

AN EVOLUTION OF LAND USE IN KENT COUNTY, MARYLAND

By

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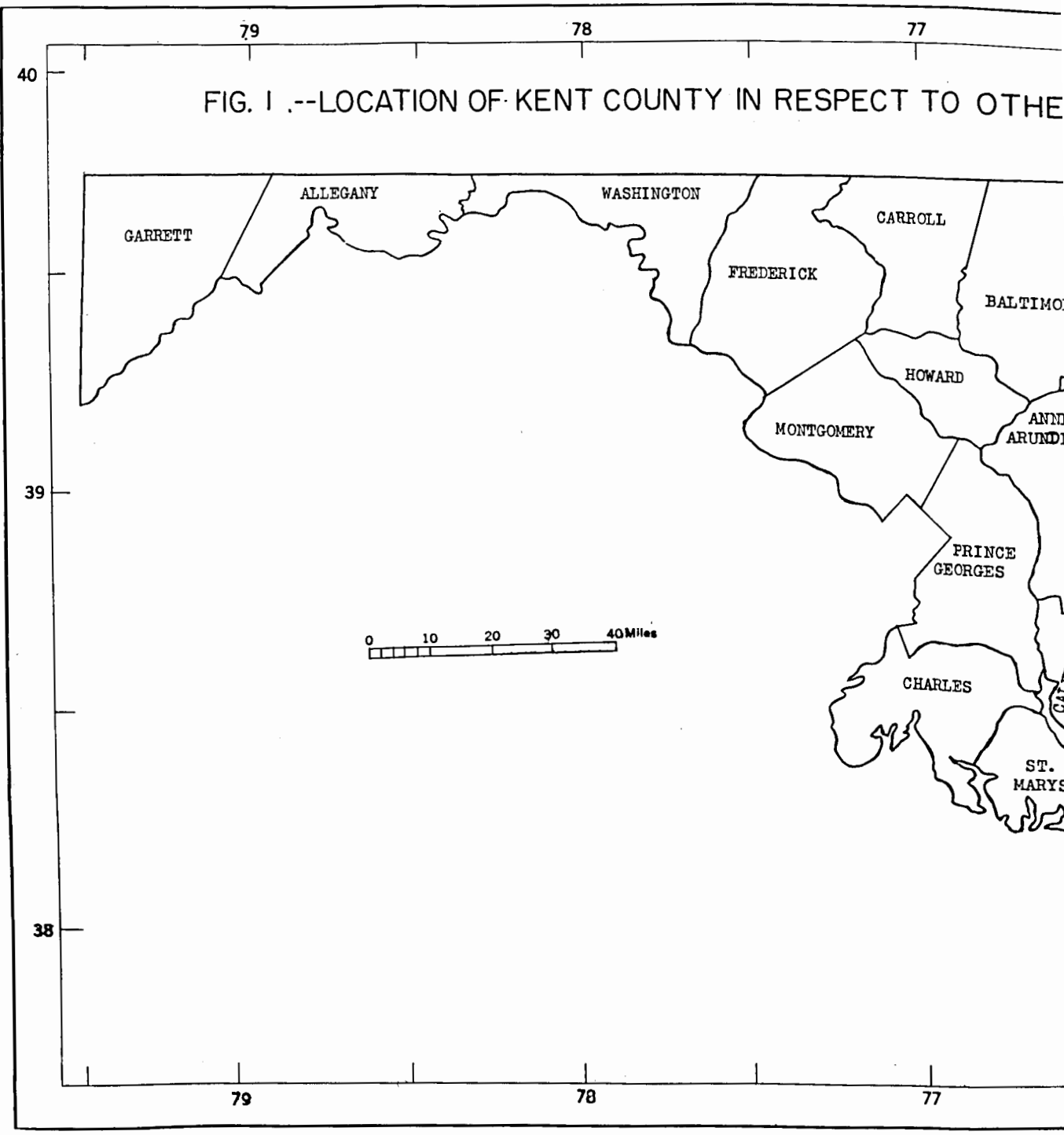
## INTRODUCTION

The object of this study is to determine the land use changes that have taken place in Kent County, located on the Eastern Shore of Maryland (See Fig. 1) with emphasis on recent land use changes. The principal objectives of this study will be to ascertain, analyze, and review the evolution of land utilization in Kent County.

