	.31	.36	*	*	*	*	*
Managers, officials & proprietors, except farm	2	#	3	3	#	.28	+	.47	.47	+	*	*	*	*	*
Clerical & sales workers (other white collar)	9	10	12	2	10	.78	1.07	.65	.05	1.70	9.1	*	*	*	*
Craftsmen, fore- and kindred	4	2	3	7	*	.74	.67	.57	1.08	*	*	*	*	*	*
Operatives and kindred, laborers	4	4	2	3	12	.55	.15	.26	.09	3.69	*	*	*	*	*
Service workers (includ. private)	8	4	12	7	13	1.21	.79	.64	2.27	.66	*	*	*	*	*
Farm workers	5	*	3	3	6	.27	*	.03	.56	.06	*	*	*	*	*

* Omitted because of insufficient sample size.
Less than .5 percent.
+ Less than .005 days per person.

TABLE B-2.2.--Hiking (On Trails With Pack): Percent of persons 12 yrs. and over participating, days of activity per person and days of activity per participant during June-August 1960 for the United States and major regions by selected socioeconomic characteristics

National Recreation Survey Data

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
All Classes	6	7	5	4	9	.26	.28	.21	.17	.49	4.4	4.2	4.2	3.9	5.4
Male (age in years)	7	8	5	6	9	.33	.36	.26	.23	.64	4.7	4.5	5.2	3.8	*
12 - 17	23	19	19	29	28	1.40	1.07	1.23	1.22	2.84	6.1	*	*	*	*
18 - 24	6	6	3	4	20	.09	.07	.09	.04	.27	*	*	*	*	*
25 - 44	5	6	6	3	4	.14	.07	.18	.08	.36	2.8	*	*	*	*
45 - 64	2	5	#	#	3	.08	.24	+	+	.15	*	*	*	*	*
65 and over	2	5	#	1	5	.26	.97	+	.01	.08	*	*	*	*	*
Female (age in yrs.)	5	6	5	3	9	.20	.21	.17	.12	.37	4.0	3.5	3.4	*	4.1
12 - 17	12	12	11	5	28	.41	.20	.45	.24	.98	3.4	*	*	*	*
18 - 24	5	8	#	6	8	.25	.22	+	.49	.22	*	*	*	*	*
25 - 44	6	7	7	3	8	.18	.21	.18	.05	.41	3.0	*	*	*	*
45 - 64	3	4	4	1	5	.17	.31	.14	.01	.26	*	*	*	*	*
65 and over	#	1	#	#	#	+	.01	+	+	+	*	*	*	*	*
Residence in SMA	6	6	5	5	10	.25	.21	.18	.16	.62	4.2	3.5	3.6	3.2	6.2
Urban (Over 1,000,000)	7	6	6	8	10	.31	.23	.26	.17	.74	4.4	3.8	*	*	*
Urban (Under 1,000,000)	4	5	3	3	9	.17	.19	.11	.08	.52	4.3	*	*	*	*
Rural	6	6	5	6	11	.24	.15	.16	.28	.50	4.0	*	*	*	*

TABLE B-2.2--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Not in SMA	6	10	6	4	8	.27	.51	.26	.18	.29	4.6	5.1	4.3	4.6	*
Urban	7	9	10	2	11	.41	1.01	.35	.20	.40	5.9	*	*	*	*
Rural, Farm	4	*	#	5	6	.09	*	+	.11	.07	*	*	*	*	*
Rural, Non-farm	7	10	7	5	6	.27	.19	.44	.21	.31	3.9	*	*	*	*
Family Income															
Less than $1,500	1	3	1	1	#	.01	.03	.01	.01	+	*	*	*	*	*
$1,500 - $2,999	3	2	#	3	13	.09	.10	+	.06	.37	*	*	*	*	*
3,000 - 4,499	5	6	4	4	4	.25	.30	.07	.10	.86	5.0	*	*	*	*
4,500 - 5,999	7	8	5	6	7	.22	.23	.20	.23	.20	3.1	*	*	*	*
6,000 - 7,999	7	8	5	8	11	.22	.25	.17	.22	.29	3.1	*	*	*	*
8,000 - 9,999	11	10	14	8	9	.59	.56	.83	.48	.36	5.4	*	*	*	*
10,000 - 14,999	9	6	7	9	15	.68	.67	.33	.72	1.15	7.6	*	*	*	*
15,000 and over	9	5	9	*	*	.31	.08	.39	*	*	*	*	*	*	*
Education, age 25 or over	4	5	4	2	5	.14	.23	.11	.03	.26	3.5	4.6	2.8	*	*
4 yrs. or less	#	#	#	#	*	.01	+	+	+	*	*	*	*	*	*
5 - 7 yrs.	1	2	1	#	+	.03	.10	.03	+	+	*	*	*	*	*
8 yrs.	1	4	#	#	3	.04	.14	+	+	.05	*	*	*	*	*
H.S. 1 - 3 yrs.	3	4	5	2	1	.12	.09	.28	.05	.03	*	*	*	*	*
4 yrs.	5	6	6	3	5	.15	.18	.11	.03	.34	3.0	*	*	*	*
College 1-3 yrs.	7	8	7	5	10	.23	.20	.13	.13	.52	*	*	*	*	*
4 yrs. or more	8	13	5	5	9	.62	1.31	.23	.08	.59	*	*	*	*	*

TABLE B-2.2--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
White	6	7	5	5	9	.28	.30	.22	.20	.51	4.7	4.3	4.4	4.0	5.7
Non-white	3	2	5	2	10	.06	.04	.08	.05	.16	*	*	*	*	*
All employed, 14 and over	5	6	4	2	11	.20	.26	.11	.05	.59	4.1	4.6	*	*	5.5
Professional, technical and kindred workers	8	8	5	7	15	.95	1.11	.20	.12	2.74	*	*	*	*	*
Managers, officials and proprietors, except farm	3	4	3	2	6	.11	.05	.09	.08	.28	*	*	*	*	*
Clerical and sales workers (other white collar)	7	8	6	1	17	.18	.29	.10	.01	.43	2.6	*	*	*	*
Craftsmen, foremen and kindred workers	4	8	#	3	*	.09	.12	.06	.09	*	*	*	*	*	*
Operatives and kindred workers, laborers	3	3	3	2	7	.11	.10	.14	.05	.22	*	*	*	*	*
Service workers (including private)	6	4	7	#	18	.13	.09	.16	+	.45	*	*	*	*	*
Farm workers	1	*	#	3	#	.02	*	+	.04	+	*	*	*	*	*

* Omitted because of insufficient sample size.
Less than .5 percent.
+ Less than .005 days per person.

TABLE B-2.3.--Horseback Riding: Percent of persons 12 years and over participating, days of activity per person and days of activity per participant during June-August 1960 for the United States and major regions by selected socioeconomic characteristics

National Recreation Survey Data

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
All Classes	6	4	5	5	11	.42	.29	.32	.43	.88	7.5	6.8	6.0	9.0	8.2
Male (age in years)	7	4	7	6	13	.47	.12	.29	.78	.90	6.7	*	4.1	13.0	6.9
12 - 17	24	12	30	23	33	2.38	.45	1.45	4.11	4.05	9.9	*	*	*	*
18 - 24	11	10	6	8	30	.42	.29	.25	.52	.77	*	*	*	*	*
25 - 44	4	#	4	4	11	.14	.03	.12	.17	.35	3.5	*	*	*	*
45 - 64	2	2	1	1	4	.06	.04	.01	.02	.29	*	*	*	*	*
65 and over	1	2	#	#	#	.01	.03	+	+	+	*	*	*	*	*
Female (age in yrs.)	5	5	4	3	9	.39	.43	.36	.10	.85	7.6	8.6	*	*	9.4
12 - 17	20	20	17	13	38	1.96	1.34	2.00	.48	5.45	9.8	*	*	*	*
18 - 24	6	12	#	8	3	.25	.67	+	.17	.05	*	*	*	*	*
25 - 44	2	1	3	1	6	.04	.03	.07	.02	.06	*	*	*	*	*
45 - 64	2	2	1	1	3	.24	.66	.03	.03	.18	*	*	*	*	*
65 and over	#	#	#	#	#	+	+	+	+	+	*	*	*	*	*
Residence in SMA	5	4	6	4	8	.27	.27	.31	.15	.37	5.4	6.8	5.2	*	4.6
Urban (Over 1,000,000)	5	4	5	8	9	.18	.16	.17	.13	.26	3.6	*	*	*	*
Urban (Under 1,000,000)	5	3	6	3	9	.19	.08	.13	.09	.77	3.8	*	*	*	*
Rural	6	6	7	5	6	.57	1.14	.71	.25	.06	9.5	*	*	*	*

TABLE B-2.3--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Not in SMA	6	5	4	5	15	.65	.34	.34	.65	1.71	10.8	*	*	13.0	11.4
Urban	5	5	5	6	5	.57	.08	.29	1.09	.17	11.4	*	*	*	*
Rural, Farm	6	*	3	5	22	.74	*	.13	.66	2.41	*	*	*	*	*
Rural, Non-farm	7	5	5	4	19	.67	.31	.61	.23	2.67	9.6	*	*	*	*
Family Income															
Less than $1,500	2	1	1	3	6	.24	.03	.02	.41	.31	*	*	*	*	*
$1,500 - $2,999	3	2	3	3	8	.25	.14	.15	.12	1.12	*	*	*	*	*
3,000 - 4,499	4	2	5	4	10	.27	.16	.15	.16	1.00	6.8	*	*	*	*
4,500 - 5,999	6	4	5	5	15	.68	.33	.41	1.27	1.26	11.3	*	*	*	*
6,000 - 7,999	7	5	7	8	8	.55	.38	.58	.29	1.22	7.9	*	*	*	*
8,000 - 9,999	7	3	8	8	11	.36	.14	.22	.51	.68	*	*	*	*	*
10,000 - 14,999	11	10	7	12	18	.40	.59	.19	.59	.25	3.6	*	*	*	*
15,000 and over	13	17	13	*	*	.75	.65	1.21	*	*	*	*	*	*	*
Education, age 25 or over	2	1	2	2	5	.10	.16	.05	.05	.17	5.0	*	*	*	*
4 yrs. or less	#	#	#	#	*	+	+	+	+	*	*	*	*	*	*
5 - 7 years	#	#	2	#	#	.01	+	.06	+	+	*	*	*	*	*
8 years	1	1	#	1	3	.05	.03	+	.08	.23	*	*	*	*	*
H.S. 1 - 3 yrs.	3	1	3	3	6	.05	.01	.06	.05	.17	*	*	*	*	*
4 years	3	2	3	1	7	.19	.38	.09	.07	.22	6.3	*	*	*	*
College 1 - 3 yrs.	3	2	2	5	2	.06	.09	.01	.11	.02	*	*	*	*	*
4 yrs.or more	5	4	5	5	9	.27	.50	.07	.08	.39	*	*	*	*	*

TABLE B-2.3--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
White	5	4	5	5	10	.41	.30	.34	.45	.70	8.2	7.5	6.8	9.0	7.0
Non-white	4	2	4	3	19	.52	.09	.07	.38	4.10	*	*	*	*	*
All employed, 14 and over	5	4	3	3	13	.24	.28	.10	.10	.77	5.2	*	*	*	5.8
Professional, technical and kindred workers	7	4	5	#	21	.25	.07	.07	+	1.13	*	*	*	*	*
Managers, officials and proprietors, except farm	3	#	3	7	3	.11	+	.03	.32	.06	*	*	*	*	*
Clerical and sales workers (other white collar)	6	8	4	4	9	.38	.94	.12	.11	.19	*	*	*	*	*
Craftsmen, foremen and kindred workers	3	#	4	3	*	.13	+	.07	.14	*	*	*	*	*	*
Operatives and kindred workers, laborers	3	3	2	2	12	.17	.06	.13	.08	.81	*	*	*	*	*
Service workers (including private)	6	6	4	1	24	.22	.20	.05	.04	1.00	*	*	*	*	*
Farm workers	6	*	3	2	21	.39	*	.16	.06	2.03	*	*	*	*	*

* Omitted because of insufficient sample size.
Less than .5 percent.
+ Less than .005 days per person.

TABLE B-2.4.--Nature Walks (To Observe Birds, Animals, Plants, Etc.): Percent of persons 12 years and over participating, days of activity per person and days of activity per participant during June-August 1960 for the United States and major regions by selected socio-economic characteristics

National Recreation Survey Data

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
All Clases	14	15	15	12	16	.75	1.14	.60	.55	.69	5.2	7.5	3.9	4.6	4.3
Male (age in years)	12	13	11	11	13	.76	1.24	.54	.55	.72	6.3	9.5	4.9	5.0	5.5
12 - 17	27	25	28	29	21	2.10	3.76	1.45	1.86	.84	7.8	*	*	*	*
18 - 24	14	22	13	12	7	1.03	2.33	1.07	.38	.13	7.4	*	*	*	*
25 - 44	11	10	12	9	18	.31	.31	.41	.19	.36	2.8	*	*	*	*
45 - 64	7	11	5	6	8	.64	.82	.22	.50	1.64	9.1	*	*	*	*
65 and over	4	8	3	#	5	.33	1.10	.03	+	.24	*	*	*	*	*
Female (age in yrs.)	17	17	19	13	19	.74	1.05	.65	.55	.66	4.4	6.2	3.4	4.2	3.5
12 - 17	30	30	36	22	30	1.16	1.47	1.14	1.02	.94	3.9	*	3.2	*	*
18 - 24	17	18	21	13	14	.65	.61	.83	.73	.16	3.8	*	*	*	*
25 - 44	18	16	21	14	25	.73	.93	.72	.38	1.05	4.1	5.8	3.4	2.7	*
45 - 64	13	15	13	11	10	.69	1.24	.35	.57	.38	5.3	*	*	*	*
65 and over	8	9	3	8	11	.53	1.02	.30	.33	.36	*	*	*	*	*
Residence in SMA	16	14	19	15	15	.78	1.03	.75	.58	.54	4.9	7.4	3.9	3.9	3.6
Urban (Over 1,000,000)	15	16	17	19	9	.92	1.16	.88	.48	.44	6.1	7.3	5.2	*	*
Urban (Under 1,000,000)	15	8	21	13	21	.58	.45	.71	.61	.48	3.9	*	3.4	4.7	*
Rural	17	13	19	16	21	.82	1.54	.61	.59	.83	4.8	*	3.2	3.7	*

TABLE B-2.4--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Not in SMA	12	18	10	10	17	.70	1.47	.36	.52	.93	5.8	8.2	3.6	5.2	5.5
Urban	13	11	12	14	12	.61	.49	.45	.86	.35	4.7	*	*	6.1	*
Rural, Farm	11	*	8	9	20	.57	*	.25	.33	2.26	5.2	*	*	*	*
Rural, Non-farm	13	22	9	7	19	.85	2.12	.36	.36	.66	6.5	9.6	*	*	*
Family Income															
Less than $1,500	4	7	3	4	#	.31	1.06	.30	.13	+	*	*	*	*	*
$1,500 - $2,999	9	4	11	8	17	.31	.26	.52	.22	.24	3.4	*	*	*	*
3,000 - 4,499	12	14	9	13	13	.92	1.33	.30	.69	1.74	7.7	9.5	*	5.3	*
4,500 - 5,999	17	14	20	16	22	.81	.94	.82	.62	.76	4.8	6.7	4.1	3.9	*
6,000 - 7,999	20	23	19	16	20	.84	1.30	.68	.58	.54	4.2	5.7	3.6	*	*
8,000 - 9,999	23	21	27	20	22	1.08	1.49	1.00	1.15	.60	4.7	*	3.7	*	*
10,000 - 14,999	16	15	19	17	14	.60	.61	.60	.83	.39	3.8	*	*	*	*
15,000 and over	19	27	20	*	*	1.70	4.63	.46	*	*	*	*	*	*	*
Education, age 25 or over	12	13	12	9	16	.57	.86	.40	.37	.73	4.8	6.6	3.3	4.1	4.8
4 years or less	1	#	2	2	*	.02	+	.02	.03	*	*	*	*	*	*
5 - 7 years	7	11	3	6	9	.48	1.05	.29	.29	.19	6.9	*	*	*	*
8 years	8	11	8	4	7	.42	.90	.24	.10	.52	5.3	*	*	*	*
H.S. 1 - 3 yrs.	12	12	12	9	15	.47	.69	.39	.22	.51	3.9	*	*	*	*
4 years	15	15	15	15	15	.64	.85	.49	.75	.40	4.3	5.7	3.3	5.0	*
College 1 - 3 yrs.	22	24	21	14	31	1.12	2.30	.79	.29	1.34	5.1	*	*	*	*
4 yrs. or more	16	12	16	21	18	.96	.46	.44	1.00	2.54	6.0	*	*	*	*

TABLE B-2.4--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
White	15	15	16	13	16	.79	1.18	.62	.62	.69	5.3	7.9	3.9	4.8	4.3
Non-white	11	16	10	9	23	.33	.51	.27	.25	.68	3.0	*	*	*	*
All employed, 14 and over	12	13	13	9	15	.61	.92	.44	.41	.83	5.1	7.2	3.5	4.3	5.4
Professional, technical and kindred workers	17	14	20	14	21	.69	.71	.75	.52	.74	4.1	*	*	*	*
Managers, officials and proprietors, except farm	10	5	12	12	9	.56	.79	.21	.82	.41	*	*	*	*	*
Clerical and sales workers (other white collar)	14	17	15	6	24	.53	.75	.40	.16	.96	3.6	*	*	*	*
Craftsmen, foremen and kindred workers	14	19	12	13	*	.94	2.20	.51	.30	*	6.5	*	*	*	*
Operatives and kindred workers, laborers	10	11	13	5	9	.55	.84	.58	.39	.09	5.8	*	*	*	*
Service workers (including private)	11	9	11	13	11	.31	.27	.43	.29	.21	2.8	*	*	*	*
Farm workers	8	*	6	9	15	.88	*	.19	.67	3.52	*	*	*	*	*

* Omitted because of insufficient sample size.
Less than .5 percent.
+ Less than .005 days per person.

TABLE B-2.5.--Walking for Pleasure: Percent of persons 12 years and over participating, days of activity per person and days of activity per participant during June-August 1960 for the United States and major regions by selected socioeconomic characteristics

National Recreation Survey Data

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
All Classes	33	43	29	27	34	4.34	6.46	3.66	3.18	3.88	13.1	15.1	12.6	11.8	11.4
Male (age in yrs.)	28	40	23	22	29	3.76	6.02	3.52	2.40	2.74	13.4	15.1	15.3	10.9	9.4
12 - 17	43	59	33	38	44	5.08	7.18	6.19	2.85	3.88	11.8	12.2	18.8	7.5	*
18 - 24	26	40	29	21	7	3.31	4.65	3.13	3.70	.17	12.7	*	*	*	*
25 - 44	27	37	24	22	26	2.36	3.28	2.27	2.00	1.40	8.7	8.9	9.5	9.1	*
45 - 64	22	34	17	15	26	3.02	6.09	1.73	1.55	3.01	13.7	17.9	10.2	*	*
65 and over	26	38	19	16	41	8.60	15.20	9.01	3.60	6.65	32.4	*	*	*	*
Female (age in yrs.)	38	46	34	32	39	4.87	6.85	3.79	3.93	4.86	12.8	14.9	11.1	12.3	12.5
12 - 17	64	69	59	66	66	9.57	13.66	7.43	9.94	7.26	15.0	19.8	12.6	15.1	11.0
18 - 24	41	50	38	36	38	6.14	8.07	4.79	4.80	8.00	15.0	16.1	*	13.3	*
25 - 44	40	52	33	32	44	4.02	6.26	3.08	3.02	3.14	10.1	12.0	9.3	9.4	7.1
45 - 64	28	34	27	24	27	4.08	5.97	2.49	3.38	4.75	14.6	17.6	9.2	14.1	*
65 and over	19	29	16	7	24	2.70	3.45	2.96	.31	4.35	14.2	*	*	*	*
Residence in SMA	38	45	36	29	39	5.18	7.00	4.66	3.28	4.62	13.6	15.6	12.9	11.3	11.8
Urban (Over 1,000,000)	45	49	38	51	43	7.13	8.11	5.88	7.15	6.06	15.8	16.6	15.5	14.0	14.1
Urban (Under 1,000,000)	33	37	39	27	30	4.12	4.98	4.80	2.85	4.13	12.5	13.5	12.3	10.6	13.8
Rural	31	38	29	23	42	3.10	5.54	2.85	2.15	2.30	10.0	14.6	9.8	9.3	5.5

TABLE B-2.5--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
Not in SMA	25	37	17	25	27	3.05	4.83	2.02	3.10	2.68	12.2	13.1	11.9	12.4	9.9
Urban	32	37	21	40	27	4.98	4.25	3.72	6.16	4.93	15.6	11.5	17.7	15.4	*
Rural, Farm	20	*	16	22	19	1.37	*	.92	1.82	.65	6.8	*	*	8.3	*
Rural, Non-farm	22	38	15	13	31	2.40	5.57	1.24	1.12	1.85	10.9	14.7	*	9.2	*
Family Income															
Less than $1,500	19	34	16	17	19	5.20	10.34	5.74	3.92	1.59	26.5	*	*	23.1	*
$1,500 - $2,999	28	38	26	24	37	4.72	9.46	3.66	2.29	8.66	16.9	24.9	14.1	9.5	*
3,000 - 4,499	32	38	27	27	39	4.06	5.59	3.77	2.98	3.75	12.7	14.7	14.0	11.0	9.6
4,500 - 5,999	36	46	30	33	29	4.21	6.21	3.43	2.37	3.31	11.7	13.5	11.4	7.2	11.4
6,000 - 7.999	37	48	31	27	37	4.31	5.62	3.42	4.19	3.49	11.6	11.7	11.0	15.5	9.4
8,000 - 9,999	37	39	36	40	32	3.61	6.36	2.28	3.64	2.34	9.8	16.3	6.3	9.1	*
10,000 - 14,999	37	44	35	25	43	4.07	4.99	3.47	2.90	4.69	11.0	11.3	9.9	*	10.9
15,000 and over	46	67	36			6.66	10.23	4.66	*	*	14.5	*	*	*	*
Education, age 25 or over	29	40	24	22	32	3.71	5.84	2.95	2.43	3.47	12.8	14.6	12.3	11.0	10.8
4 yrs. or less	20	28	16	15	*	3.80	6.07	5.15	1.80	*	19.0	*	*	*	*
5 - 7 yrs.	25	37	24	17	34	3.85	7.28	2.51	2.10	6.10	15.4	19.7	*	12.4	*
8 years	25	41	18	18	27	3.82	7.01	2.53	2.78	2.29	15.3	17.1	14.1	*	*
H.S. 1-3 yrs.	29	34	29	23	26	3.27	5.15	2.75	1.75	2.22	11.3	15.1	9.5	7.6	*
4 yrs.	32	48	24	23	34	3.11	4.99	2.75	1.58	2.72	9.7	10.4	11.5	6.9	8.0
College 1-3 yrs.	33	31	25	39	39	4.26	4.13	2.19	5.73	5.44	12.9	*	*	14.7	*
4 yrs.or more	39	51	40	29	30	5.69	7.41	6.14	4.07	4.18	14.6	14.5	*	*	*

TABLE B-2.5--Continued

Socioeconomic Characteristic	% Participating					Days per Person					Days per Participant				
	US	NE	NC	S	W	US	NE	NC	S	W	US	NE	NC	S	W
White	32	42	27	25	35	4.27	6.56	3.46	2.79	3.98	13.3	15.6	12.8	11.2	11.4
Non-white	40	54	51	33	26	4.93	5.15	6.30	4.71	2.19	12.3	9.5	12.4	14.3	*
All employed, 14 and over	29	39	26	22	30	2.90	4.61	2.29	1.95	2.81	10.0	11.7	8.8	8.8	9.4
Professional, technical and kindred workers	35	32	31	31	51	4.43	5.44	3.64	2.90	5.41	12.6	*	*	*	*
Managers, officials and proprietors, except farm	26	34	28	22	16	2.90	5.62	2.97	1.20	1.16	11.2	*	*	*	*
Clerical & sales workers (other white collar)	37	50	33	28	31	3.66	5.45	2.77	1.91	4.61	9.9	10.8	8.4	6.9	*
Craftsmen, foremen & kindred workers	25	40	19	14	*	2.30	4.92	.74	1.49	*	9.3	12.3	*	*	*
Operatives and kindred workers, laborers	26	37	23	17	28	2.76	3.65	3.19	2.11	.74	10.6	9.9	13.8	*	*
Service workers (including private)	32	34	32	28	34	2.50	3.34	1.64	1.83	4.21	7.9	*	*	*	*
Farm workers	19	*	17	21	15	1.36	*	.64	2.33	.58	7.1	*	*	*	*

* Omitted because of insufficient sample size.

TABLE B-3.--Participation in preferred activities (first, second or third choice) by persons 12 years and over by preferred activity and family income--summer period 1960

National Recreation Survey Data

Family Income	All with Preferences	Percent Participating Freely*	Percent restricted by: Facilities #	Time-Money	Ability +	Other
	Attending outdoor concerts & drama					
All Classes	100	19	31	35	4	10
Less than $3,000	100	9	27	36	6	21
$ 3,000 - $ 5,999	100	24	36	24	3	13
6,000 - 9,999	100	18	30	49	##	4
10,000 and over	100	**	**	**	**	**
	Attending outdoor sports events					
All Classes	100	36	10	46	3	5
Less than $3,000	100	31	10	43	7	8
$ 3,000 - $ 5,999	100	33	9	53	1	3
6,000 - 9.999	100	48	7	38	1	6
10,000 and over	100	34	14	44	3	6
	Bicycling					
All Classes	100	56	4	36	1	3
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $5,999	100	63	7	25	2	3
6,000 - 9,999	100	51	2	45	##	2
10,000 and over	100	**	**	**	**	**
	Boating other than sailing or canoeing					
All Classes	100	27	9	58	2	3
Less than $3,000	100	17	17	59	6	2
$ 3,000 - $ 5,999	100	25	9	57	3	7
6,000 - 9,999	100	27	8	62	1	1
10,000 and over	100	34	9	56	1	##
	Camping					
All Classes	100	23	7	58	3	10
Less than $3,000	100	10	7	67	7	10
$ 3,000 - $ 5,999	100	23	5	58	3	10
6,000 - 9,999	100	27	10	51	2	11
10,000 and over	100	25	9	60	##	6
	Driving for pleasure					
All Classes	100	53	1	38	4	4
Less than $3,000	100	39	##	52	7	2
$ 3,000 - $ 5,999	100	56	##	36	4	4
6,000 - 9,999	100	57	3	32	3	6
10,000 and over	100	65	##	34	##	1

TABLE B-3--Continued

Family Income	All With Preference	Percent Participating Freely *	Percent restricted by: Facilities #	Time-Money	Ability +	Other
			Fishing			
All Classes	100	25	7	57	5	6
Less than $3,000	100	24	7	56	9	5
$ 3,000 - $ 5,999	100	28	6	57	4	6
6,000 - 9,999	100	23	10	56	2	8
10,000 and over	100	18	10	63	1	8
			Hiking			
All Classes	100	34	12	39	6	8
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $ 5,999	100	39	4	46	4	7
6,000 - 9,999	100	21	15	52	3	9
10,000 and over	100	**	**	**	**	**
			Horseback riding			
All Classes	100	25	15	49	6	5
Less than $3,000	100	32	2	59	5	2
$ 3,000 - $ 5,999	100	24	14	54	5	2
6,000 - 9,999	100	22	15	47	6	9
10,000 and over	100	29	22	41	2	6
			Hunting			
All Classes	100	24	7	54	9	6
Less than $3,000	100	26	7	52	9	6
$ 3,000 - $ 5,999	100	26	3	54	9	9
6,000 - 9,999	100	19	13	56	10	1
10,000 and over	100	17	17	53	6	8
			Nature walks			
All Classes	100	37	10	35	10	7
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $ 5,999	100	40	12	33	9	7
6,000 - 9,999	100	43	9	36	6	6
10,000 and over	100	**	**	**	**	**
			Picnicking			
All Classes	100	42	5	39	4	10
Less than $3,000	100	32	5	45	8	10
$ 3,000 - $ 5,999	100	43	4	40	3	11
6,000 - 9,999	100	47	6	35	2	10
10,000 and over	100	58	3	32	2	5

TABLE B-3--Continued

Family Income	All With Preference	Percent Participating Freely *	Percent restricted by # Facilities	Time-Money	Ability +	Other
		Playing other games or sports				
All Classes	100	49	8	33	5	5
Less than $3,000	100	48	7	27	11	7
$ 3,000 - $ 5,999	100	51	8	33	4	4
6,000 - 9,999	100	49	4	40	3	3
10,000 and over	100	46	11	32	2	9
		Playing baseball				
All Classes	100	45	10	32	3	10
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $ 5,999	100	33	8	45	6	8
6,000 - 9,999	100	58	11	18	##	13
10,000 and over	100	**	**	**	**	**
		Playing golf				
All Classes	100	33	8	49	3	7
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $ 5,999	100	29	10	55	2	5
6,000 - 9,999	100	39	4	47	3	7
10,000 and over	100	33	12	43	3	9
		Playing tennis				
All Classes	100	24	22	42	9	3
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $ 5,999	100	29	16	48	3	3
6,000 - 9,999	100	20	17	40	23	##
10,000 and over	100	**	**	**	**	**
		Sightseeing				
All Classes	100	32	2	55	5	7
Less than $3,000	100	21	3	58	8	10
$ 3,000 - $ 5,999	100	34	1	55	4	6
6,000 - 9,999	100	38	3	52	3	5
10,000 and over	100	37	##	58	3	2
		Swimming				
All Classes	100	39	13	38	5	5
Less than $3,000	100	29	14	43	8	5
$ 3,000 - $ 5,999	100	36	12	41	5	6
6,000 - 9,999	100	42	14	37	2	5
10,000 and over	100	47	15	32	2	4

TABLE B-3--Continued

Family Income	All With Preference	Percent Participating Freely *	Percent restricted by: Facilities#	Time-Money	Ability +	Other
		Walking for pleasure				
All Classes	100	64	3	18	11	5
Less than $3,000	100	65	1	13	17	4
$ 3,000 - $ 5,999	100	67	3	17	9	5
6,000 - 9,999	100	50	5	30	10	6
10,000 and over	100	72	2	16	5	5
		Water skiing				
All Classes	100	19	12	62	4	3
Less than $3,000	100	**	**	**	**	**
$ 3,000 - $ 5,999	100	17	10	67	3	3
6,000 - 9,999	100	12	12	64	8	3
10,000 and over	100	29	18	52	2	##

* Participating in preferred activity "as often as he likes."

Does not participate as often as desired because facilities are too crowded, inadequate or distant.

+ Unable because of lack of skill, age, physical condition or fear.

**Omitted because of insufficient sample size.

##Less than .5 percent.

TABLE B-4.--Participation in preferred activities by persons 12 years and over with some preference (first, second or third choice) for selected activities, summer 1960, by activity and sex

National Recreation Survey Data

	Preferred activity (first, second, or third choice)									
	Swimming	Fishing	Boating other than sailing or canoeing	Water skiing	Camping	Hunting	Hiking	Nature walks	Picnicking	Playing golf
All persons (percent)										
All	100	100	100	100	100	100	100	100	100	100
Participating freely *	39	25	27	19	23	24	34	37	42	33
Restrictions										
Facilities #	13	7	9	12	7	7	12	10	5	8
Financial +	7	9	32	33	10	6	4	2	7	7
Time **	32	48	26	29	47	48	36	33	32	42
Ability ##	5	5	2	4	3	9	6	10	4	3
Other	5	6	3	3	10	6	8	7	10	7
Male (percent)										
All	100	100	100	100	100	100	100	100	100	100
Participating freely *	42	24	25	18	22	23	39	26	49	29
Restrictions										
Facilities #	12	7	9	12	8	7	2	31	4	6
Financial +	5	9	34	37	9	6	8	3	6	8
Time **	35	51	28	30	51	48	37	38	33	47
Ability ##	4	4	2	2	3	9	8	13	3	3
Other	4	4	1	1	8	6	6	***	5	7

TABLE B-4--Continued

	Preferred activity (first, second, or third choice)									
	Playing baseball ++	Playing tennis	Playing other games and sports	Walking for pleasure	Horseback riding	Bicycling	Driving for pleasure	Sightseeing	Attending outdoor sports events ++	Attending outdoor concerts
All persons (percent)										
All	100	100	100	100	100	100	100	100	100	100
Participating freely *	45	24	49	64	25	56	53	32	36	19
Restrictions:										
Facilities #	10	22	8	3	15	4	1	2	10	31
Financial +	2	9	3	1	26	24	18	15	12	11
Time **	31	33	30	17	23	12	21	40	35	25
Ability ##	3	9	5	11	6	1	4	5	3	4
Other	10	3	5	5	5	3	4	7	5	10
Male (percent)										
All	100	100	100	100	100	100	100	100	100	100
Participating freely *	44	24	51	74	28	69	55	33	33	22
Restrictions:										
Facilities #	10	30	7	2	15	***	1	***	9	38
Financial +	***	6	1	2	22	22	15	12	9	4
Time **	31	33	31	12	25	7	24	47	41	25
Ability ##	4	6	5	9	7	***	3	4	3	4
Other	11	***	4	2	5	2	1	4	4	7

TABLE B-4--Continued

	Preferred activity (first, second, or third choice)									
	Swimming	Fishing	Boating other than sailing or canoeing	Water skiing	Camping	Hunting	Hiking	Nature walks	Picnicking	Playing golf
Female (percent)										
All	100	100	100	100	100	100	100	100	100	100
Participating freely *	37	26	29	20	24	30	31	41	39	42
Restrictions:										
Facilities #	15	8	10	12	7	3	20	6	5	14
Financial +	8	10	29	26	12	3	***	2	8	5
Time **	29	40	24	28	43	47	35	31	31	31
Ability ##	5	5	2	7	3	7	5	9	4	3
Other	6	11	6	6	12	10	9	11	12	5

* Persons participating freely engage in the activity as often as desired.

Restricted by facilities which are too crowded, inadequate or distant.

+ Restricted by lack of money, equipment or Transportation.

**Restricted by lack of time due to work or family responsibilities.

TABLE B-4--Continued

	Preferred activity (first, second, or third choice)									
	Playing baseball ++	Playing tennis	Playing other games or sports	Walking for pleasure	Horseback riding	Bicycling	Driving for pleasure	Sightseeing	Attending outdoor sports events ++	Attending outdoor concerts, drama
Female (percent)										
All	###	100	100	100	100	100	100	100	100	100
Participating freely *	###	23	47	60	23	48	51	32	42	18
Restrictions:										
Facilities #	###	18	9	3	15	6	1	3	10	28
Financial +	###	11	7	1	30	26	19	16	15	14
Time **	###	32	28	19	22	15	19	36	24	24
Ability ##	###	11	4	11	5	1	5	5	2	5
Other	###	5	6	6	6	4	6	8	7	11

Unable because of physical condition, age (too young or too old), or fear.

++ Persons with preference for baseball unspecified active or passive are excluded.

*** Less than .5 percent.

Omitted because of insufficient sample size.

TABLE B-5.--Percent of persons indicating preference for selected activities by order of preference and time available, summer period, 1960

National Recreation Survey Data

	By Order of Preference				First Preference by Time Available			
	1st	2nd	3rd	Some (1st,2nd or 3rd)	Vacation	Week-end trip	Day's outing	2-3 hrs.
Water Activities	44	28	19	*	38	31	29	17
Swimming	22	12	7	42	22	14	14	10
Fishing	18	9	6	33	14	13	11	5
Boating, other than sailing or canoeing	2	5	4	11	2	3	3	1
Water skiing	2	2	1	5	1	1	1	#
Land Activities	8	10	8	*	6	6	3	2
Camping	4	3	3	10	3	4	#	#
Hunting	3	4	2	10	1	1	1	1
Hiking	#	1	1	3	1	1	1	#
Nature walks	1	1	1	3	1	1	1	1
Other Activities	24	26	24	*	9	9	38	27
Picnicking	10	13	10	33	3	4	31	3
Playing outdoor games or sports +	8	6	5	*	3	3	5	11
Golf	2	1	1	4	1	1	1	2
Baseball	1	1	#	3	#	#	1	2
Tennis	#	1	1	2	#	#	#	1
Other	4	3	4	10	2	1	3	6
Walking for pleasure	3	3	4	11	2	1	2	10
Horseback riding	2	2	2	6	1	1	1	1
Bicycling	#	1	2	3	#	#	#	2

TABLE B-5--Continued

	By Order of Preference				First Preference by Time Available			
	1st	2nd	3rd	Some (1st,2nd or 3rd)	Vacation	Week-end Trip	Day's outing	2-3 hrs.
Other Passive Activities +	15	21	24	*	28	28	13	26
Driving for pleasure	7	9	9	25	5	7	4	15
Sightseeing	4	7	8	18	21	18	7	2
Attending outdoor sports events +	3	4	5	11	1	2	1	2
Attending outdoor concerts, drama, etc.	1	1	2	4	#	#	#	1
No Preferences	5	13	23	*	18	25	15	22

* The percent of persons indicating "some" preference for grouped activities is not available. A particular activity occurs only once in the preference order of any particular sample person; however, within activity groups an unknown amount of duplication of some persons occurs.

Less than .5%.

+ Preferences for baseball unknown with respect to active or passive ("some" preference equals 5%) have been omitted from all sections of this table.

APPENDIX

APPENDIX A

THE SOCIAL FUNCTION OF OPEN SPACES*

by Lewis Mumford

The very title chosen for this paper, "The Social Function of Open Spaces," shows that a change has taken place during the last generation in our conception of open spaces in relation to the urban and regional environment. People in the 19th Century were conscious, primarily, of the hygienic and sanitary function of open spaces. Even Camillo Sitte called the inner parks of the city "sanitary greens." In order to offset the increasing congestion and disorder of the city, great landscape parks were laid out in the neighboring countryside, more or less in the fashion that the aristocracy had promoted for their private country estates.