A major trend within the past ten years has been toward a decreasing number of farms and, at the same time, a decreasing number of people gainfully employed in agriculture. This trend has resulted in the displacement of agricultural earners by farm machinery and farm consolidations. An increase in the average size of farms is due to "outsiders" — business men from out-of-state -- who have established themselves in the county by buying and combining principally waterfront property. Thus large estates are formed along with the restoration of Colonial homes. This type of land tenure has been bringing about utilization of the land in the form of large dairy and beef herds. Kent County has the smallest number of farms of all the counties in Maryland but it has the largest average farm size in the state. This is an area of predominantly large dairy farms with highly mechanized machinery and equipment. The major trend in the last 25 years has been from cash grain to livestock raising which has resulted from the growth of dairying. The pattern of field crops has also changed from cash grains to feed grains for the large dairy herds.

This study has been accomplished through the use of field work, historical data, tables, maps, and photographs. The assumption can be made that greater permanency and stability in land use may be assured

FIG. 1 .--LOCATION OF KENT COUNTY IN RESPECT TO OTHE



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I .--LOCATION OF KENT COUNTY IN RESPECT TO OTHER COUNTIES IN MARYLAN

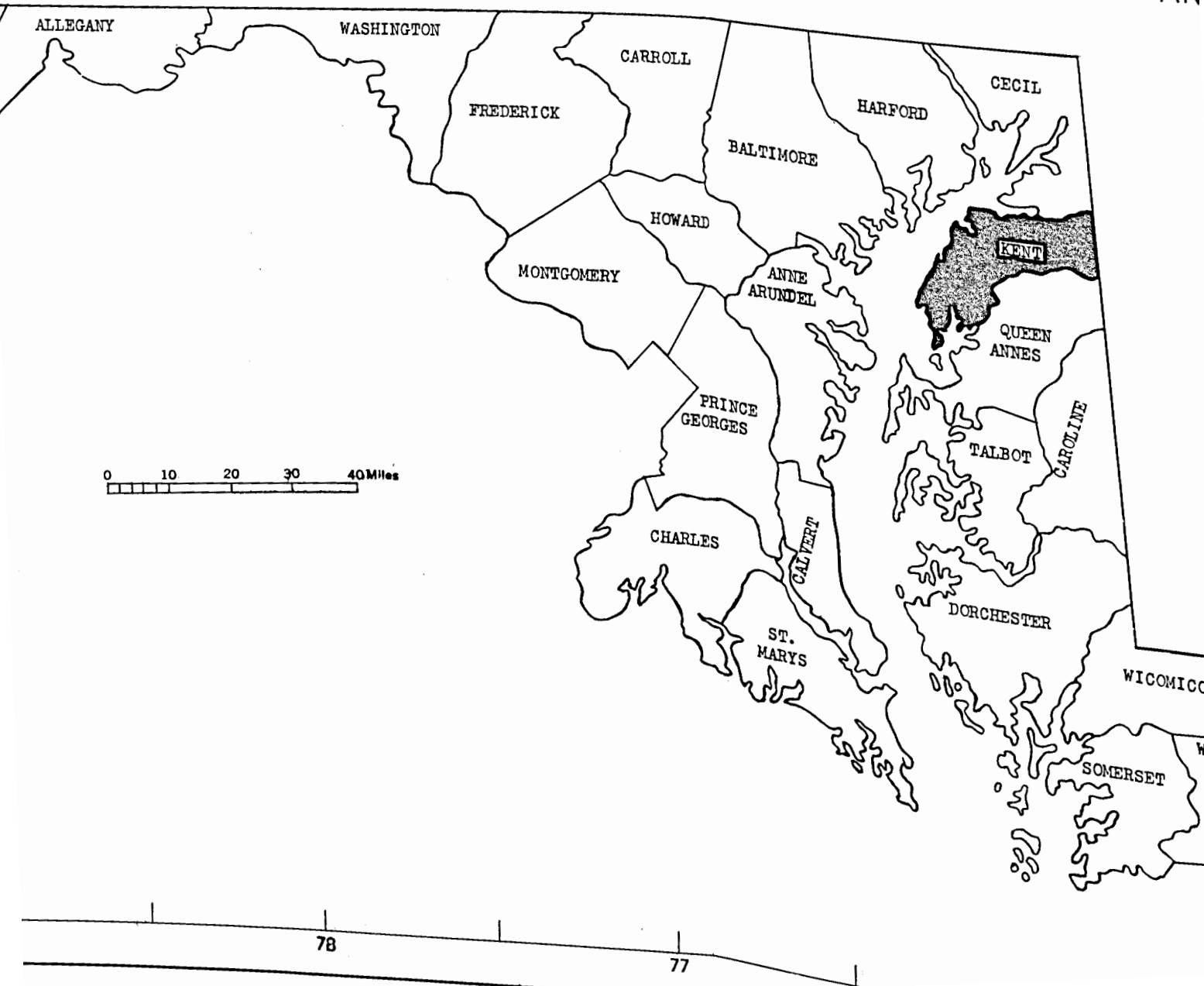
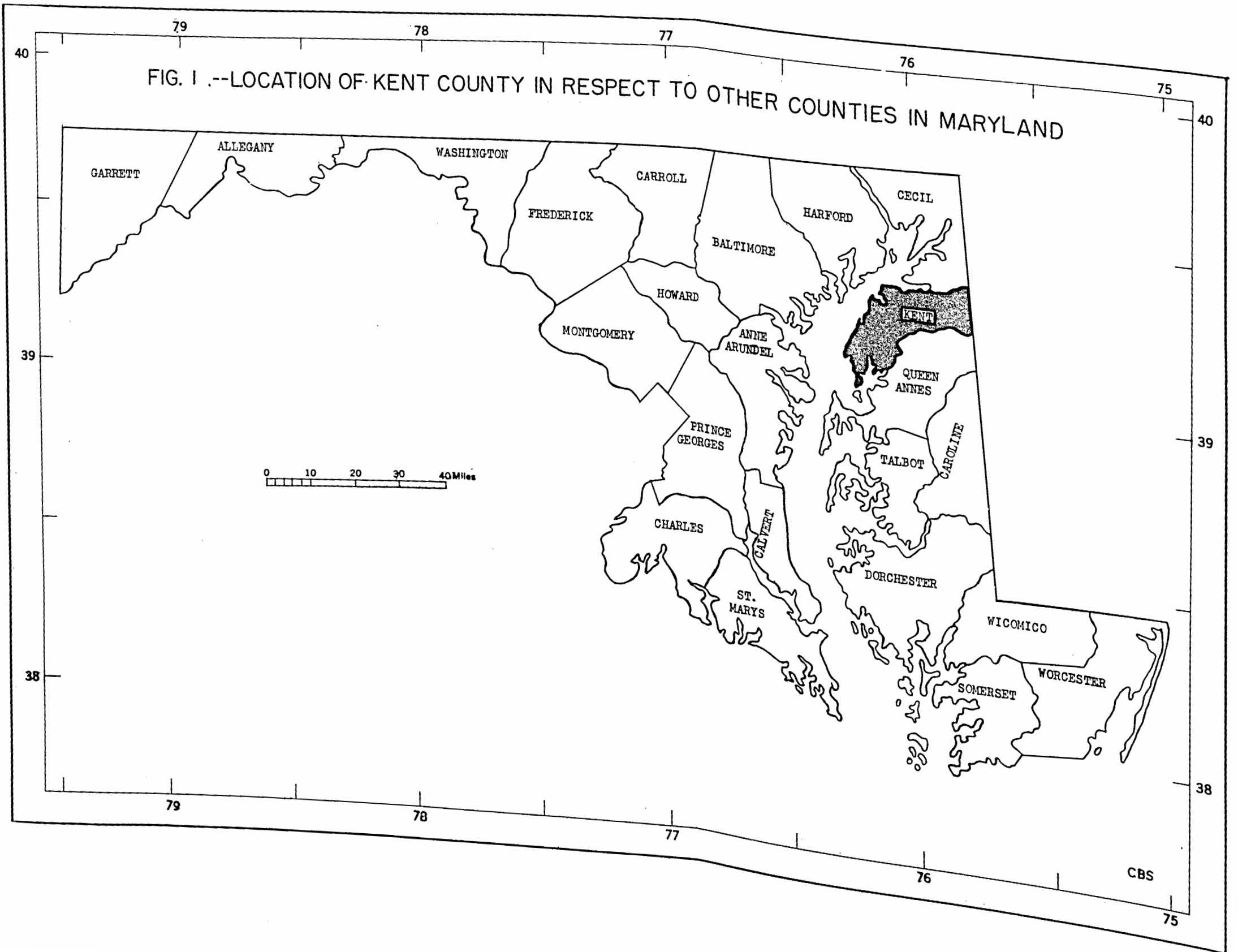


FIG. 1 --LOCATION OF KENT COUNTY IN RESPECT TO OTHER COUNTIES IN MARYLAND



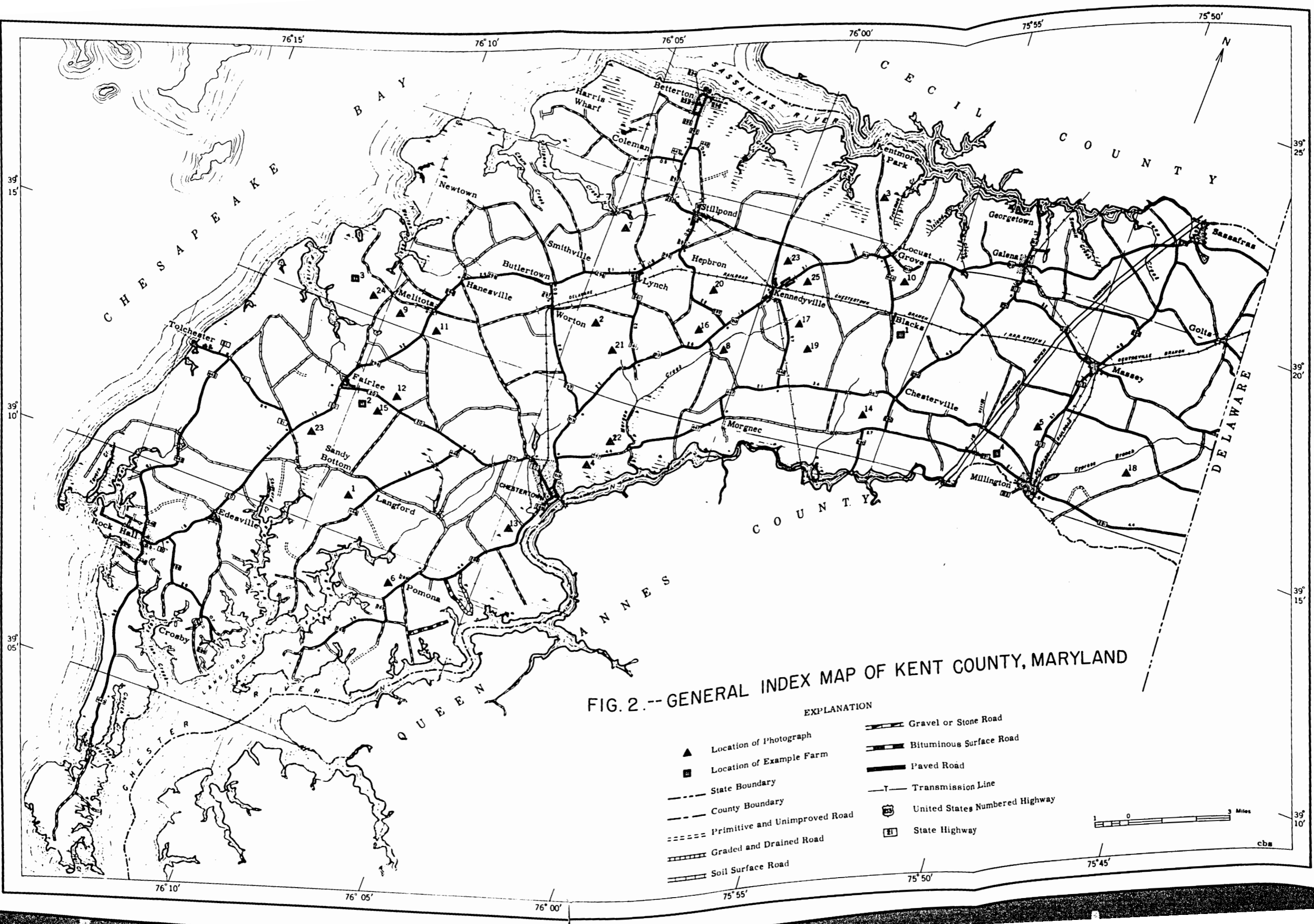


FIG. 2.-- GENERAL INDEX MAP OF KENT COUNTY, MARYLAND

- EXPLANATION
- ▲ Location of Photograph
  - Location of Example Farm
  - - - State Boundary
  - - - County Boundary
  - - - - - Primitive and Unimproved Road
  - - - - - Graded and Drained Road
  - - - - - Soil Surface Road
  - ▬▬▬ Gravel or Stone Road
  - ▬▬▬ Bituminous Surface Road
  - ▬▬▬ Paved Road
  - - - - - Transmission Line
  - Ⓢ United States Numbered Highway
  - Ⓜ State Highway