Given the high densities for dwellings that have prevailed in big cities, it was natural, no doubt, that there should be an emphasis on the biological necessity for open spaces: the value of sunlight, fresh air, free movement in promoting health and the psychological need for the sight of grass, bushes, flowers, trees. The park was treated, not as an integral part of the urban environment but as a place of refuge, whose main values derived from its contrast with the noisy, crowded, dusty urban hive. So impoverished were most modern cities, except where they inherited parks, open squares and playing fields from previous centuries, that open spaces came to be treated as if their value was directly proportional to their area--without too much regard for their formal beauty, their accessibility, their frequency of use or their effect in altering the texture of urban life. Those who believed that gardens and parks and a rural environment were essential to humane urban living moved, if they had the means, to a spacious suburb; and in the very act of seeking this all-too-simple solution, they permitted the city itself to become further congested and pushed the open country ever farther away from its center.

Today our appreciation of the biological function of open spaces should be even deeper, now that their aid in sustaining life is threatened by radio-active pollution and the air itself around every urban center is filled with a multitude of cancer-producing substances. But, in addition, we have learned that open spaces have also a social function to perform which the mere demand for a rural refuge too often overlooks.

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To understand how important the social function of open spaces is, we must take into account three great changes that have taken place during the last century. First, the change in the scale of human settlement brought about by fast transportation and instantaneous means of communication. As a result, physical congestion is no longer the sole way of bringing a large population into intimate contact and co-operation. From this has come a new order of design, based upon the open plan and low density settlement: for in the suburbs that have been growing so rapidly around the great centers, the buildings exist, ideally, as free-standing structures in a parklike landscape. Too often the trees, gardens and fields vanish under further pressure of population, yet the sprawling, open, individualistic structure--almost an anti-social structure--remains. The third great change is the general reduction of working hours, along with an increasing shift of work itself from industrial occupations to services and professional vocations. Instead of being faced with a small leisured class, we have now to provide recreational facilities for a whole leisured population. Mark the consequences of this last transformation. If this emancipation from incessant toil is not to become a curse, we must create a whole series of alternatives to the sedatives and anesthetics now being offered--especially the anesthesia of locomotion at an ever higher rate of speed and an ever lower return in esthetic pleasure and meaningful purpose. In meeting this challenge we may do well to re-examine the experience of the historic aristocracies who, when not engaged in aimless violence and destruction, devoted so much of their energies to the audacious transformation of the whole landscape. Once we accept the challenge of creating an environment so rich in human resources that no one would willingly leave it even temporarily on a Jules Verne astronautic vacation, we shall alter the whole pattern of human settlement. Ebenezer Howard's dream of garden cities will widen into the prospect of a garden civilization.

How very little of the planning that has been projected or achieved during the last generation has taken this new situation into account. Indeed, the chief work that has been done in urban extension and in highway building has been under a curious compulsion to serve the machine rather than to respond to human needs. Unless fresh ideas are introduced, the continued growth of loose suburban areas will undermine, and eventually destroy, our historic cities and deface the natural landscape, creating a large mass of undifferentiated lowgrade urban tissue, which, in order to enable its inhabitants to perform even the minimal functions necessary in the city, will impose a vast amount of locomotion, public and private, and incidentally, push the countryside ever farther away from even the suburban areas. This kind of openness and low density is another name for social and civic disintegration, such as we find in cities like Los Angeles, where one half of

its central area is dedicated to the movement and storage of motorcars. Meanwhile, the great landscape parks at the periphery of our old cities become neglected, though a long motor ride to areas beyond often leads to a far less attractive destination. While this is happening, the more distant public recreation areas by woods, lake or sea are left to stagger under a weekend congestion that robs that facility of its recreative value, for the motor car brings to such distant areas the combined population, not just of a city but of a whole region. As a result of these changes, in particular our over-attention to movement and our under-attention to settlement and cultivation, the very words "park" and "field" have taken on new meanings. "Park" now usually means a desert of asphalt, designed as a temporary storage space for motor cars; while "field" means another kind of artificial desert, planted in great concrete strips, covering square miles, not acres, vibrating with noise, dedicated to the arrival and departure of planes. From park and field unroll wide ribbons of concrete that seek to increase the speed of travel between distant points at whatever sacrifice of esthetic pleasure or social opportunities. Thus wasteland grows at the expense of parkland; and instead of recreation--re-creation--we have de-creation, or the organized dissipation of human energy with a minimum return in health, vitality and joy.

If our present system of development goes on, without a profound change in our present planning concepts and values, the final result will be a universal wasteland, unfit for human habitation, no better than the surface of the moon. No wonder people play with projects for exploring interplanetary space; we have turned the landscape around our great cities into a mere launching platform, and our monotonous daily journeys in the cramped interiors of motor cars are a preparatory exercise for the even more cramped and comatose journeys by rocket. Perhaps the first step toward regaining possession of our souls will be to re-possess and re-plan the whole landscape. Let us face the facts of life. To turn away from the processes and patterns of life, growth, reproduction; to prefer the disintegrated, the accidental, the random, to organic form and orders is, in fact, to commit collective suicide; and, by the same token, to create a counter-movement to the irrationalities and threatened exterminations of our day, we must draw close once more to the healing order of humanized nature and create a harmonious ecological pattern based on primary human needs--not just on transportation.

The time has come in landscape design, I submit, to conceive alternatives for the classic and romantic cliches of the past, and for the even more sterile cliches of the mechanical "space-eaters," who would destroy all the esthetic resources of the landscape in their effort to enable tens of thousands

of people to crowd together at the same time. What happens when their weekend mass of tourists finally reach such a point? They can only accept the congested facilities and reproduce the banal amusements of the very community they have made such a desperate effort to escape. So it is not by a mere quantitative increase in the present park facilities, but by a comprehensive change in the whole urban and regional pattern, that we shall realize to the full the social function of open spaces.

And first, one must think of large open spaces, outside the existing urban areas, as no longer adequately represented by a few landscape parks or wild reservations, however extensive; nothing less than a whole region, the larger part of which is in a state of natural growth and economic cultivation, will suffice to meet the needs of our new style of recreation, open to the larger part of the population. The most important immediate task around every growing urban center is to reserve permanent open areas, capable of being maintained for agriculture, horticulture and related rural industries. These areas must be established in such a fashion as to prevent the coalescence of one urban area into another. Though the provision of the urban greenbelt in part meets this need, we must now think of not a greenbelt but rather a permanent green matrix dedicated permanently to rural uses, whether it comes under public control or remains in private hands. For weekend recreation, the whole landscape has become, in fact, the landscape park. That area is too large to acquire for park purposes alone; and its upkeep, if under the state or municipal control, would overburden the largest budget. By firm legal regulation the land, though mainly worked by individuals, may be zoned permanently for rural uses in a fashion that will maintain its recreational value, provided both highway system and recreational facilities are planned so as to disperse the transient population.

The new task for the landscape architect is to articulate the whole landscape so that every part of it may serve for recreation. Besides stabilizing agricultural land by zoning, so that it will not, without public authorization, be used for urban residential or industrial building, the task of the landscape architect will be to design footpaths, picnicking grounds, sequestered groves, pedestrian pleasances, along riverfronts and beaches, in such a fashion as to give public access to every part of the rural scene, without undue disturbance to the daily round of life. One must think of the new public areas as long continuous strips of public land, visually penetrating, opening up, but not otherwise trespassing on, the countryside.

There is the beginning of this new process of using the whole landscape as a recreational facility in the layout of bicycle paths in the Netherlands; as there remains in certain parts

of England, as a residue from a quite different era, a system of public footpaths over hill and dale, through field and wood, a system that needs only to be broadened into somewhat wider strips, no more than twenty-five of fifty feet, to provide amply for public needs without encroaching too heavily on agricultural uses. The same kind of planning would even apply to the motor road, once the object was to achieve, not the maximum amount of speed, but the maximum amount of relaxation and beauty in slow drives designed to open up views, and persuade the driver, not to press forward at high speed to a more distant point, but to linger where shade and rich foliage and spicy air were his without further effort. Even in the design of faster highways, those recreational values that have nothing to do with speed can be brought into play by the resourceful landscape architect: thus the design of the Taconic State Parkway in New York State, following the ridgeway in great curves, heavily planted with flowering bushes, opening wide views, from time to time, on the valley below, offers special rewards to the motorist.

While our facilities for mass transportation are responsible for opening up the whole region as a recreational area and public park, the landscape architect must boldly challenge the transportation authorities and highway engineers who have made a fetish of speed, in order to justify the extravagant costs of their enterprise by attracting the maximum load of traffic. Speed is a cheap mass substitute for a life devoid of any more significant kind of esthetic interest. But if our object is to disperse traffic, avoid congestion, and promote enjoyment we must round out our highway system, not by building more speedways, but by laying out or rehabilitating minor roads designed for just the opposite purpose; namely, to tempt him to slow down, to stretch his legs and relax, to spend more time in enjoying the natural beauties near at hand, and less time in trying to reach some more distant point where thousands of other motor cars will converge. We do not increase the opportunities for recreation when we turn a woodland into a parking lot, or an ocean beach into a fishing net filled with squirming human bodies.

In this task of applying landscape design to the whole region, in order to make it available to every kind of recreation, we must find a place for both the extrovert and the introvert--for both those enjoyments that are often enhanced by a public setting and the presence of other people, and those more romantic impulses that lead to withdrawal and solitary exploration and quiet contemplation. As one of our Dutch friends has well put it, we must provide for passivities as well as activities. And we must know how to leave well enough alone! Today, in most countries, we tend to overplay the role of mass movements and mass satisfactions, and forget the need to offset the compulsions of the crowd by providing plenty of space for solitary withdrawal. Man, as Emerson

observed, needs both society and solitude; and part of the function of open spaces is to remain open, not crowded with people seeking mass recreation. But in this larger regional provision for open spaces, I can detect no difference between the needs of the most congested metropolis and those of the country town or the open suburb. For mass transportation, by rail, by public bus and by private motor car and cycle, has extended the field of recreation far beyond the local community and has at least potentially, widened the area of choice. The surest mark of bad planning is that, in the very effort to meet one kind of mass demand, the planner is tempted to set up a single standard of success, that of quantitative use, and to overlook the need for variety and choice.

If this goes on, our mass recreation area will become as standardized, as monotonous, as lacking in psychological stimulus of any kind, as our big airports or our radio programs. Good planning, on the other hand, as it widens the field of recreation, in order to meet the demands of a bigger population, commanding vastly greater opportunities of leisure, must be more concerned to achieve greater differentiations of both human activities and landscape forms. The landscape architect's task is to bring out the unique resources of each spot--here a winding river, there a striking view, or in another place, an historic village with a good inn, whose character must be preserved by swinging motor roads and car-parks around the outside of the village, instead of letting cars and buses pile up in its center.

So much for the larger conception of open spaces, as conceived on a new regional pattern, with a permanent green matrix of open areas, preserved for both the local resident and the visitor. If we take the necessary political measures to establish this permanent green matrix, a large part of the pressure to escape from the congested city to a seemingly more rural suburb will be relieved, for the values that the suburb sought to achieve by strictly private means--and actually could achieve only for a small economically favored fraction of the sprawling population--will become an integral feature of every urban community. But two complementary movements are now necessary and possible: one is that of tightening the loose and scattered pattern of the suburb, turning it from a purely residential community into a balanced community, a true garden city, with a more varied population and with local business to support it; and the other is that of loosening the congestion of the city, emptying out part of its population, introducing parks, playgrounds, green promenades, private gardens into quarters that we have permitted to become indecently congested, void of beauty and often positively inimical to life. Here, too, we must think of a new form of the city, which will have the biological advantages of the suburb, the social advantages of the city and esthetic delights that will do justice to both modes.

Now the great function of the city is to give a collective form to what Martin Buber has well called the I and Thou relation: to permit, indeed to encourage and incite, the greatest potential number of meetings, encounters, challenges, between all persons, classes and groups, providing, as it were, a stage upon which the drama of social life may be enacted, with the actors taking their turn as spectators and the spectators as actors. The social function of open spaces in the city is to bring people together; and as Unwin first suggested in 1908 at Hampstead, and Wright and Stein carried further in Radburn, in 1928, when both private and public spaces are designed together, this mingling and meeting may first take place, under the pleasantest possible conditions, in the neighborhood. Unfortunately, the very congestion of the city produced a reaction on the part of sensitive people that made them over-emphasize a purely quantitative ideal of open spaces; and under the influence of suburban fashion, which made privacy and spatial aloofness a mark of upper class status, many of our new communities in both America and Europe are far too loose and sprawling to serve their social purposes. The American exurbanite's standard of a minimum of one acre per house serves only to deruralize the countryside without improving the city.

The problem of the upper class suburb today is to trade some of its excessive biological space for social space. That of the congested city is just the opposite--it must introduce, into its overbuilt quarters, sunlight, fresh air, private gardens, public squares and pedestrian malls, which will both fulfill the social function of the city and make it as favorable a place as the old suburb for establishing a permanent home and bringing up children. The first step in making our older cities habitable is to reduce their residential densities, replacing decayed areas now occupied at a density of 200 to 500 persons per acre, too often in extravagant high-rise structures, hostile to family needs, with housing that will permit parks and gardens as an integral part of the design, at densities not higher than a hundred, or at most, in quarters for childless people, of 125 persons per acre. Let us not be deceived by the appearance of spatial openness that can be achieved by crowding families into fifteen--or twenty--story apartment houses. Abstract visual open space is not the equivalent of functional open space, which may be used as playgrounds and private gardens. Here again a variety of uses--and therefore a variety of esthetic forms--is the mark of skillful planning, and row after row of great slabs or towers, even though set apart far enough to avoid casting a shadow on one another, create a poor environment for any kind of recreation, for they rob the neighboring area of sunlight and destroy the intimate human and familiar scale, so vital to the young child.

In the restoration or new creation of urban open spaces, there is room for much fresh experiment and bold design, which will depart both from traditional models and those that have become the fashionable cliches of contemporary form. And in this field each city should, on the basis of its own landscape and culture, suggest a different answer: what is appropriate for Amsterdam with its great water resources would not be equally valuable in Madrid. We do not merely need grand plans, conceived freshly, for entirely new neighborhoods where we have cleared away acres of slum: we also need piecemeal solutions, that can be applied on a small scale, seizing each small opportunity that will go toward the fulfillment, over the years, of a much larger design. Venice, with its campi and piazzas, the central areas of Athens, and Paris, are particularly rich in such minor open spaces. And what applies to individual blocks applies to neighborhoods. They, too, to have any value for recreation, must be insulated from the traffic avenues and motorways: the parts of the neighborhoods should be joined together by green ribbons, pedestrian malls and pleasances, such as that admirable park Olmsted designed for the Back Bay Fens of Boston, taking advantage of a little river and a swamp to create a continuous thread of green.

The one great requirment for open spaces in urban centers is to insulate them spatially from the fumes, the noise and the distracting movement of motor traffic. The neighborhood, not the individual building block, not the street-front and the avenue, is now the unit of urban design, and all fresh schemes for both open spaces and for traffic to be worthy of approval, must separate the pedestrian as completely as possible from the motor car. When this can be done from the beginning, as was first decisively done at Radburn, New Jersey, the motor roads that give access to buildings may be reduced in area and partly eliminated; while the space that is so saved within the superblock and the neighborhood may be dedicated to recreational uses. When these measures are taken, a much more economic and socially valuable use of the land can be made, without the wastage in roads and setbacks and verges one finds in the British New Towns--admirable though they are in their provision for greenbelts and private gardens.

What I have been saying about the social function of open spaces can now be briefly summed up. For weekend recreation we must treat the whole region as a potential park area and make it attractive at so many points that the hideous congestion of weekend traffic that goes on everywhere will be minimized, or disappear entirely. As for daily use, the same requirements for open space apply to both the most congested cities and the most sprawling suburbs: for the first must be loosened up and the second must become more concentrated and many-sided. In the cities of the future, ribbons of green must run through every quarter, forming a continuous web of

garden and mall, widening at the edge of the city into protective green belts, so that landscape and garden will not be rural monopolies but will likewise be an integral part of urban life.

Source: LANDSCAPE: Magazine of Human Geography, Winter 1960-1961, Vol. 10, No. 2, pp. 1-6.

APPENDIX B

WHAT IS A LONG DISTANCE ROUTE?

Some Questions Answered

(The numbers in the text indicate the relative Sections of the National Parks and Access to the Countryside Act, 1949, and the Highways Act, 1959. The latter came into operation on January 1, 1960.)

What are Long Distance Routes?

They are paths along which the public can make extensive journeys on foot or, in appropriate cases, on horseback, and in respect of which the Commission have submitted a Report to the Minister of Housing and Local Government. A characteristic of such routes is that for the whole or the greater part of their lengths they do not pass along roads mainly used by vehicles. (NPA 51)

What are examples of Long Distance Routes?

One example is the Pennine Way, which is a hill walk of some 250 miles from Edale in Derbyshire along the Pennines and thence over the Cheviots to the Scottish Border.

Another example is the walk which is projected round the whole of the South West Peninsula from Minehead in Somerset westward along the coasts of Somerset, Devon, Cornwall and back on the south coast of the peninsula to Studland in Dorset.

Further examples are the Offa's Dyke Route (from Prestatyn to Chepstow) and the Pembrokeshire Coastal Path.

How does a Long Distance Route come into being?

A route is created in three stages. First, a Report proposing the route is made to the Minister of Housing and Local Government by the National Parks Commission (NPA 51). Second, the Minister decides whether to approve the proposals which he has power to do with or without modifications (NPA 52). Proposals so approved are known as "approved proposals relating to a long distance route" (NPA 52). Third, if the proposals are approved, the Minister asks local authorities to create such rights of way along the route as are required.

The Minister has approved seven Reports sent to him by the Commission to the present date: for the Pennine Way, the Pembrokeshire Coast, North Cornwall Coast, South Cornwall

Coast, Offa's Dyke, the Devon South Coast, and the Somerset and North Devon Coast. Further proposals have been submitted to him for a Dorset Coast Path and a South Downs Long Distance Route. The latter is proposed as a bridleway for use by horse riders as well as by walkers.

How does the Commission prepare a Report?

When the Commission think it desirable to consider the merits of a route they prepare maps of a provisional line which they have surveyed on the ground. The Commission have sometimes been helped in this work by the Ramblers' Association whose members have voluntarily surveyed the route. On other occasions the Commission have been indebted to County Councils who have carried out this preparatory work for them.

The Commission, having adopted a provisional line, consult every Joint Planning Board, County Council, County Borough Council and County District Council through whose area the line passes. The Commission ask each local authority for any general comments upon the appropriateness of the proposed section of the line in its area; for example, what is the status of the paths in question, i.e. whether public rights of way exist or need to be created; and any information as to ferries where they are needed to complete the route (NPA 51).

How are new public rights of way created?

The Act provides two methods of creating new public rights of way; by Agreement (H.A. 27) or by Order (H.A. 28).