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by utilizing the land for what it is best suited to produce. In an agricultural county, such as Kent, the retention of the soil, maintenance of its fertility, and the productivity are fundamental and therefore, the outstanding problems of optimum land utilization in the county. Land use adjusted into a pattern set by man should be utilized according to its capabilities. Optimum production and use of the land may be obtained by utilizing it for purposes to which it is best adapted. This is essentially a geographical problem in the final analysis and is manifested by a myriad of socio-economic factors that compose the gamut of land use implications.

The author's interest in this area emanates from a field course in Geography and a number of trips through parts of this county. Field work was accomplished during the spring and summer of 1952 and constitutes the primary source of data for this thesis. The initials of the author appear where compilation of maps and graphs have been drawn from research and field data. All photographs have been taken by the author during his field work in the county.

## CHAPTER I

### LOCATION AND REGIONAL SITUATION

Kent County is a small portion of the Atlantic Coastal Plain in northeastern Maryland abutting on the eastern shore of the Chesapeake Bay. (See Fig. 1) The total land area of the county is 282 square miles, mostly relatively flat with some undulating areas interspersed. The shoreline of Kent County, beginning a half mile northwest of Sassafras and ending two miles west of Millington, has a length of 209 miles including Eastern Neck Island. The irregular shoreline of the county is caused by inlets, rivers, bays, and creeks. (See Fig. 2)

The state of Delaware forms its narrow eastern boundary; but water barriers lie on all other sides: the Chesapeake Bay to the west, the Chester river to the south, and the Sassafras river to the north. The widest distance across Chesapeake Bay from Kent County -- Swan Point to Fort Howard in Baltimore County -- is ten miles, and the narrowest distance, three miles, is from Worton Point to Aberdeen Proving Grounds. There are three bridges that connect Kent County with its neighboring counties: one crossing the Sassafras river from Cecil County north of Georgetown on Route 213; one across the Chester river at Chestertown on Route 213; and one across the Chester river from Queen Annes County on Route 290. (See Fig. 2) Another bridge of importance is located on Route 445 connecting Eastern Neck Island with the rest of the county. The Chesapeake Bay Bridge that crosses the Bay from Sandy Point in Anne Arundel County to Stevensville in Queen Annes County offers direct access to commerce and transportation between Kent County and the Western Shore. A Baltimore steamboat line,



Tolchester Lines, Inc., offers daily excursions during the summer from Baltimore to Tolchester Beach which is strictly a passenger service.

Altitudes range from sea level in the tidal marshes to a little over one hundred feet above sea level at two points, one on Stillpond Neck, and the other about one mile southwest of Kennedyville.

The Chester and Sassafras rivers are the most important waterways in the county and are navigable for several miles toward the upper reaches. These two rivers were of utmost importance to the economy of the county during Colonial times as they were navigable for ocean-going vessels. Chestertown on the Chester river, Georgetown on the Sassafras river, and Rock Hall on the Chesapeake Bay were the important ports of the area. Tobacco was the main export and chief imports were building materials and clothing. The county was well situated with respect to water transportation and egress to centers of commerce and trade along the Atlantic Coastal Plain and even with foreign countries. Today, steamboat lines carry some freight to Baltimore and Philadelphia from Rock Hall. The Chester and Sassafras rivers are relatively insignificant as commercial transportation arteries at the present time due to a high degree of silting.

In 1870 the Pennsylvania Railroad Company built a branch line that crosses the Delaware state line near Golts and divides at Massey, one branch leaving the county at Millington, and the other terminating at Chestertown. Rail transportation became increasingly important throughout the latter part of the nineteenth century and the early 1900's and provided another means of transporting passengers and freight in and out of the county. This type of transportation supplied increased stimulus to the development of a dairy industry in the county. Philadelphia and Wilmington markets became accessible for Kent County milk. Today, the railroad is used chiefly in

transporting bulky farm machinery, lime, fertilizers, and other heavy farm supplies.

Large refrigerated glass-lined tank trucks make it possible to collect milk from a wider area than formerly, and have almost completely supplanted the railroad in the transport of milk to nearby urban centers. Milk is sent directly to the dairy, eliminating former transshipment from railroad car to truck. A large percentage of livestock is also transported by truck to these centers.

On July 30, 1952, the Chesapeake Bay Bridge was opened to the public. This innovation will have far-reaching effects in eliminating the geographic barrier that has separated the Eastern Shore from the Western Shore. The accessibility of Kent County with regard to other large urban centers as a market for the dairy and beef cattle industry is now most favorable. The effect of the Bay Bridge on the economy of Kent County will probably come from a long-run point of view rather than from any immediate effects.

Farming is the principal occupation of the county and started in Colonial times when subsistence farming and tobacco culture were the most important. After 1720 there was a shift from a subsistence-tobacco type agriculture to grain farming. From 1870 to 1920 there was a short-lived period of fruit culture with peach production in the earlier years and pears in the latter years. Dairying came into prominence soon after 1915. Relatively speaking, the largest percentage of land is devoted to agricultural activities. Corn grown for grain and silage, wheat, and hay are the principal crops and dairying is the most important industry. The major shift in the past twenty-five years has been from cash grains to dairying and livestock.

In the past, remoteness of the county relative to large urban

centers has been due to its location off main routes of travel thus producing a state of isolation from the remainder of the state and the other counties of the Delmarva peninsula. This isolation has produced a homogeneous culture that is deep-rooted and is reflected in the attitudes of the people, thus an air of provincialism has developed that has been carried over from Colonial days to the present time. Self-sufficiency and a reluctance to accept outside ideas and changes have resulted from the county's remoteness and long isolation from the rest of the nation. This attitude has been expressed in land use by the reluctance of the dirt farmers to accept and to conform to new farming techniques and new conservation practices. In many instances, farm plans were made by the Soil Conservation Service and were put into operation on some of the farms with the consent of the dirt farmers; however, after a few years, most of these dirt farmers reverted to their former practices and techniques because they could not see any immediate farm improvements or economic advantages in production. Other factors instrumental in causing this isolation have been poor roads, poor transportation service, and the expense of travel in both money and time, making communication between this section and other regions, particularly the Western Shore, difficult. Thus has been developed a philosophy of life that reverts to long periods of isolation and remoteness.

## CHAPTER II

### PHYSICAL BACKGROUND

#### The Lands

Kent County lies entirely within the Atlantic Coastal Plain province. The topography of the county is flat to undulating ranging from sea level to 100 feet. The highest points in the county are located on Stillpond Neck and southwest of Kennedyville.

In the northern and northeastern parts, the topography is undulating and is intricately interspersed with steep slopes and bordering inlets from the Sassafras river. The relief, in many places, is dissected due to topographic conditions with considerable dissection occurring along the margins of the tidal estuaries. This undulating type of topography also exists to a lesser extent in the south central part; however, this section is interspersed with many flat table-like areas. Along the northwest littoral section from Harris Wharf to Betterton, cliff-like escarpments rise 40 to 50 feet giving a very rugged appearance to the surrounding area. In the northwest corner, tributaries from the Sassafras river have cut channels from 30 to 80 feet deep producing banks with very steep slopes. This particular section offers an excellent strategic location to the control of the Bay. From this vantage point, Aberdeen can be seen on a clear day.

Eastern Neck and Eastern Neck Island are located in the extreme southern part of the county. The terrain in this area is chiefly flat land interspersed with marshy depressions. The topography in the extreme southwestern part consists of numerous creeks, bays, and inlets.

The geological development of the county has resulted in three distinct morphological features -- the Talbot plain, the Wicomico plain, and the tidal marshes. (See Fig. 3) From tidewater the slope in the southern and western parts of the county is very gradual up to a height of about 45 feet which is the Talbot plain. There is a rise or scarp in many places of 10 to 15 feet above which is the Wicomico plain. At many places the lower and younger scarps are very steep having been but slightly modified since they were eroded by waves along the coastline. The older scarps, though notched in places by valleys, extend along unbroken for a few miles inland.<sup>1</sup> On both plains there are steep slopes along the principal streams, and broad gently sloping areas on the divides between the streams.<sup>2</sup>