County Borough and County District Councils have powers to make Agreements and it is naturally hoped that rights of way will be acquired in that way.

What is the Cost?

The Commission submit to the Minister an estimate of the cost and they ask the assistance of Highway Authorities in the preparation of that estimate. This estimate covers both capital and annual outlay for both existing and new paths, and provides for any necessary repairs and improvements, e.g. new gates and stiles, footbridges, stepping stones and signposts. The estimate of compensation payable when new rights of way are created is made for the Commission by the District Valuers.

It is most desirable that the simple character of these paths should be preserved. It would, therefore, be contrary to their character for any formal work to be done upon them. Nevertheless, a certain amount of work will need to be undertaken as described above; and it is this minimum amount of necessary work which is covered by the estimate.

Who pays the cost?

The Minister is empowered to defray expenditure incurred by a local authority in the payment of compensation and for the construction, maintenance, or improvement of a way if that expenditure is incurred for the purpose of approved proposals (NPA 98). The grant for this purpose is 100 per cent (see paragraph 15 (2) (a) of the Explanatory Memorandum to the National Parks and Access to the Countryside (Grants) Regulation 1954, published by the Stationery Office (6d). The Regulations form Statutory Instrument No. 415/1954 (price 3d).)

Will the routes be signposted?

The Commission are anxious that the marking adopted should be in character with the country traversed by the path and that marking should be undertaken only where the walker, who will normally be equipped with a map, is likely to mistake the way. In upland regions stone cairns should suffice; and members of the Ramblers' Association have voluntarily erected a number of cairns on the Pennine Way. But, even on such routes, there will be places where a signpost is desirable, e.g. where the path leaves or joins a road or where direction is necessary in a town or village. When a Route is in prospect the Commission discusses with highway authorities the method of marking appropriate to the particular route.

The Commission have devised a form of sign which has been commended for general adoption on long distance routes by the four Local Authority Associations (The County Councils Association, The Association of Municipal Boroughs, the Urban District Councils Association, and the Rural District Councils Association) and approved by the Royal Fine Art Commission and by the Ministries of Transport and of Housing and Local Government. This sign is made of unpainted oak and bears wording in raised lettering. Signs bearing the words "Pennine Way" and 25" long by 3 1/2" have been used on that route. Similar signs, bearing the words "Coast Path" have been recommended for use on the Southwest Peninsula Coast Path and the Pembrokeshire Coast Path.

The Commission are now considering the possibility of a standard symbol which might be used to indicate a long distance route in places of special doubt or difficulty.

Is there any provision for accommodation, meals and refreshments along the Route?

The Commission's Report to the Minister may include proposals on this subject (NPA 51 (2)). Local planning authorities are empowered to make such arrangements as are requisite to give

effect to any approved proposals of this kind and grants are available at a rate of 75 per cent (N:A 54--see also paragraphs 13 (d) and 15 (c) of the Explanatory Memorandum on the National Parks and Access to the Countryside (Grants) Regulations, 1954). In the Reports which the Commission have made up to the present date no such proposals have been included but certain local authorities have supplied information to the Commission about existing facilities and future needs.

Source: National Parks Commission, 1 Cambridge Gate, Regent's Park, London, N. W. 1

Revised, October, 1962

APPENDIX C

THE "HOCH BILL"

(As re-introduced in the House of Representatives on Feb. 19, 1948.)

H. R. 5479, 80th Congress, 2d session

"A BILL TO AMEND THE FEDERAL-AID HIGHWAY ACT OF 1944 TO AUTHORIZE THE CONSTRUCTION OF A NATIONAL SYSTEM OF FOOT OR HORSE TRAILS."

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 9 of the Federal-Aid Highway Act of 1944, approved December 20, 1944 (58 Stat. 838), is amended by inserting at the end thereof a new subsection to read as follows:

"(d) For the construction and maintenance within the continental United States of a national system of foot or horse trails, not to exceed ten thousand miles in total length, to be devoted solely for foot or horse travel and camping, which activities will develop the physical fitness and self-reliance of, and an appreciation of nature in, the people of this Nation, and serve as a part of the basic training of our youth for service in the armed forces, there is hereby authorized to be appropriated the sum of $50,000 for the first fiscal year for which appropriations are made hereafter for purposes of this subsection, a like amount for each of the second and third years thereafter, and such sums as may be necessary for each fiscal year thereafter. The Forest Service of the Department of Agriculture is authorized and directed to construct, develop, and maintain said national system of trails, cooperating with other Federal agencies and with States and political subdivisions thereof in areas where trails of such system cross property under the jurisdiction of such other federal agencies or owned by States and political subdivisions thereof: Provided, That where trails of such system cross lands under the administrative jurisdiction of another federal agency, or where they cross lands owned by a State or political subdivisions thereof, the Forest Service may perform the functions authorized herein with respect to such lands only with the approval of such other agency. All trails of such system shall be constructed, developed, and maintained in a manner which will preserve as far as possible the wilderness, historic, or scientific values of the areas traversed by the trails of such system. The Forest Service is authorized to acquire such lands and easements as may be

necessary for such system and to provide shelters, signs, maps, guidebooks, and other attendant facilities. The Appalachian Trail, a mountain footpath extending from Maine to Georgia for two thousand and fifty miles, and the Pacific Crest Trail, extending from Canada to Mexico through Washington, Oregon, and California , shall be included as trails of the said national system of trails."

Source: Publication No. 5, January 1950, Sixth Edition, Issued by The Appalachian Trail Conference, Inc., p. 41.

APPENDIX D

CALIFORNIA RIDING AND HIKING TRAIL PROJECT

In 1944, the idea of establishing a statewide Riding and Hiking Trail was advanced by the California State Horsemen's Association, which was later successful in bringing the project to the attention of the State Reemployment and Reconstruction Commission. A committee was appointed by that body which was known as the California Riding and Hiking Trails Committee of the Citizens Advisory Committee on Development of Natural Resources. This Committee studied the problem, and in December of 1944 forwarded a report to the Reemployment and Reconstruction Commission recommending the inclusion of the project in the Commission's program, outlining the general route of the proposed trail and suggesting appropriate legislation for furtherance of the project.

In 1945, the State Legislature passed the "Riding and Hiking Trails Law" (Chapter 1469, Statutes of 1945). This act declares that it is the policy of the State to encourage an increase in riding and hiking in the interests of the public health; defines the project to include any work or undertaking to plan, chart, map or survey any trail area, to acquire land for building trails and necessary appurtenances; places the administration of the project in the Division of Beaches and Parks under supervision of the Director of Natural Resources in accordance with policies established by the State Park Commission; authorizes the State Park Commission to appoint an Advisory Committee of six members (subsequently increased to seven members) from persons nominated by interested organizations; authorizes the State Park Commission to accept on behalf of the State financial assistance to aid the project; prohibits the use of the right of Eminent Domain to acquire property for trail purposes, and appropriated an initial sum for surveys and studies of the project.

Beginning with a small force early in 1947, the Division began the task of laying out 3,000 miles of trail contemplated under the law. As the project had no precedent, progress was quite slow; but the project began to take shape as more was learned about the job ahead.

Very early the Advisory Committee recommended that the route of any particular segment of the trail should be determined by local interest, subject to review and approval of the State Park Commission. Therefore, each county was asked to form a local advisory group which would pick the route, and secure the approval of the County Planning Commission and Board of Supervisors. This group then submitted a Master Plan for the county which was studied in detail by the staff

of this Division and an appropriate recommendation made to the State Park Commission.

Following the approval of the Master Plan, the work of acquiring easements and developing the Trail fell to the Division's engineers and right-of-way agents. Very early in the program it became apparent that the lack of right to condemn right-of-way was a major obstacle. Now fifteen years later the lack of Eminent Domain has proved to be the greatest single deterent to the advancement of the R & H Trail Master Plan. In 1948, enough rights-of-way had been acquired to justify beginning construction. Butte, Contra Costa, San Diego, Los Angeles and San Mateo Counties were the first to complete Master Plans. Work, therefore, was started first in these counties and has progressed to other counties in the State.

The trail through the state is in various stages of completion. In several counties acquisition of rights-of-way has just started, while in others, the trail is complete and in use. At present, some 1,000 miles of trail have been completed, with additional miles under construction. The trail is complete in San Diego, San Bernardino, Los Angeles, Butte, and Plumas Counties with construction under way in Fresno, Ventura, and Placer Counties. In addition, there are about 1,500 miles of proposed trail in the National Forest and National Park administered areas which can be developed but actual construction plans for the entire length have not been completed.

Trail construction is accomplished in various ways. In areas under the administration of the Federal Government, trails are constructed and maintained under a cooperative agreement contract. In other areas, this activity is performed by the Division's District Superintendent in whose area the trail lies.

An attempt has been made to locate the trail to give the longest possible period of annual use, recognizing that the period of heaviest use will be during the summer vacation months. Therefore, it often occurs that it is necessary to locate portions of the trail in areas which will be desirable recreation country during the summer without regard to the length of the season. In some areas, the trail climbs to an elevation of 10,000 feet and will be usable a maximum of five months. In these instances, the lower elevations are so hot and dry during the summer as to be undesirable for comfort and enjoyment.

The trail route passes through all types of areas--desert, high mountains, forest grassland, woodlot, and suburban developments. Some sections follow the route of historic trails--De Anza, Butterfield Stage Road, Overland Immigrant Trail, and other old mining trails and pioneer routes.

To those who employ this leisurely mode of travel, the route will reveal some of the finest aspects of California. Ultimately, a system of campsites is planned at intervals of 15 to 25 miles. These will generally consist of a source of water, simple sanitary facilities, camp stoves, hitch racks and horse corrals. Occasionally, where the trail passes through a State Park, a more elaborate camp may be built, such as now exists in Cuyamaca Rancho State Park and Samuel P. Taylor State Park. Los Caballos in Cuyamaca Rancho State Park consists of camp stoves, tables, barbecue pit, fire rings, water trough, hitch racks, pole stalls and a combination building with toilets and showers. A similar campsite has been constructed in Samuel P. Taylor State Park in Marin County.

As to when the whole project will be completed, there is no ready answer. Completion depends on so many factors--right-of-way, number of personnel assigned to the project, degree of cooperation of various county, federal and state agencies (which thus far has been excellent), and allocation of funds. Steps are now being taken to speed up the program. It must be kept in mind that no condemnation can be used to acquire rights-of-way for this project which often causes unpredictable delays.

Trail maps for San Diego, San Bernardino, Los Angeles, and Butte-Plumas Counties have been completed and are available for public distribution. Other folders will be published as trail is completed. Trail map folders are available by writing the Division of Beaches and Parks, Box 2390, Sacramento 11, California.

Source: Department of Natural Resources, Division of Beaches and Parks, Box 2390, Sacramento 11, California

(Received in personal correspondence)

APPENDIX E

NOTES ON THE EARLY INDIAN TRAILS OF MICHIGAN

Trails hundreds of miles in length extended across the country and shorter ones connected places or haunts which the Indians habitually visited (see Figure 1). These footpaths had been located with great sagacity and were usually the most feasible lines for tramping from place to place. They were the first steps in internal improvements.

The white people immediately discovered that the best routes for penetrating and subduing the interior were the Indian trails. Many of our most improved highways are along the traces the natives had pursued for centuries. The first trade and commerce in Michigan by white men was with the Indians. The traders' stores, usually called trading posts, had no other object than to create among the tribes desires for European goods and to barter with the native hunters for furs. These posts were almost always situated at the meeting or crossing of main trails, generally upon some important water course.

Owing to the interest the old trails have for the student of the material development of the state, great pains have been taken to locate them accurately. Only in a few cases are any trails about which there is uncertainty, traced upon the maps. Numbers of those that are traced do not connect. They have both "blind" beginnings and ends, owing to the fact that the field notes and other records of the government surveyors do not enable the cartographer to draw his lines in a more definite manner.

Trails From Michigan to Tidewater

The entire country was crossed by paths. An understanding of Indian trails in Michigan depends upon some comprehension of the larger communication complexes. The Michigan trails, artificially divided in our minds by our system of political divisions, are but a part of the larger network. We may look briefly at some of these long arteries of trade and travel before going into detail as regards our local situation.

Great Trail

A most important line of travel into Michigan, now paralleled by highways of commerce, was the Great Trail, probably so designated because of its special importance in Indian and pioneer affairs. Its eastern branches came from the country around Boston, Delaware, and Chesapeake bays. It connected with the Sauk or Chicago Trail by means of two or three

branches as it bent around the west end of Lake Erie.

This was a continuous path between tidewater, the Great Lakes, and the middle parts of the Mississippi. Over it, in prehistoric and historic times, traveled men, savage and civilized, upon missions of vital importance to their domestic and political affairs. For uncounted years moccasin-footed Indians, then Indians upon ponies, soldiers mounted and on foot, pioneers with ox-teams and travelers in stage coaches, all upon some mission or other--war, adventure, trade, chase, exploration, home-seeking--passed over this trail.

From the East the trail came to the junction of the Monongahela and Allegheny rivers, which form the Ohio where Fort Duquesne, Fort Pitt, and afterward Pittsburgh, were built. From this point the trail extended to the Ohio border, entering the state very near the southeast corner of Columbiana County, struck almost due west to the south border of Stark County, and forded the Tuscarawas at the site of old Fort Laurens. Thence it went westerly to Mohican John's Town, in Ashland County. A few miles west of there it bent northwesterly, passing Sandusky Bay to Perrysburg, at the Maumee Rapids. One branch extended west from this ford of the Maumee River, deflected northwest, and entered Michigan at the southwest corner of Seneca Township, Lenawee County, where Morenci is now situated. This branch trail continued northwest to the village of Allen, Hillsdale County, where it joined the main Chicago Trail.

One track of the Great Trail bent north through where Port Lawrence, now Toledo, stood. A branch forked off at Monroe and followed the River Raisin to the Macon Reservation in central Monroe County, and from there went up the Saline River to the salt springs in Washtenaw County, where it connected with the Chicago Trail. Several other well-trodden paths practically paralleled these branches from the Great Trail to the Chicago Trail. The main Great Trail continued north from Monroe through Flat Rock and Brownstown to the crossing at Detroit. From there on to the Straits of Mackinac it was called the Saginaw and Mackinaw Trail.

The old maps do not agree as to the exact course the Great Trail took in the vicinity of Toledo. No doubt the Black Swamp, which at different seasons extended along the lower reaches of the Maumee for many miles, made detours necessary at times of high water.

Shore Trail

The Shore Trail, as it is known historically, followed the southern shore of Lake Erie, going east from the various Michigan trails that converged at Toledo. It paralleled the Great Trail to Sandusky Bay, where the two met and parted.

The Shore Trail then led on to Erie, Pennsylvania, and to Buffalo and Niagara, New York. In western New York the same kind of branching of the main trail that existed at its western end made connections with various points in the Iroquoian territory. The direct Iroquois Trail followed the Mohawk River to the Hudson. There were trails leading east from the Hudson River to Massachusetts Bay.

The Shore Trail led through bloody country; the unfortunate Erie or Cat Tribe, who were virtually exterminated by the Five Nations, their own near relatives, once occupied parts of this country. The highway through Cleveland and other cities of the Lake Erie shore closely follows the old Shore Trail.

Mohawk Trail

The Mohawk Trail was an extension of the Shore Trail, connecting the Middle West with the Hudson and points east. Not only were there trails to New England, but there was, for instance, a branch of the Mohawk Trail in west-central New York that led to the old Iroquois town, Tioga, in northern Pennsylvania, where the Chemung joins the Susquehanna. It was a gateway toward the Chesapeake and Virginia.

Scioto Trail

One of the great warpaths of Indian history virtually led to and from Michigan. The Scioto Trail branched from the Great Trail and the Shore Trail, at their junction at Sandusky Bay, and ascended the Sandusky River upon the west side, to the divide and portage between that stream and headwaters of the Scioto River. It went down the Scioto to its confluence with the Ohio. It crossed the Ohio and joined the famous "Warriors' Path" across Kentucky to Cumberland Gap. Beyond the Gap, by collaterals, it reached the Gulf of Mexico and the southern Atlantic coast, at different points. An important trail led into Florida. Over these Indian lines, from Lakes to Gulf, went Michigan copper, and back from the south came shells and other materials for ornaments and implements to gratify the tastes of the north.

Potomac Trail

The Baltimore and Ohio Railroad, east of Parkersburg, West Virginia, follows the old Indian Trail and, before reaching Grafton, tunnels the mountains in two places exactly under the crests where the trail crosses. It was a marvel of engineering skill to locate this railroad through and over so rough a country, and when it was completed, it was only a resurvey by men of the tripod of the route the Indian and the buffalo had threaded for hundreds of years.

Montreal Trail

According to maps of John H. Eddy, 1816, and Thomas Hutchins, 1778, a road, which undoubtedly had been a very old trail coming from Montreal and following the Chicago Trail from Detroit, branched off at Fort St. Joseph and led south to the Tippecanoe River in Indiana and to Prophet's Town and Quiatanon upon the Wabash. From the latter village there was water communication by way of the Wabash, Ohio, and Mississippi to New Orleans; the total distance is given by Eddy as 1,871 miles.

Mahoning Trail

Besides the Great Trail there was another one leading west from the head of the Ohio River. This was the Mahoning Trail. It followed the north bend of the Mahoning River in eastern Ohio, and then went directly west to join the Great Trail near Sandusky Bay. It was the most direct route from Detroit to the forks of the Ohio River.

Sauk or Chicago Trail

There was a trail connecting Detroit with the Sauk town at the confluence of the Rock River with the Mississippi in Illinois. The old road from Detroit to Chicago follows this route to a point near La Porte, Indiana. It deviated around the head of Lake Michigan and led on through Chicago to the wild rice fields of Green Bay, the lakes of Wisconsin, and far away to the copper mines of Lake Superior. Article 6 of the Treaty of Chicago, August 29, 1821, says: "The United States shall have the privilege of making and using a road through the Indian country, from Detroit and Fort Wayne, respectively, to Chicago."

As a matter of fact, what has been referred to as the Sauk or Chicago Trail was only a small section and, finally, a branch of a two-thousand-mile thoroughfare. In the paragraph on the Montreal Trail we have mentioned a branch which crossed the Detroit River and went through Canada to Niagara Falls and Montreal. That part of this long path that extended through Michigan is now known as Trunk Line U. S. 112.

Besides the long trails already mentioned, there were interstate trails that have developed into trunk-line highways. As a central point in tracing a few of the Indian paths that have become permanent roads leading to and from the Great Lakes, I have taken Detroit, although there is no reason for thinking that it was of any more importance to tribesmen, in prehistoric times, than some other places in Michigan.

Saginaw Trail

The Saginaw Trail extended northwest to the Saginaw River, which it crossed and then followed the east side of Tittabawassee. At the mouth of Tobacco River, near Edenville, upon the boundary between Midland and Gladwin counties, the trail divided. From this ford one branch led to Houghton Lake, in Roscommon County. It curved along the east shore of the lake and then turned west around Higgins Lake. At the northwest corner of Higgins Lake the trail again divided. One path led to Grand Traverse Bay, the other to L'Arbre Croche and Mackinaw. From the ford at Edenville the east fork of the Saginaw Trail went up the Tittabawassee through the center of Gladwin County and then led on in a quite direct line to Cheboygan, where it turned abruptly west and met the western branch at the Straits of Mackinac.