Talbot Plain. The Talbot plain is of marine origin and consists of unconsolidated beds of sand, gravel, clay, and sandy clay. This formation extends from sea level to an elevation ranging from 38 to 45 feet<sup>3</sup> where it is separated by scarps (former seacliffs) from the Wicomico plain. This continuous band of scarps ranges from 15 to 30 feet in height from the Hanesville vicinity to Chestertown<sup>4</sup> forming one of the most prominent topographic features in the county. The Talbot plain is best developed along the Chesapeake Bay, the lower courses of the Chester river, and the lower

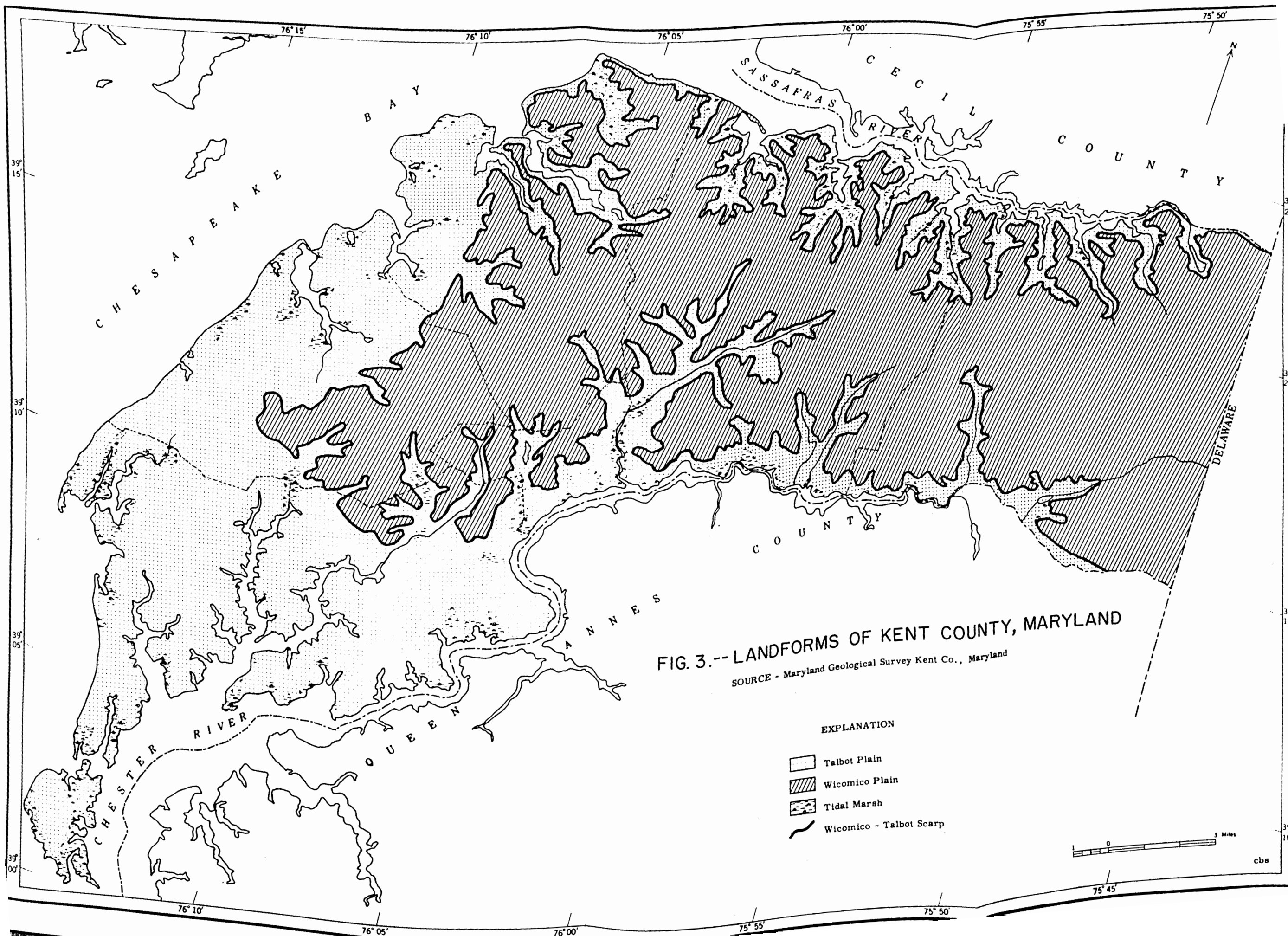
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<sup>1</sup>Chester K. Wentworth, "Sand and Gravel Resources of the Coastal Plain of Virginia", Virginia Geological Survey Bulletin 32, Division of Purchase and Printing, Richmond: 1930, p. 8