The Dixie Highway, coming from the south and passing through Toledo, Detroit, Pontiac, and Flint, follows the Saginaw Trail.

Grand River Trail

The road to Grand Rapids that leaves Detroit as Grand River Avenue follows the course that Indians took for centuries before pioneers pushed into wilderness of Oakland, Livingston, Ingham, Ionia, and Kent counties.

Territorial and Potawatomi Trails

Two paths crossed the Chicago or Sauk Trail at Ypsilanti and passed through Ann Arbor. One followed the Huron River from its mouth; the other came in over the higher land to the south. Beyond Ann Arbor the so-called Territorial Trail went through the centers of Jackson and Calhoun counties and branched. A branch went to Kalamazoo and finally united with the Chicago Trail in southeastern Berrien County. The northern branch of the Territorial Trail again bifurcated for the mouth of the St. Joseph River at St. Joseph and for the mouth of the Kalamazoo at Saugatuck.

Trail From Soutwest Michigan to Saginaw and the North

A trail about which there is uncertainty as to its exact course for a part of the way led from the southwestern part of the state to the Saginaw River. One is able to speak more securely of its precise course north of Saginaw. One branch leading through the central part of the Lower Peninsula has already been described. The other followed the Huron shore to Alpena. At Alpena it followed for a few miles the Thunder Bay River, passed Long Lake, Alpena County, and again struck the Huron shore about the center of Presque Isle County. From there it went on to the mouth of the Cheboygan, where the city

f that name stands, and then to the Straits.

Trail Southwest from Mackinaw

There was a trail from Mackinaw around the Traverse bays, at the foot of Lake Michigan. This trail ran through the southern half of Manistee County and rather close to the shore through Mason and Oceana Counties. About a mile south of the boundary between Oceana and Muskegon counties, the path probably deflected inland to strike the shore again at the mouths of the Black and St. Joseph Rivers, at the present towns of South Haven and St. Joseph, respectively. Below St. Joseph this trail touched Indian villages along the shore, or near it, and joined the Sauk Trail in Indiana, with which it connected for Chicago and "points" to the west, southwest, and northwest.

Other Trails

Minor trails ramified in all directions in the state, connecting with the trans-state trails at many points. Mr. H. Brevoort, Deputy U.S. Surveyor, records, October, 1839: "Trail leads from mouth of Manistee River to Town 30 N.R. 3 W." The terminus of this trail was in Bagley Township, Otsego County, the west side of Otsego Lake. The distance was 85 miles.

There were trails and portages from Ontonagon and Menominee rivers connecting with the streams that flow through Wisconsin into the Mississippi. There is every reason to believe that much commerce passed that way from the Lake Superior mines to the far south. Two almost parallel and direct Indian paths connected St. Ignace and Sault Ste. Marie, which was less than half the distance between these important points by the water route.

Along the courses of many streams and through swamps there were sometimes two trails: one followed the banks; the other, during high water, went through the adjoining uplands. An illustration of this was the trail coming up the Huron River from its mouth at Lake Erie to Portage Lake, on the border between Washtenaw and Livingston counties. This trail is designated the Potawatomi Trail. The river path kept quite close to the water's edge. The other was sometimes a mile or more back from the stream upon the solid ground through the woods. These old traces are followed today for the greater part of their courses by modern roads. Some of them are commonly referred to as "back roads;" others are excellently paved.

In the notes upon many of the counties special mention is made of minor trails. Examination of the various maps will add greatly to the fuller understanding of the lines of Indian travel and transportation by both water and overland routes.

Source: Wilbert B. Hinsdale, Archeological Atlas of Michigan (Ann Arbor, Michigan: University of Michigan Press, 1931), pp. 3-5.

APPENDIX F

SELECTED CHARACTERISTICS OF SOME OF THE USERS OF A TRAILWAY SYSTEM

Hiking

Our definition of hiking required that it be along trails with a pack, thereby distinguishing it from walking for pleasure, mountain climbing, and nature walks.

With this specialized definition of hiking, we find that slightly more than half of the hiking occasions engaged in during the summer 1960 by the population 12 years of age and over were by boys or girls 12 to 17 years. This group alone hiked more than 17 million days (or part days) during June-August 1960. Boys of these ages hiked an average of 1.4 times during the summer, compared with 0.41 for girls.

Although hiking cannot be considered as an expensive outdoor activity, the rate of participation, nevertheless, is associated with income. The rate increases from almost no participation among the class receiving less than $1,500 annually per family to 0.68 occasions per person during the summer among the group earning $10,000 to $15,000 per family. Participation falls off for the highest income class.

Hiking is quite low in the preference order for outdoor activities, only 3 percent listing "some" preference for hiking. The degree of preference increases with more frequent participation in hiking for such active recreations as swimming, camping, horseback riding, and bicycling. These are vigorous activities, characteristic of youth.

One-third of those who prefer hiking are able to hike as frequently as they would like. Another one-third of those who prefer hiking do not engage as often as they would like because of insufficient available time. Another 12 percent are restricted because facilities are not immediately available. Restrictions due to financial ability are insignificant. Females who prefer hiking mention more often than the males the unavailability of paths and other facilities; both mention the time restriction about equally.

For the adult population, the association of hiking with income, with professional and white-collar occupations, and with education, suggests that the older hikers are a fairly well-identified group. But hiking is not generally popular throughout the adult population.

Hiking in the United States does not have the appeal that it

has in Europe. Our youth (12 through 17 years) are the principal hikers. With a pack, it becomes a strenuous activity, and to engage required considerable physical effort. Among those who have tried hiking but did not like it, more than half say it is too strenuous for them.

Bicycling

In America, bicycling is almost altogether an activity of youth. . . . The population as a whole engaged 1.75 days (during the 3 summer months, 1960), but the age group 12-17 cycled on an average of 10 days. Boys are more active cyclists than girls. Participation is slightly greater outside metropolitan areas than within them. The rate of participation increases to the $3,000 to $4,499 family income group, and then gradually declines as income increases. Nonwhites cycle more than whites. There are very few cyclists who do not rate their health as good or excellent.

The population as a whole engages in cycling at a rate of 5.15 occasions per person for the entire year.

Considering only persons 25 years of age and older, we find that as education increases, the average number of days cycling increases, also, reaching a peak among those with 1 to 3 years of college, and dropping off for the group completing college.

Thus, cycling or hiking paths to fishing or swimming locations would prove to be compatible with the interests of the youthful participant.

Considering the relationship between participation and income, previously described, the general availability of bicycles, and their low maintenance cost, bicycles undoubtedly are available to all but the lowest income group. The great opportunity to increase cycling participation lies among the 18-44 age group. Perhaps journeys by family groups would be possible if paths free of other traffic are provided, and if hostels or camping facilities are made available. This has been realized in several European countries.

Horseback Riding

Only 6 percent of the population went horseback riding one or more times during the summer 1960. This was 0.42 occasions per person. The younger ages, 12 to 17 years, participate in horseback riding at rates significantly higher than other ages. Generally, the rate declines with age, ...

Among those who prefer horseback riding, one-fourth participate as often as they would like. Twenty-six percent of those who do not participate as often as they would like feel that they

are restricted by financial limitations and 23 percent by a lack of time. Facilities, evidently meaning availability of horses and paths, was mentioned by 15 percent of the group preferring horseback riding. Six percent mentioned an inability to ride. . . . Thus, it would appear that increases in income and, leisure time will create more horseback riding occasions, particularly in areas where trails and horses are plentiful.

Riding horses is an outdoor activity in which one usually would engage for 2 or 3 hours, although treks across country might take longer. Great exertion is not required to ride a horse for a brief period, although moderate physical exertion certainly is required. One may mount and ride with little skill or one may possess considerable skill in handling the steed. Furthermore, by varying the animal, the terrain on which one rides, and the time involved, one may continuously create new challenges to improve horseback riding skills. In general, however, the basic skills required for proper control and manipulation of the animal as well as the physical responses necessary on the part of the rider in order to make the activity enjoyable, are minimal and once acquired, may be elaborated upon without undue effort.

Status achievement through participation perhaps is high in urban areas, particularly among middle and upper class groups. In rural America, on the other hand, status may be achieved through possession of unusually fine animals, through skillful performance, or related activities, rather than merely from horseback riding itself. A variety of motives may be served by riding. One may ride primarily because the exercise gained is within one's capacity without overtaxing one's strength. Another motive may be love of animals; the pleasure of attaining coordination of movement between rider and horse creates an affinity between man and beast. Where one rides in a group with others, sociability cannot be minimized, for such undoubtedly is a strong motive for many occasions. A desire for new experience motivates horseback riding occasions which take one over new terrain or into unfamiliar areas. Horseback riding, also, may be a means for sightseeing, picnicking, hunting, and related activities.

Scurce: National Recreation Survey (Washington, D. C.: United States Government Printing Office, 1962), Outdoor Recreation Resources Review Commission Report No. 19.

APPENDIX G

CONDENSATION OF MICHIGAN LAWS PERTAINING TO RECREATIONAL LAND ACQUISITION

Cities and Villages

Constitutional Provisions Respecting Parks

Any city or village may acquire, own, establish, and maintain, either within or without its corporate limits, parks, boulevards, . . . and all works which involve the public health or safety (Constitution, art. VIII, sec. 200).

Tax Delinquent Lands Deeded to Municipality

Whenever any lands are delinquent for taxes and have been bid off to the State one or more times by reason of the delinquency, the title to the State is to be deemed to be absolute in and to the lands. Any such lands, whether occupied or unoccupied, located within the corporate limits of any city or village having a population of 1,000 or more must, upon request of the governing body of the city or village, be transferred to it (ch. 59).

Home Rule Cities

Parks, Recreation Grounds, etc.

Permissible Charter Provisions

Each such city may in its charter provide for the acquisition by purchase, gift, condemnation, lease, construction, or otherwise, either within or without its corporate limits, and either within or without the limits of the county in which it is located, of necessary lands for boulevards, parks, recreation grounds, municipal camps, public grounds, zoological gardens, museums, public works, and public buildings of all kinds, and for the costs and expenses of the same (ch.49).

Restriction on Sale of Parks

No such city may sell any park or any part thereof, or any property bordering on a waterfront, or vacate any public place leading to a waterfront, unless approved by three-fifths of the electors voting thereon (Ibid.).

Cities of the Fourth Class

Classified

Cities containing a population not exceeding 10,000 are cities of the fourth class. All incorporated villages in which a county seat is located may be incorporated as cities of the fourth class without respect to their population (chs. 48 and 49).

Parks

Authority

Any such city may acquire, purchase, appropriate, and own such real estate as may be necessary for public grounds, parks, buildings, and other purposes necessary or convenient for the public good, and for the execution of powers conferred. The council may lay out, establish, and enlarge, or vacate and discontinue, public grounds and parks within the city; improve, light, and ornament the same; regulate the care thereof, and protect the same and the appurtenances thereof from destruction, encroachments, and injury, and from all nuisances (ch. 48).

Cities; Villages; Counties; Townships; School Districts

Public Recreation System

Powers of Municipality

Any city, village, county, or township may operate a system of public recreation and playgrounds; acquire, equip, and maintain land, buildings, or other recreational facilities; employ a superintendent of recreation and assistants; vote and expend funds for the operation of such system (ch. 53).

Forests

Authority

Any such municipality or school district may acquire by purchase, gift, or devise, or may provide lands already in its possession, and use the lands for forestry purposes, either within or without its territorial limits, and may carry on forestry on the lands. Gifts of money or personalty may also be received and expended or held in trust for forestry purposes (ch. 98 1/2).

Cities, Villages, Counties, and Townships

Appropriations to State-owned Parks

The legislative body of each county, city, village, and township may appropriate out of its general or contingent funds such sum or sums of money as it may deem advisable for the purpose of contributing toward the support, maintenance, upkeep, and improvement of any State-owned park or zoological gardens or grounds. The contributions are to be made to the state conservation commission and must be devoted exclusively to the purposes for which given (ch. 104).

Joint Maintenance; Transfers

The State conservation commission may enter into contracts with any county, city, village, or township, or any number of such jointly, for the support, maintenance, upkeep, and improvement of State parks. Each such municipality may enter into such contracts. Any municipality may transfer the care and control of any open spaces owned or controlled by it to the State conservation commission upon such terms and for such periods as may be mutually agreed upon, or may enter into an agreement with such commission for the joint care or preservation of open spaces within or adjacent to such municipality. The commission may in like manner transfer the care and control of any open spaces controlled by it to any local municipality (Ibid.).

Acceptance of Gifts

Any city, village, township, or other municipal corporation may receive, own, and enjoy any gift of real or personal property made by grant, devise, or bequest or in any other manner for public parks and other public purposes, whether made directly or in trust, subject to such conditions, limitations, and requirements as may be provided in the grant, devise, bequest, or other instrument. No gift is invalid because of any informality in the instrument evidencing the gift if the intent can be determined therefrom, nor by reason of its contravening any statute or rule against perpetuities (ch. 56).

Villages

Incorporation: Population and Area

Any part of a township or townships no included in any incorporated village, containing an area of not less than three-fourths of a square mile, and a resident population of not less than 250 persons, may be incorporated as a village. In the upper peninsula an area of less than three-fourths of a square mile may be so incorporated (ch. 47).

Parks

Acquisition and Sale

Any village may purchase, appropriate, and own such real estate as may be necessary for public grounds, parks, and other purposes necessary or convenient for the public good. Such grounds may be sold at public sale, or leased, as occasion may require. However, no public parks may be sold without the consent of a majority of the village electors (Ibid.)

Eminent domain

Private property may be taken and appropriated within the village for public grounds, parks, and spaces, and for other lawful and necessary public uses (Ibid.).

Townships

Parks

Acquisition Plan; Referendum

Any plan for the securing of a park or resort must fully set forth the premises which it is intended to occupy, and specify the sum which each township will annually raise by tax for the maintenance and support, which may not be less than one-tenth of a mill or more than 5 mills on the respective valuations of each township. The proposition must be submitted to the electors of each township, and if adopted by a majority vote constitutes a binding contract on each township (Ibid.)

Park Commission

Acquisition of Land; Purposes

The commission may acquire, maintain, manage, and control township parks and places of recreation, including bathing beaches, and may condemn land for such purposes; may accept gifts, grants, and devises of land suitable for parks and places of recreation, also gifts and bequests of money, such money to be held in trust and used for the acquisition and improvement of land suitable for park and recreation purposes (Ibid.).

Counties

Parks; Zoological Gardens

Tax for Acquisition, Maintenance, etc.

For the purpose of purchasing or condemning property for

parks or gardens, or for improving and maintaining the same, and for contributing toward the maintenance of similar properties owned or held in trust by townships, cities, villages, or adjoining counties, or if used for the benefit of the public, the board of supervisors may raise by tax on the property within the county subject to taxation for county purposes such sum as it may deem needful, but not exceeding in any one year one-quarter of one mill on the assessed valuation of the county. In counties having an assessed valuation of less than $8,000,000 the sum raised by tax may not exceed $2,000 (Ibid.).

Source: Digest of Laws Relating to Local Parks and Recreation as of January 2, 1940 (Washington, D. C.: United States Government Printing Office, 1941), 534 pp.

APPENDIX H

PRELIMINARY SUGGESTED MICHIGAN TRAIL EASEMENT FORM

E A S E M E N T

KNOW ALL MEN BY THESE PRESENTS, That _____

_____ and _____ for and in consideration of the sum of $1.00 to them in hand paid, hereby grant to the MICHIGAN DEPARTMENT CF CONSERVATION, Lansing, Michigan, a limited right-of-way easement for the use and benefit of the public, such easement to be for the use of horses, riders and pedestrians only, to be 16 feet in width, across the following described premises situated in the Township of _____County of_____, State of Michigan, to-wit:

This right-of-way is to connect with other similar rights-of-way across public and private lands to the end that a bridle trail for use of horses, riders and pedestrians may be established through various townships and counties in Michigan. Consistent with this purpose, the grantors for themselves and their heirs and assigns, reserve the right to locate and relocate said right-of-way from time to time across said above-described premises so that it will constitute the least interference with grantors use of said premises and still connect with the established trails at both ends.

IN WITNESS WHEREOF, The parties hereto have hereunto set their hands and seals this _____ day of _____, 19__.
In the presence of:

_____ _____

_____ _____

STATE OF MICHIGAN)
) ss.
COUNTY OF_____)

On this _____day of _____19____, before me, a Notary Public in and for said County personally appeared _____and_____ to me known to be the same persons described in and who executed the within Easement, who acknowledged the same to be their free act

My Commission expires:_____ _____
Notary Public
_____County, Michigan

Source: Michigan Department of Conservation as drawn up by Mr. Fitch R. Williams, Traverse City, Michigan.

APPENDIX I

WISCONSIN CONSERVATION EASEMENT-- TRAILS, ROADS, ACCESS WAYS

THIS INDENTURE made this_____day of _____19_____, by and between_____ and_____, his wife, of_____County, Wisconsin, Grantor_____; and the State of Wisconsin (Conservation Commission, Grantee.

WHEREAS, the Grantor_____ the owner_____ in fee simple of certain real estate which is in, near to, or adjacent to a Wisconsin Conservation Department project area now known as _____, and located in _____ County, Wisconsin, and

WHEREAS, the Grantee, through its State Conservation Commission, desires to construct a public _____rods wide, on, over and across the lands of the Grantor_____,

NOW, THEREFORE
WITNESSETH: For and in consideration of the sum of $_____ paid by the Grantee to the Grantor_____, receipt whereof is hereby acknowledged, and in consideration of the covenants hereinafter contained, the Grantor_____hereby agree_____ to sell, transfer, grant, and convey to the Grantee, upon acceptance by said Grantee, an easement and right in perpetuity to construct, operate and maintain a public_____ on, over and across the following described real estate, which acceptance must be made by the Grantee within _____ months from the date hereof:

the location of said right of way is shown on Exhibit "A" attached, hereto, and made a part hereof.

(1) The price to be paid to Grantor_____by Grantee for such easement is $_____
(2) All stumps, slash and other debris resulting from the clearing of the right of way will be disposed of by the Grantee by burning or otherwise, according to law.
(3) All trees having a commercial value, including firewood, will be cut in standard lengths and piled conveniently by the Grantee, for disposal by sale or otherwise by the Grantor_____.
(4) The Grantee shall have the right:
    (a) To post such signs and posters along said lands as are deemed necessary and suitable to delineate the above lands and locate them for public use, and
    (b) To make such improvements and installations as are necessary, convenient and incidental to the

full enjoyment and use of the rights and privileges granted by this easement.

The Grantee agrees to assist the Grantor_____ in correcting any conditions which are detrimental to the Grantor _____resulting from such use, within six months following receipt of a written request for such assistance made to it by the Grantor_____, within six months from the time the alleged damage occurred.

The Grantor_____further agree__to release the Grantee from any claims of damage which may arise as a result of floods and flash floods on the lands described on the previous page.

To have and to hold the said easement hereby granted, unto the Grantee forever.

A covenant is hereby made with the State of Wisconsin that the Grantor_____hold_____the premises described on the previous page included in the "restricted area" by good and perfect title; having good right and lawful authority to sell and convey the same; that the premises are free and clear from all liens and encumbrances whatsoever except as hereinafter set forth.

The Grantor__, for themselves, their heirs, executors, administrators, grantees, successors, and assigns, further covenant and agree that they will neither lease nor convey any other easement in any way affecting said "restricted area" without first securing the written permission of the State Conservation Commission of Wisconsin or its successor or successors.

And _____being the owner__and holder of _____certain_____lien_____which is

_____
(Insert detail concerning lien)

against said premises, do__hereby join in and consent to said conveyance free of said lien.

Source: William H. Whyte, Jr., Open Space Action: A Report to the Outdoor Recreation Resources Review Commission (Washington, D. C.: United States Government Printing Office, 1962), 119 pp.

APPENDIX J

THE TRAIL--A DESCRIPTION BY ENOS MILLS

The trail is as old as the hills. In every wild corner of the world it is the dim romantic highway through "No Man's Land." Ever intimate with the forest and stream, this adventurous and primitive way has an endless variety. Its scenes shift and its vistas change. It has the aroma of the wilderness. It always leads to a definite place over a crooked and alluring way. With eager haste it may go straight to some poetic point, but usually it winds with many a delightful delay. I think of it as watching the white cascades, listening to the echoes, delaying by the lonely shore, spending hours in the forest primeval, leisurely crossing the grassy, sun-filled glades, skirting the time-stained crags and varnishing into the heights, looking down into the valley, and tarrying where artists would linger. Somewhere it leads to a lake.

At the primitive beaver house it takes a look as it crosses the expanded brook upon the beaver dam. A fallen tree gives it a way across the river. In a gorge it hears the ouzel from the rocks pour forth his melody--joyous notes of happy, liquid song.

It crosses a moraine to examine the useful debris that the Ice King formed while he was sculpturing the mountains and giving lines to the landscape. Clouds bound its realm with floating shadows. It passes a picturesque old landmark, a pine of a thousand years. In this one spot the ancient pine has stood, an observing spectator, while the seasons and the centuries flowed along. His autobiography is rich in weather lore, full of adventures, and filled with thrilling escapes from fires, lightening, and landslides. During his thousand years, strange travelers and processions have passed along. He often saw victor and victim and the endless drama of the wilderness.

The trail is followed by wild life, and along it the wild flowers fill the wild gardens. It has the spirit of the primal outdoors. It extends away ever to the golden age. Many a night this way across the earth is as thick with fireflies as the great Milky Way across the sky with stars. The moon, the white aspens, and the dark spruces pile it with romantic shades, and on a sunny day it is often touched by the fleeting shadow of an eagle in the sky.

This old acquaintance would have you carry your own pack, and, like your best friend, expects your best on every occasion. The trail compels you to know yourself and to be

yourself, and puts you in harmony with the universe. It makes you glad to be living. It gives health, hope, and courage, and it extends that touch of nature which tends to make you kind. This heroic way conducted out ancestors across the ages. It should be preserved. It has for us the inspiration of the ages.

A dim trail led our wandering primeval ancestors out from the twilight. It was a trail ever winding, shadowy, and broken, but ever under the open sky and ever from "yesterday's seven thousand years." It had its beginning in the walks of beasts that prowled the solemn primeval forests. Over it our half-lost ancestors painfully advanced. A fallen tree was their first bridge and a floating log their first boat. They wondered at the strange alternating day and night at which we still wonder. With joy they watched the shining dawn, and with fear and dread they saw the dusk of dying day. They learned the endless procession of seasons. The mysterious movements of wind and water aroused their curiosity, and with childlike interest they followed the soft and silent movements of the clouds. The wide and starry sky appealed strangely, strongly, to their imagination, and in this luminous field of space their fancy found a local habitation and a name for the thousand earthly fears and factors of their lives. They dared the prairie, climbed the hills, but long kept close to the forest.

After hard and fearful ages--after "A million years and a day"--the camp-fire came at last. This fragment of the Immortal Sun conquered the cold and the night, and misery and dread gave way to comfort and hope. No more the aspen trembled. It became a dancing youth, while the strange, invisible echo was a merry hiding child. The fireflies changed to fairies, and Pan commenced to pipe the elemental melody of the wild.

Nature ever showed her pictures and interested her children in fairylands. Winter, cold and leafless; spring, full of song and promise; the generous wealth of summer; and autumn with its harvest of color, came and disappeared, and came again through all the mysterious years. Lightning, the echo, with roar and whisper of the viewless air, the white and lonely moon, the strange elipse, the brilliant and fleeting rainbow,--Nature's irised silken banner,--the mystery of death, these seeds of thought bloomed into the fanciful, beautiful myths and legends that we know.

Once, like a web of joy, trails overspread all the wild gardens of the earth. The long trail is gone, and most others are cut to pieces and ruined. The few broken remnants are but little used.

The traveler who forgets or loses the trail will lose his way, or miss the best of life. The trail is the directest approach to the fountain of life, and this immortal way delays age and commands youth to linger. While you delay along the trail, Father Time pauses to lean upon his scythe. The trail wanders away from the fever and the fret, and leads to where the Red Gods call. This wonderful way must not be buried and forgotten.

Source: Enos A. Mills, Your National Parks (Boston and New York: Houghton Mifflin Company, 1917), pp. 451-453.

APPENDIX K

THE APPALACHIAN TRAILWAY AGREEMENT

The Appalachian Trailway Agreement is the basic and controlling policy with respect to the Trail in the Federally-owned lands.

The agreement with the States, to which all except Maine have adhered, differs in that the area is one-fourth mile on each side of the Trail. This limitation arises out of the limited area of the reservations in State ownership, which make the width in the Federal area, one mile, unworkable on the State-owned lands.

The Federal Appalachian Trailway Agreement follows:

MEMORANDUM OF AGREEMENT
between
THE NATIONAL PARK SERVICE
and
THE UNITED STATES FOREST SERVICE
for the Promotion of
THE APPALACHIAN TRAILWAY

WHEREAS, The Appalachian Trail is recognized as a regional project involving specialized forms of recreational land use; and

WHEREAS, Certain portions of the Trail traverse public lands under the separate jurisdictions of the National Park Service and the United States Forest Service; and

WHEREAS, The Federal Government is committed to the policy of fostering and promoting recreation in the public interest; and

WHEREAS, It is the desire of the respective Services to cooperate with the Appalachian Trail Conference and with the States through which the Trail passes in its protection and perpetuation;

NOW, THEREFORE, The National Park Service and the United States Forest Service do hereby mutually agree to carry out the following program, looking towards the creation of the Appalachian Trailway, insofar as consistent with their established policies, and subject to appropriate authority under Acts of Congress and the availability of funds therefor:

I

To designate a zone extending for a minimum width of one mile on each side of those portions of The Appalachian Trail which pass through areas under their separate jurisdiction, except in those localities where it descends into the main valleys, within which zone there will be constructed no new paralleling routes for the passage of motorized transportation and no developments which in the judgment of the administering agency are incompatible with the existence of said zone: Provided, that this agreement shall not be construed to affect the location of the Blue Ridge Parkway; Provided, further, that this shall not prevent logging and the construction of logging roads not open to the general public where the trail crosses areas under management for the production of timber; Provided, further, that within 200 feet of the trail no cutting primarily for timber production will take place.

II

To relocate wherever desirable and as rapidly as the agencies administering the land have available funds which can be devoted to these purposes and are not necessary for work of higher priority, and after agreement with the Appalachian Trail Conference, those portions of The Appalachian Trail which lie within one mile of paralleling routes for the passage of motorized transportation.

III

To maintain as well as available funds permit all other portions of The Appalachian Trail which pass through areas under their separate jurisdictions.

IV

To develop and maintain campsites with simple fireplace, water, sanitation and in most cases lean-to or other simple shelter facilities along or near the route of The Appalachian Trail wherever it passes through areas under their separate jurisdictions, and to locate such facilities so that they will not be more than a comfortable day's journey apart.

V

To cooperate with the several States and their political subdivisions in the gradual extension of public holdings along the general route of The Appalachian Trail, wherever the most justifiable forms of land use indicate such acquisition to be desirable, and as rapidly as the agencies administering the land have available funds which can be devoted to these purposes and are not necessary for work of higher priority.

VI

To encourage the acquisition of scenic easements along The Appalachian Trail or land use regulation through rural zoning, whichever appears to be the more feasible and economical means of protecting the scenic values of those portions of the Trailway which are not in public ownership.

VII

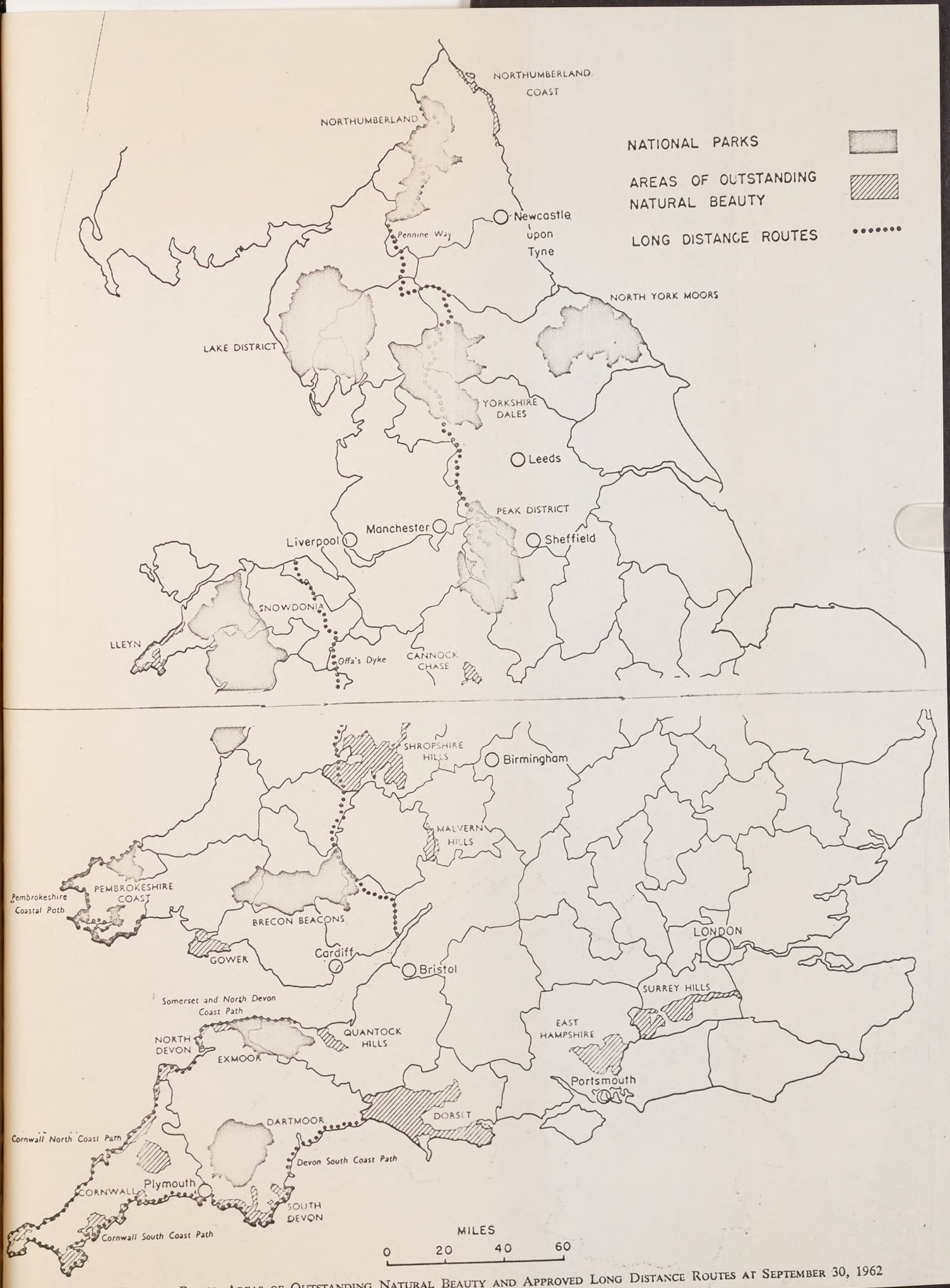
It is understood and agreed that this understanding may be terminated or modified in whole or in part upon six months' advance notice in writing given by either party hereto to the other.

Signed this 15th day of October, 1938.

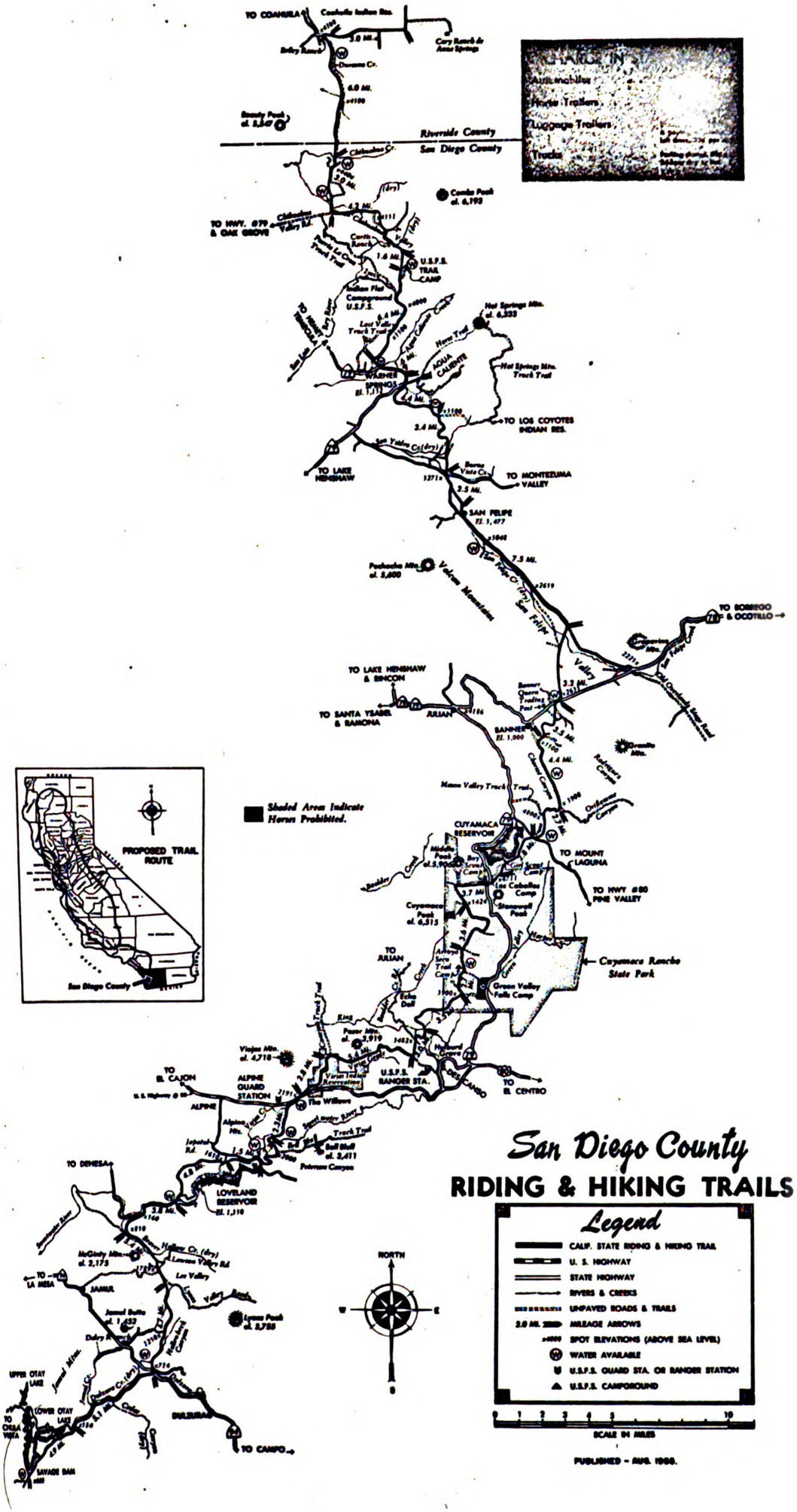
By Arno B. Cammerer, Director,
National Park Service.

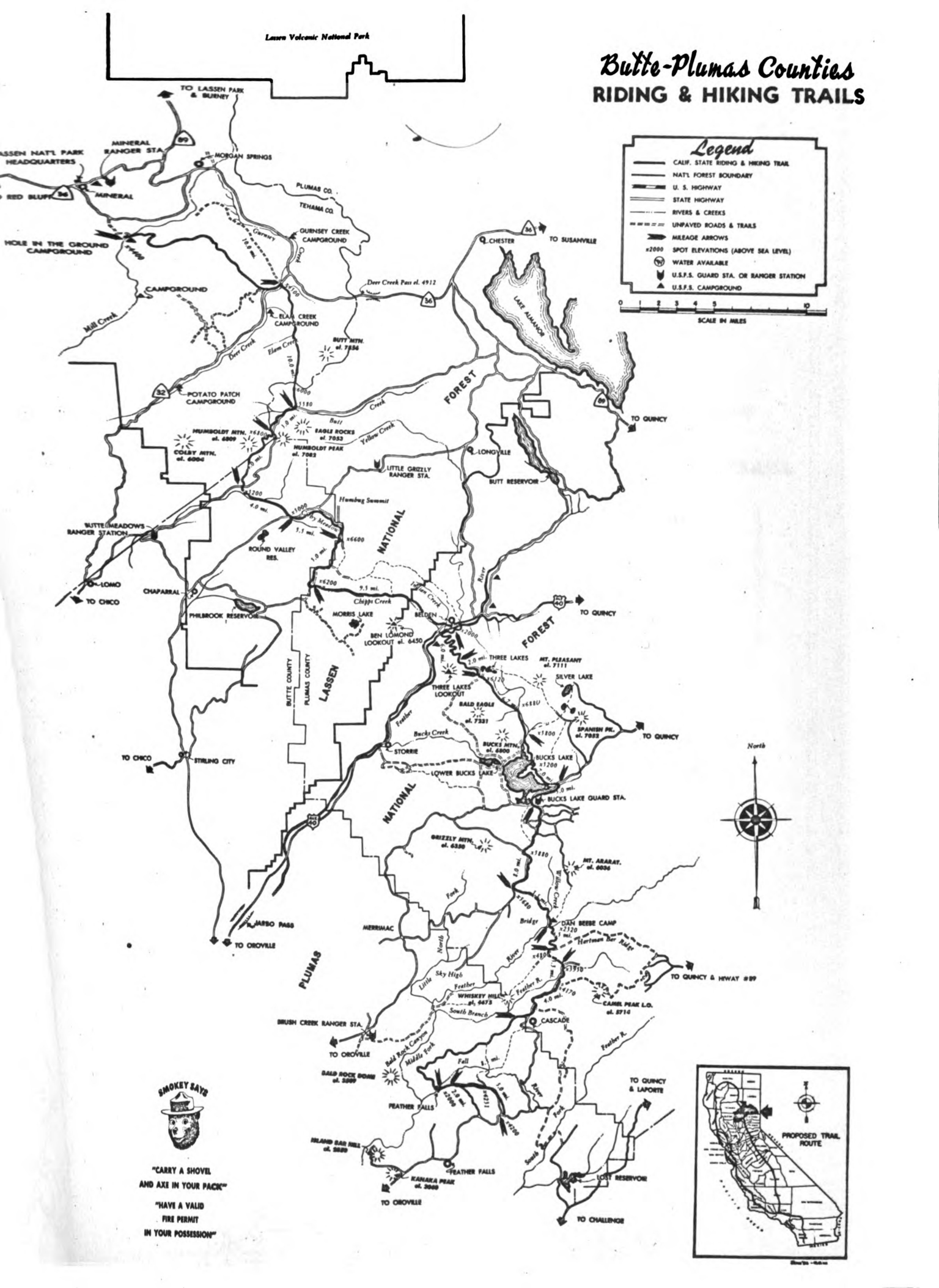
By C. L. Forsling, Acting Chief,
U.S. Forest Service.

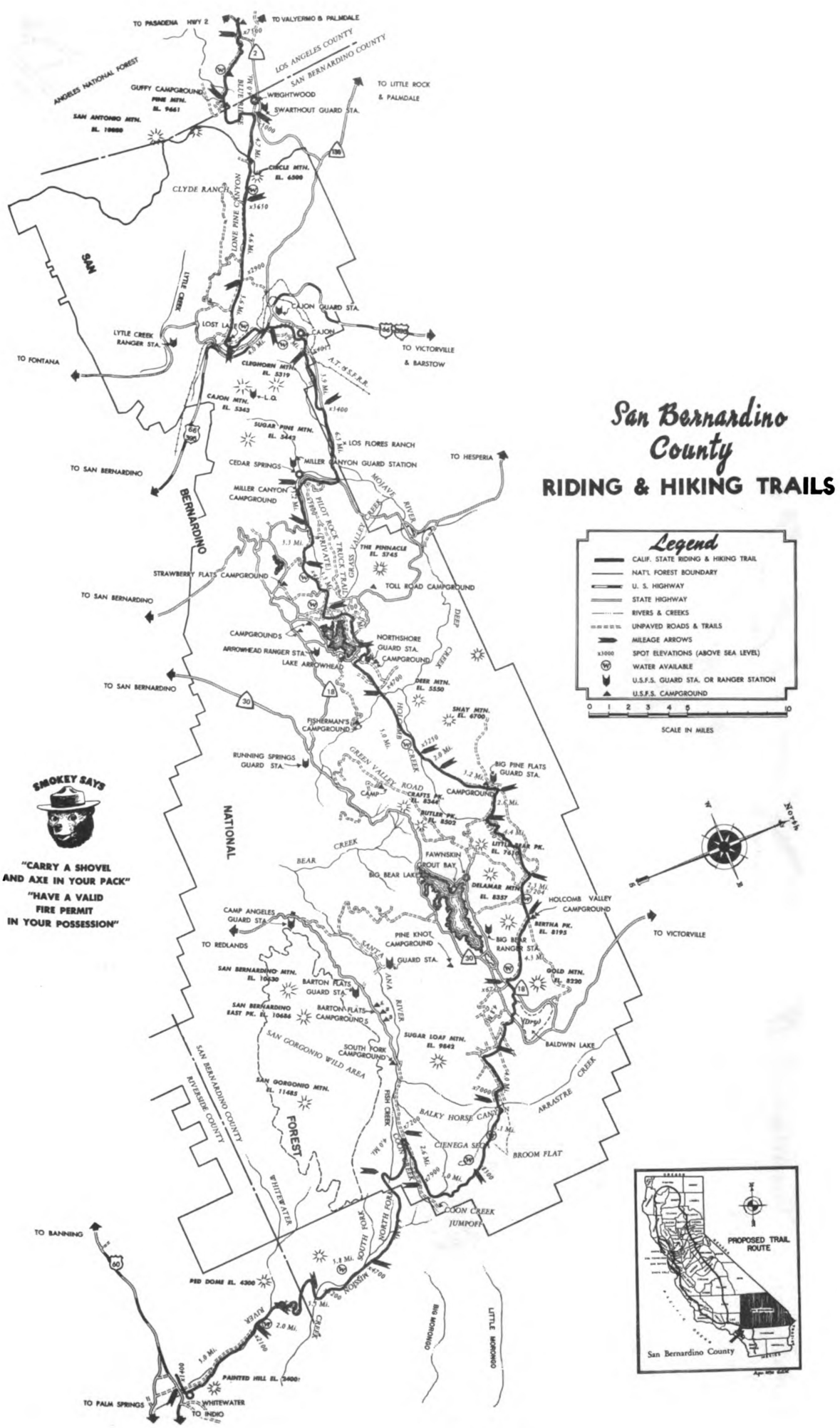
Source: The Appalachian Trail (6th ed.), Publication No. 5 (Washington, D.C.: The Appalachian Trail Conference, January, 1950), pp. 39-40.



1. The National Parks, Areas of Outstanding Natural Beauty and Approved Long Distance Routes at September 30, 1962


TO COAHUILA
Cahuilla Indian Res.
Cary Ranch & Anza Springs
Riverside County
San Diego County
Combs Peak el. 6,193
TO HWY. 79 & OAK GROVE
U.S.F.S. TRAIL CAMP
Hot Springs Mtn. el. 6,533
Hot Springs Mtn. Trail
AGUA CALIENTE
WARNER SPRINGS
TO LOS COYOTES INDIAN RES.
TO LAKE HENSHAW
TO MONTEZUMA VALLEY
SAN FELIPE
Pacheco Mtn. el. 5,600
Volcan Mountains
TO BORREGO & OCOTILLO
TO LAKE HENSHAW & JULIAN
TO SANTA YSABEL & RAMONA
JULIAN
BANNER
Granite Mtn.
Mason Valley Truck Trail
CUYAMACA RESERVOIR
TO MOUNT LAGUNA
TO HWY 80 PINE VALLEY
Cuyamaca Peak el. 6,515
Los Caballos Camp
Stonewall Peak
Cuyamaca Rancho State Park
TO JULIAN
Green Valley Falls Camp
Pine Mtn. el. 5,919
Viejas Mtn. el. 4,718
TO EL CAJON
ALPINE GUARD STATION
U.S.F.S. RANGER STA.
TO EL CENTRO
ALPINE
The Willows
Bell Bluff el. 2,411
Peterson Canyon
TO DEHESA
LOVELAND RESERVOIR
McGinty Mtn. el. 2,175
Lawson Valley Rd.
TO LA MESA
JAMUL
Lyons Peak el. 3,780
UPPER OTAY LAKE
LOWER OTAY LAKE
SAVAGE DAM
DULZURA
TO CAMPO
TO CHULA VISTA
PROPOSED TRAIL ROUTE
San Diego County
Shaded Areas Indicate Horses Prohibited.
NORTH
San Diego County
RIDING & HIKING TRAILS
Legend
CALIF. STATE RIDING & HIKING TRAIL
U. S. HIGHWAY
STATE HIGHWAY
RIVERS & CREEKS
UNPAVED ROADS & TRAILS
MILEAGE ARROWS
SPOT ELEVATIONS (ABOVE SEA LEVEL)
WATER AVAILABLE
U.S.F.S. GUARD STA. OR RANGER STATION
U.S.F.S. CAMPGROUND
SCALE IN MILES
PUBLISHED – AUG. 1968.


Lassen Volcanic National Park
Butte-Plumas Counties
RIDING & HIKING TRAILS
Legend
CALIF. STATE RIDING & HIKING TRAIL
NAT'L FOREST BOUNDARY
U. S. HIGHWAY
STATE HIGHWAY
RIVERS & CREEKS
UNPAVED ROADS & TRAILS
MILEAGE ARROWS
x2000 SPOT ELEVATIONS (ABOVE SEA LEVEL)
WATER AVAILABLE
U.S.F.S. GUARD STA. OR RANGER STATION
U.S.F.S. CAMPGROUND
SCALE IN MILES
TO LASSEN PARK & BURNEY
MINERAL RANGER STA.
MORGAN SPRINGS
MINERAL
HOLE IN THE GROUND CAMPGROUND
GURNSEY CREEK CAMPGROUND
PLUMAS CO.
TEHAMA CO.
CHESTER
TO SUSANVILLE
Deer Creek Pass el. 4912
LAKE ALMANOR
CAMPGROUND
BLACK CREEK CAMPGROUND
BUTT MTN. el. 7856
POTATO PATCH CAMPGROUND
HUMBOLDT MTN. el. 6809
COLBY MTN. el. 6060
EAGLES ROCKS el. 7053
HUMBOLDT PEAK el. 7083
LITTLE GRIZZLY RANGER STA.
LONGVILLE
BUTT RESERVOIR
TO QUINCY
BUTTE MEADOWS RANGER STATION
ROUND VALLEY RES.
LOMO
TO CHICO
CHAPARRAL
PHILBROOK RESERVOIR
MORRIS LAKE
BEN LOMOND LOOKOUT el. 6450
BELDEN
THREE LAKES
THREE LAKES LOOKOUT
MT. PLEASANT el. 7111
SILVER LAKE
BALD EAGLE el. 7331
SPANISH PK. el. 7083
BUCKS MTN. el. 6000
BUCKS LAKE
LOWER BUCKS LAKE
STORRIE
STIRLING CITY
BUCKS LAKE GUARD STA.
GRIZZLY MTN. el. 6380
MT. ARARAT el. 6036
JARBO PASS
TO OROVILLE
MERRIMAC
DAN BEEBE CAMP
Hartman Bar Ridge
TO QUINCY & HIWAY #89
CAMEL PEAK L.O. el. 5714
WHISKEY HILL el. 6475
CASCADE
BRUSH CREEK RANGER STA.
TO OROVILLE
BALD ROCK DOME el. 5059
FEATHER FALLS
TO QUINCY & LAPORTE
ISLAND BAR HILL el. 2820
KANAKA PEAK el. 3060
FEATHER FALLS
TO OROVILLE
LOST RESERVOIR
TO CHALLENGE
BUTTE COUNTY
PLUMAS COUNTY
LASSEN NATIONAL FOREST
PLUMAS NATIONAL FOREST
North
PROPOSED TRAIL ROUTE
SMOKEY SAYS
"CARRY A SHOVEL AND AXE IN YOUR PACK"
"HAVE A VALID FIRE PERMIT IN YOUR POSSESSION"


San Bernardino County
RIDING & HIKING TRAILS
Legend
CALIF. STATE RIDING & HIKING TRAIL
NAT'L FOREST BOUNDARY
U. S. HIGHWAY
STATE HIGHWAY
RIVERS & CREEKS
UNPAVED ROADS & TRAILS
MILEAGE ARROWS
x3000 SPOT ELEVATIONS (ABOVE SEA LEVEL)
WATER AVAILABLE
U.S.F.S. GUARD STA. OR RANGER STATION
U.S.F.S. CAMPGROUND
SCALE IN MILES
SMOKEY SAYS
"CARRY A SHOVEL AND AXE IN YOUR PACK"
"HAVE A VALID FIRE PERMIT IN YOUR POSSESSION"
PROPOSED TRAIL ROUTE
San Bernardino County
TO PASADENA HWY 2
TO VALYERMO & PALMDALE
LOS ANGELES COUNTY
SAN BERNARDINO COUNTY
ANGELES NATIONAL FOREST
GUFFY CAMPGROUND
PINE MTN. EL. 9661
SAN ANTONIO MTN. EL. 10080
WRIGHTWOOD
SWARTHOUT GUARD STA.
TO LITTLE ROCK & PALMDALE
CIRCLE MTN. EL. 6300
CLYDE RANCH
LONE PINE CANYON
SAN
BERNARDINO
NATIONAL
FOREST
LYTLE CREEK
LOST LAKE
CAJON GUARD STA.
CAJON
LYTLE CREEK RANGER STA.
TO FONTANA
TO VICTORVILLE & BARSTOW
CLEGHORN MTN. EL. 5319
A.T.&S.F.R.R.
CAJON MTN. EL. 5343
SUGAR PINE MTN. EL. 5342
LOS FLORES RANCH
TO HESPERIA
TO SAN BERNARDINO
CEDAR SPRINGS
MILLER CANYON GUARD STATION
MILLER CANYON CAMPGROUND
PILOT ROCK TRUCK TRAIL (PRIVATE)
MOJAVE RIVER
GRASS VALLEY CREEK
THE PINNACLE EL. 5745
STRAWBERRY FLATS CAMPGROUND
TOLL ROAD CAMPGROUND
TO SAN BERNARDINO
CAMPGROUNDS
ARROWHEAD RANGER STA.
LAKE ARROWHEAD
NORTHSHORE GUARD STA. CAMPGROUND
DEER CREEK
DEER MTN. EL. 5550
TO SAN BERNARDINO
SKAY MTN. EL. 6700
FISHERMAN'S CAMPGROUND
HOT SPRINGS CREEK
RUNNING SPRINGS GUARD STA.
GREEN VALLEY ROAD
CRAFTS PK. EL. 8344
BIG PINE FLATS GUARD STA.
CAMPGROUND
BUTLER PK. EL. 8502
LITTLE BEAR PK. EL. 7610
BEAR CREEK
FAWNSKIN
TROUT BAY
BIG BEAR LAKE
DELAMAR MTN. EL. 8357
HOLCOMB VALLEY CAMPGROUND
CAMP ANGELES GUARD STA.
TO REDLANDS
PINE KNOT CAMPGROUND
GUARD STA.
BERTHA PK. EL. 8195
BIG BEAR RANGER STA.
TO VICTORVILLE
SAN BERNARDINO MTN. EL. 10630
BARTON FLATS GUARD STA.
SANTA ANA RIVER
GOLD MTN. EL. 8220
SAN BERNARDINO EAST PK. EL. 10686
BARTON FLATS CAMPGROUNDS
SUGAR LOAF MTN. EL. 9842
BALDWIN LAKE
SOUTH FORK CAMPGROUND
SAN GORGONIO WILD AREA
SAN GORGONIO MTN. EL. 11485
ARRASTRE CREEK
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
FISH CREEK
BALKY HORSE CANYON
CIENEGA SEDA
BROOM FLAT
WHITEWATER
COON CREEK
COON CREEK JUMPOFF
NORTH FORK
SOUTH FORK
MISSION CREEK
TO BANNING
RED DOME EL. 4300
PAINTED HILL EL. 3400±
TO PALM SPRINGS
WHITEWATER
TO INDIO
BIG MORONGO
LITTLE MORONGO

Los Angeles County
RIDING & HIKING TRAILS

CHARGE IN STATE PARKS

Automobiles	Parking charge, 25¢ per 24-hour day or less
Horse Trailers	Parking charge, 25¢ per 24-hour day or less
Luggage Trailers	No extra charge if a car is paying; otherwise, if left there, 25¢ per day
Trucks	Parking charge, 50¢ per 24-hour day or less



Legend

- CALIF. STATE RIDING & HIKING TRAIL
- NAT'L FOREST BOUNDARY
- U. S. HIGHWAY
- STATE HIGHWAY
- RIVERS & CREEKS
- UNPAVED ROADS & TRAILS
- MILEAGE ARROWS
- x6000 SPOT ELEVATIONS (ABOVE SEA LEVEL)
- (W) WATER AVAILABLE
- U.S.F.S. GUARD STA. OR RANGER STATION
- U.S.F.S. CAMPGROUND

0 1 2 3 4 5 10
SCALE IN MILES

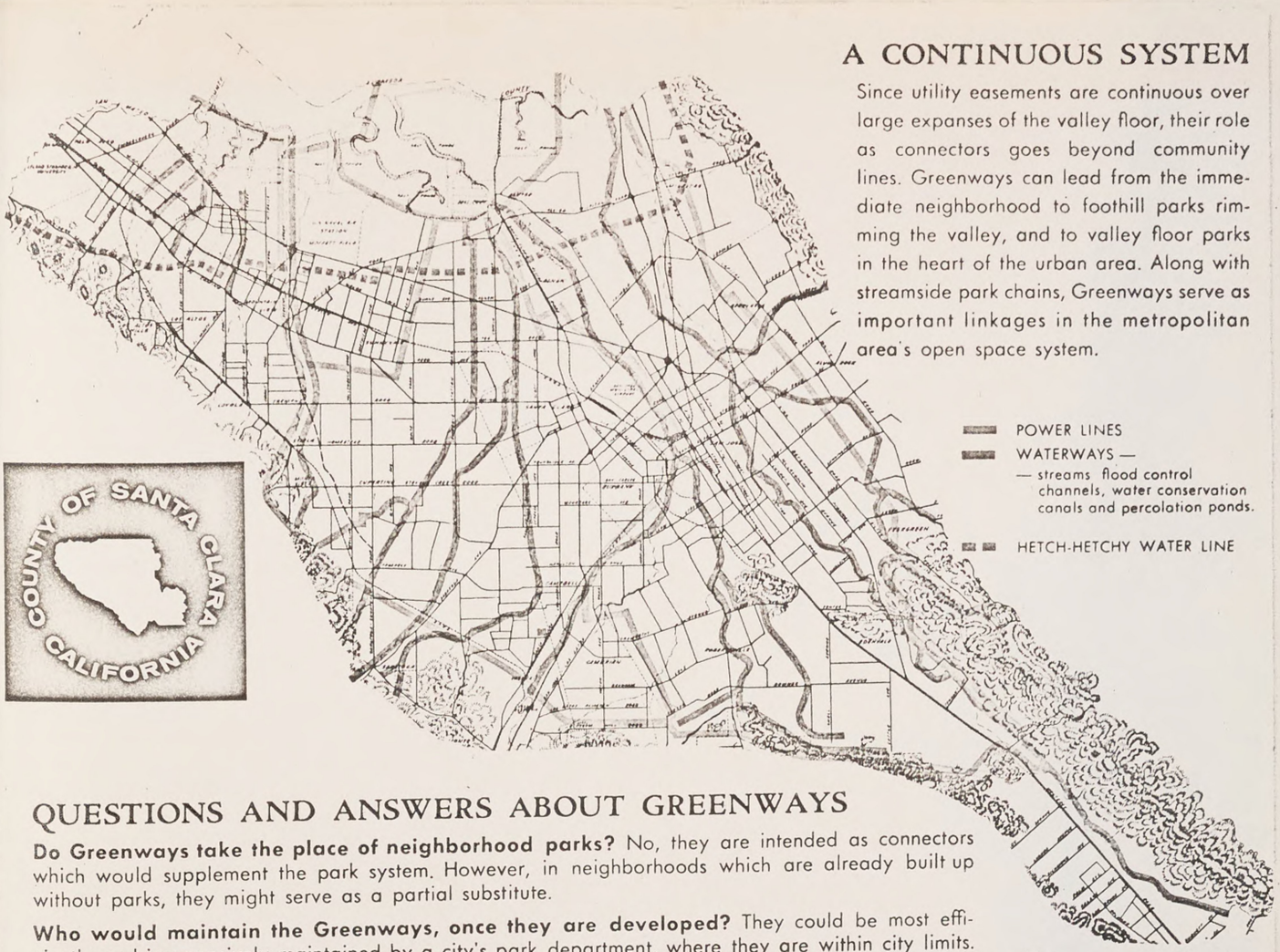
TO VENTURA & SANTA BARBARA (Under Construction)
TO GORMAN & BAKERSFIELD
TO TEHACHAPI
Kern County
TO CASTAIC
FOREST
HUGHES LAKE
Elizabeth Lake Canyon
FAIRMONT RES.
FAIRMONT
3.0 Mi.
x3000
4.5 Mi.
MUNZ LAKE
2.2 Mi.
x3500
Grass Mtn. El. 4605
ELIZABETH LAKE
3.3 Mi.
x3402
NATIONAL
ANGELES
San Francisquito Canyon
BOUQUET RES.
Bouquet Canyon
4.5 Mi.
x4000
5.3 Mi.
TO LANCASTER
TO SAN FERNANDO
Sierra Pelona El. 4850
4.9 Mi.
x4500
x3000
Mt. McDill El. 5187
3.3 Mi.
Santa Clara River
Sierra Pelona Valley
TO LANCASTER & MOJAVE
TO SAUGUS
Magic Mtn. El. 4878
4.1 Mi.
Parker Mtn. El. 4127
RAVENNA
ACTON
3.3 Mi.
1.7 Mi.
x3000
PALMDALE
PALMDALE RES.
Soledad Canyon
WERNERS CAMP
Messenger Flats
L. A. County Home for the Aged
5.0 Mi.
MAGNETIC SPR.
Iron Mtn. El. 5632
7.1 Mi.
x5450
VINCENT
Mt. Gleason El. 6532
3.8 Mi.
x5100
5.9 Mi.
ANGELES
NATIONAL
Cutoff
Palmdale
FOREST
LITTLE ROCK
TO LA CANADA
Pasadena
Mill Creek Summit
Mill Creek
8.2 Mi.
Granite Mtn. El. 6597
Pacifico Mtn. El. 7124
Tujunga Creek
Mt. Hillyer El. 6144
CHILAO GUARD STA.
x5500
4.0 Mi.
Little Rock Cr.
PEARBLOSSOM
4.5 Mi.
BUCKHORN GUARD STA.
x7000
3.2 Mi.
Pleasant View Ridge
Big Rock
Canyon
Watsman Mtn. El. 8038
Devils
VALYERMO RANGER STA.
VALYERMO P.O.
Devils Canyon
Bear Canyon
Wild Area
Kratka Ridge
Mt. Williamson El. 8214
5.0 Mi.
x6000
Devils Punchbowl
San Gabriel River
Bear Cr.
Mt. Islip El. 8250
Mt. Lewis El. 8395
4.0 Mi.
Pinyon Ridge
5500
CALDWELL LAKE
TO VICTORVILLE
Mt. Hawkins El. 8418
N. Baldy Peak El. 9134
3.5 Mi.
SAN GABRIEL RES.
Iron Fork
Mt. Baden-Powell El. 9399
4.0 Mi.
x7500
BIG PINES REC. AREA
Prairie Fork
4.6 Mi.
Blue Ridge
4.0 Mi.
x8000
North

OREGON
NEVADA
PROPOSED TRAIL ROUTE

SMOKEY SAYS

A CONTINUOUS SYSTEM

Since utility easements are continuous over large expanses of the valley floor, their role as connectors goes beyond community lines. Greenways can lead from the immediate neighborhood to foothill parks rimming the valley, and to valley floor parks in the heart of the urban area. Along with streamside park chains, Greenways serve as important linkages in the metropolitan area's open space system.



COUNTY OF SANTA CLARA CALIFORNIA

QUESTIONS AND ANSWERS ABOUT GREENWAYS

Do Greenways take the place of neighborhood parks? No, they are intended as connectors which would supplement the park system. However, in neighborhoods which are already built up without parks, they might serve as a partial substitute.

Who would maintain the Greenways, once they are developed? They could be most efficiently and inexpensively maintained by a city's park department, where they are within city limits. Maintenance by a neighborhood association or by a special district created for the purpose is also possible.

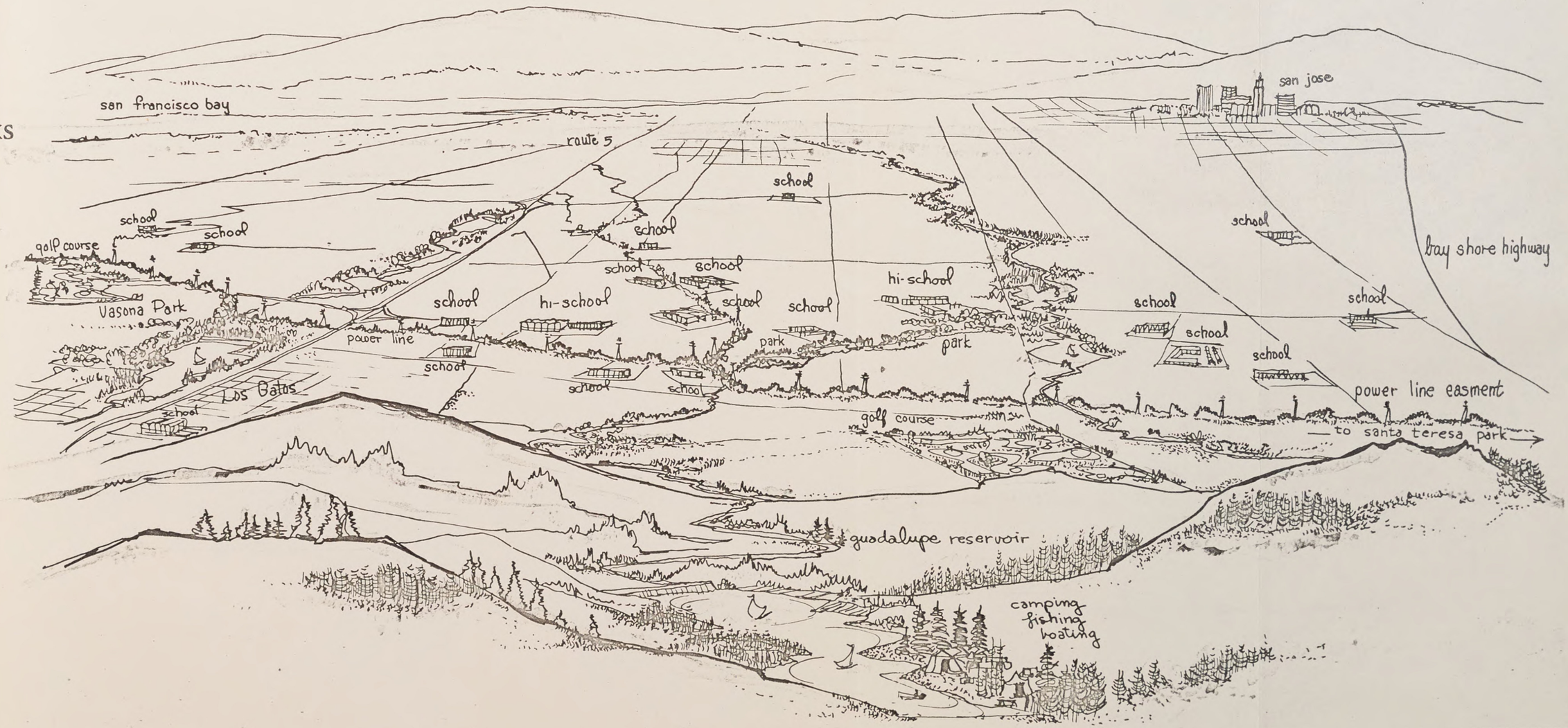
Who would police the Greenways? A city police department, or the County Sheriff if the area is unincorporated, would police Greenways just as they do parks and other public places.

Who will insure the Greenways against public liability suits which might arise in connection with their use? The Pacific Gas and Electric Company will continue the insurance they presently carry on their installations. Cities can obtain an insurance rider to their present parks and recreation liability insurance at a negligible price.

How will abutting property owners be affected? When the Greenways are developed, abutting property owners will benefit by an increase in the resale value of their property. One residential appraiser has estimated that this increase would amount to from $750 to $1,000.

Published by County of Santa Clara Planning Department, July, 1961.

RKS


san francisco bay
route 5
san jose
school
golf course
Vasona Park
power line
Los Gatos
hi-school
park
bay shore highway
power line easment
to santa teresa park
guadalupe reservoir
camping
fishing
boating

MICHIGAN
DEPARTMENT OF CONSERVATION

OAKLAND COUNTY

SCALE IN MILES
0 1 2

N

BASE MAP BY MICHIGAN STATE HIGHWAY DEPARTMENT

LEGEND

ROADS

- UNIMPROVED ROAD
- GRADED AND DRAINED ROAD
- SOIL SURFACED ROAD
- GRAVEL OR SIMILAR ROAD
- BITUMINOUS SURFACED ROAD
- PAVED ROAD
- DIVIDED HIGHWAY
- DIVIDED HIGHWAY WITH FRONTAGE ROAD

ROAD SYSTEM DESIGNATION

- INTERSTATE HIGHWAY (94)
- UNITED STATES HIGHWAY (27)
- STATE HIGHWAY (78)
- BUSINESS LOOP — BL
- BUSINESS ROUTE — BR
- BUSINESS SPUR — BS

AIRPORTS
(WITH FIELD LIMITS AND RUNWAYS)

- MILITARY FIELD (SOME FACILITIES AVAILABLE)
- AIRPORT, COMPLETE FACILITIES (COMMERCIAL OR MUNICIPAL)
- AIRFIELD, LIMITED FACILITIES
- LANDING AREA OR STRIP (INCLUDING PRIVATE AIRFIELDS)

RAILROADS

- RAILROAD (ANY NUMBER TRACKS) USED BY SINGLE OPERATING COMPANY
- RAILROAD (ANY NUMBER TRACKS) USED BY MORE THAN ONE OPERATING COMPANY ON SAME OR ADJACENT RIGHTS OF WAY (NOT TRACKAGE RIGHTS)
- RAILROAD STATION
- RAILROAD ABOVE ROAD
- RAILROAD BELOW ROAD
- RAILROAD TUNNEL

HIGHWAY BRIDGES
(20 TO 200 FT. LENGTH)

- GENERAL
- DRAWBRIDGE

(200 FT LENGTH OR OVER)

- GENERAL
- DRAWBRIDGE
- SUSPENSION
- ARCH
- TRUSS OR GIRDER
- HIGHWAY GRADE SEPARATION
- INTERCHANGE SHOWING RAMPS

DRAINAGE

- NARROW STREAM
- WIDE STREAM (OVER 250 FT)

NAVIGATION

- FREE FERRY — FF
- TOLL FERRY — TF

DAMS

- DAM WITH ROAD
- DAM WITHOUT ROAD

BOUNDARIES

- NATIONAL BOUNDARY
- STATE BOUNDARY
- COUNTY BOUNDARY
- CIVIL TOWNSHIP BOUNDARY
- CONGRESSIONAL (U.S. LAND) TOWNSHIP BOUNDARY
- SECTION LINE

CITY AND VILLAGE

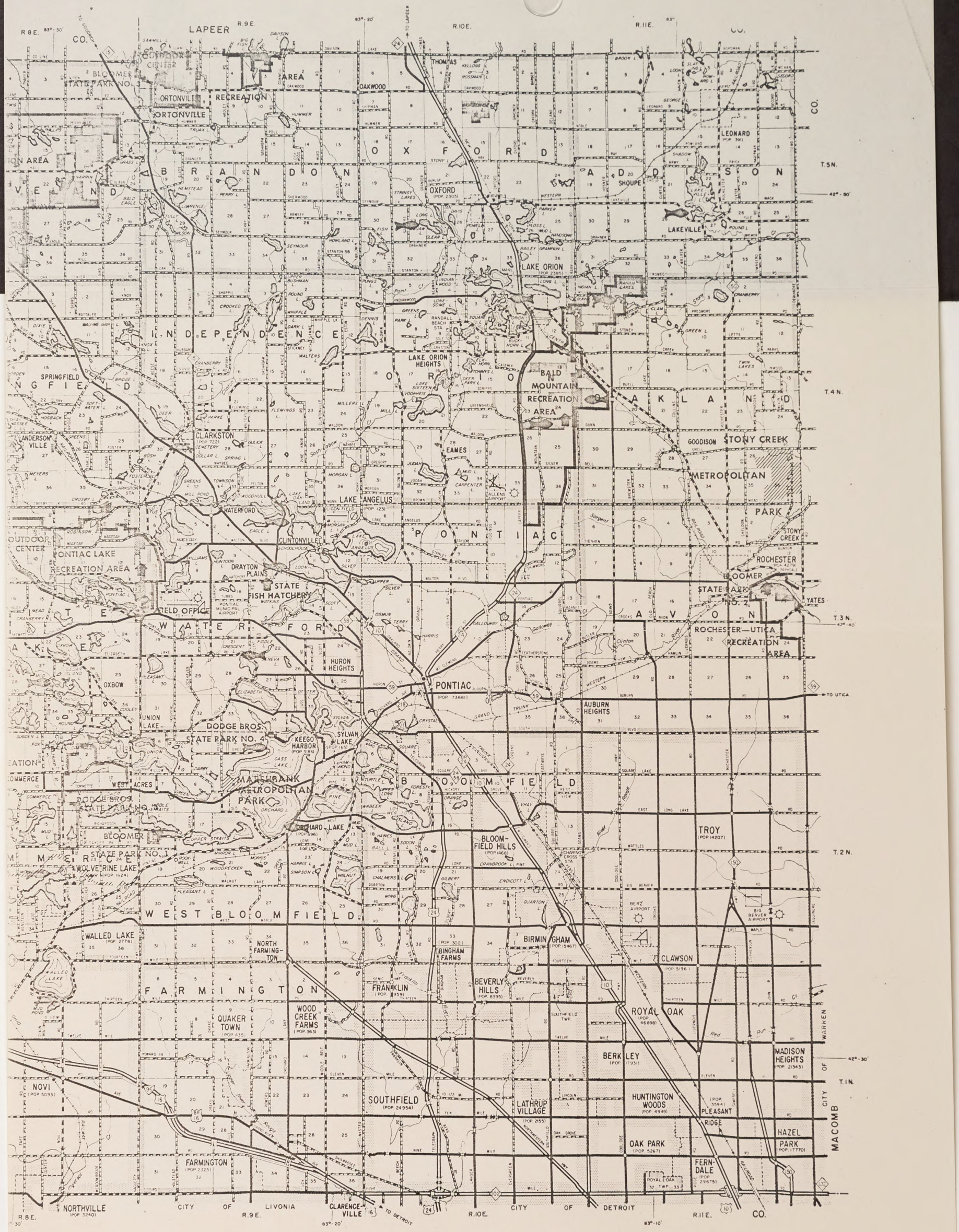
- STATE CAPITAL
- COUNTY SEAT
- UNINCORPORATED COMMUNITIES
- INCORPORATED CITY OR VILLAGE

CONSERVATION LEGEND

- STATE LANDS DEDICATED FOR STATE FOREST, PARKS AND OTHER PUBLIC CONSERVATION USES
- FEDERAL GOVERNMENT LANDS IN NATIONAL FORESTS
- BOUNDARIES, STATE AND NATIONAL PROJECTS
- CONSERVATION DEPARTMENT UNITS
- PUBLIC FISHING SITES
- MUNICIPAL AND ROADSIDE PARKS
- STATE AND NATIONAL FOREST CAMP GROUNDS
- WILDLIFE FLOODING

NOTE:
IT IS THE POLICY TO RETAIN STATE LANDS IN STATE OR NATIONAL PROJECT AREAS. FOR FURTHER INFORMATION INQUIRE LANDS DIVISION, DEPARTMENT OF CONSERVATION, LANSING 26, MICH.




R8E. 83°-30'
LAPEER CO.
R.9E.
83°-20'
R.10E.
R.11E.
TO LAPEER
TO GOODRICH
TO UTICA
T.5N.
42°-50'
T.4N.
T.3N.
42°-40'
T.2N.
42°-30'
T.1N.
R.8E.
R.9E.
R.10E.
R.11E.
83°-30'
83°-20'
83°-10'
CITY OF WARREN
CITY OF MACOMB
OAKLAND CO.
JUNE 1, 1961
BLOOMER STATE PARK NO. 3
ORTONVILLE RECREATION AREA
ORTONVILLE
OAKWOOD
THOMAS
LEONARD (POP 391)
SHOUPE
LAKEVILLE
OXFORD (POP 2305)
LAKE ORION (POP 2385)
LAKE ORION HEIGHTS
BALD MOUNTAIN RECREATION AREA
SPRINGFIELD
ANDERSONVILLE
CLARKSTON (POP 722)
CEMETERY
EAMES
GOODISON
STONY CREEK METROPOLITAN PARK
WATERFORD
LAKE ANGELUS (POP 123)
CLINTONVILLE
OUTDOOR CENTER
PONTIAC LAKE RECREATION AREA
DRAYTON PLAINS
STATE FISH HATCHERY
FIELD OFFICE
TUBBS PONTIAC MUNICIPAL AIRPORT
ROCHESTER (POP 4279)
BLOOMER STATE PARK NO. 2
YATES
ROCHESTER—UTICA RECREATION AREA
HURON HEIGHTS
OXBOW
UNION LAKE
DODGE BROS. STATE PARK NO. 4
KEEGO HARBOR (POP 3186)
SYLVAN LAKE (POP 165)
PONTIAC (POP 73681)
AUBURN HEIGHTS
MAPLEBANK METROPOLITAN PARK
ORCHARD LAKE (POP 596)
BLOOMER STATE PARK NO. 1
WOLVERINE LAKE (POP 1624)
WEST BLOOMFIELD
BLOOMFIELD HILLS (POP 1468)
TROY (POP 14207)
WALLED LAKE (POP 2778)
NORTH FARMINGTON
BINGHAM FARMS
BIRMINGHAM (POP 15467)
CLAWSON (POP 5196)
FARMINGTON
FRANKLIN (POP 959)
BEVERLY HILLS (POP 8395)
WOOD CREEK FARMS (POP 363)
QUAKER TOWN (POP 635)
ROYAL OAK (POP 46898)
BERKLEY (POP 7931)
MADISON HEIGHTS (POP 21343)
NOVI (POP 5093)
SOUTHFIELD (POP 24954)
LATHRUP VILLAGE (POP 2155)
HUNTINGTON WOODS (POP 4949)
PLEASANT RIDGE (POP 3594)
OAK PARK (POP 5267)
HAZEL PARK (POP 17770)
FERNDALE (POP 29675)
ROYAL OAK TWP.
FARMINGTON (POP 2325)
NORTHVILLE (POP 3240)
CITY OF LIVONIA
CLARENCEVILLE
TO DETROIT
CITY OF DETROIT
BERRY AIRPORT
BIG BEAVER AIRPORT
OAKLAND CO.

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