<sup>2</sup>Ralph W. Ruble, "Physical Land Conditions in Kent Soil Conservation District Maryland", U. S. Government Printing Office, Washington: 1945, p. 20

<sup>3</sup>Maryland Geological Survey, "Kent County", The Johns Hopkins Press, Baltimore: 1926, p. 83

<sup>4</sup>Ibid., p. 82



**FIG. 3.-- LANDFORMS OF KENT COUNTY, MARYLAND**  
 SOURCE - Maryland Geological Survey Kent Co., Maryland

- EXPLANATION**
- Talbot Plain
  - Wicomico Plain
  - Tidal Marsh
  - Wicomico - Talbot Scarp



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portions of the stream tributaries of the Sassafras river. The areal distribution varies in width from 3 to 7 miles in the vicinity of Tolchester Beach and Rock Hall. The plain occupies nearly one-third of the surface formation of the county. The predominant topography is flat with no discernible differences in elevation, though after a heavy rain slight depressions fill with water. (See Plate 1) This produces a water-logged condition giving rise to drainage problems in scattered portions of the plain. The soils in this plain have not developed normal profiles resulting from imperfect drainage, lack of aeration, and lack of oxidation.

The structure of the Talbot plain varies from a few feet to 40 or more feet in thickness. The upper portion of the formation lies at an average elevation of about 20 feet above sea level and consists of gravel layers, clayey loam carrying gravel layers and scattered boulders. The lower portion is composed of clay, sand, gravel, and boulders. Broad areas occur along the shores of the present tidewater. Along the riverbanks, and to some extent inland, the plain has been dissected, thus breaking it up from a continuous plain-like feature. Dissection from the stream tributaries has cut down from 10 to 20 feet below the general level of the land area.<sup>5</sup>

In places along the littoral bluffs the waves of the Chesapeake Bay have caused such extensive shore erosion that it is becoming an increasingly serious problem. The Soil Conservation Service has been counteracting this by constructing jetties consisting of poles of about 6 inches in circumference, firmly entrenched off the shoreline, and around which old rubber tires are placed.

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<sup>5</sup>H. B. Winant and J. P. Bewley, "Soil Survey of Kent County, Maryland", U. S. Department of Agriculture, Bureau of Chemistry and Soils, 1930, p. 1



Plate 1. A view showing the Talbot plain 1 mile south of Langford. Land use is devoted to permanent pasture. A silted and weeded drainage ditch in the foreground displays the lack of farm maintenance.



Wicomico Plain. The Wicomico plain is generally level to gently sloping with elevations ranging from 40 to 100 feet.<sup>6</sup> This plain is both higher in elevation and older than the Talbot plain. The Wicomico plain is the best developed surface (or land form) feature of the county and occupies nearly two-thirds of the surface formation.

There is marked similarity in the topographic features of the two plains; however, the Wicomico plain forms a broad watershed in the drainage system of the county. Stream tributaries have penetrated practically all areas of this formation and as a result, the topographic characteristics are undulating or gently rolling (See Plate 2) and natural drainage has been established. Natural drainage and the undulating topography have favored aeration and oxidation in the soil profile, thus normal profiles have been developed in most places underlain by this formation. The topography in the northern part of this formation is undulating and interspersed with steep slopes and bordering inlets on the Sassafras river. Dissection occurs in many places along the stream tributaries (See Plate 3) with the width of dissection varying from one-fifth to one-half mile. In the northwestern part, the terrain becomes undulating due to dissection by small streams. These stream tributaries have cut channels 30 to 80 feet deep.<sup>7</sup>

The Wicomico formation is chiefly of marine origin. Its thickness ranges from a few feet to 50 feet or more owing to the uneven surface on which it was deposited.<sup>8</sup> The upper portion of the formation consists of clay loam carrying gravel layers and scattered boulders; the lower portion

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<sup>6</sup>Maryland Geological Survey, op. cit., p. 49

<sup>7</sup>Winant and Bewley, op. cit., p. 2

<sup>8</sup>Maryland Geological Survey, op. cit., p. 82

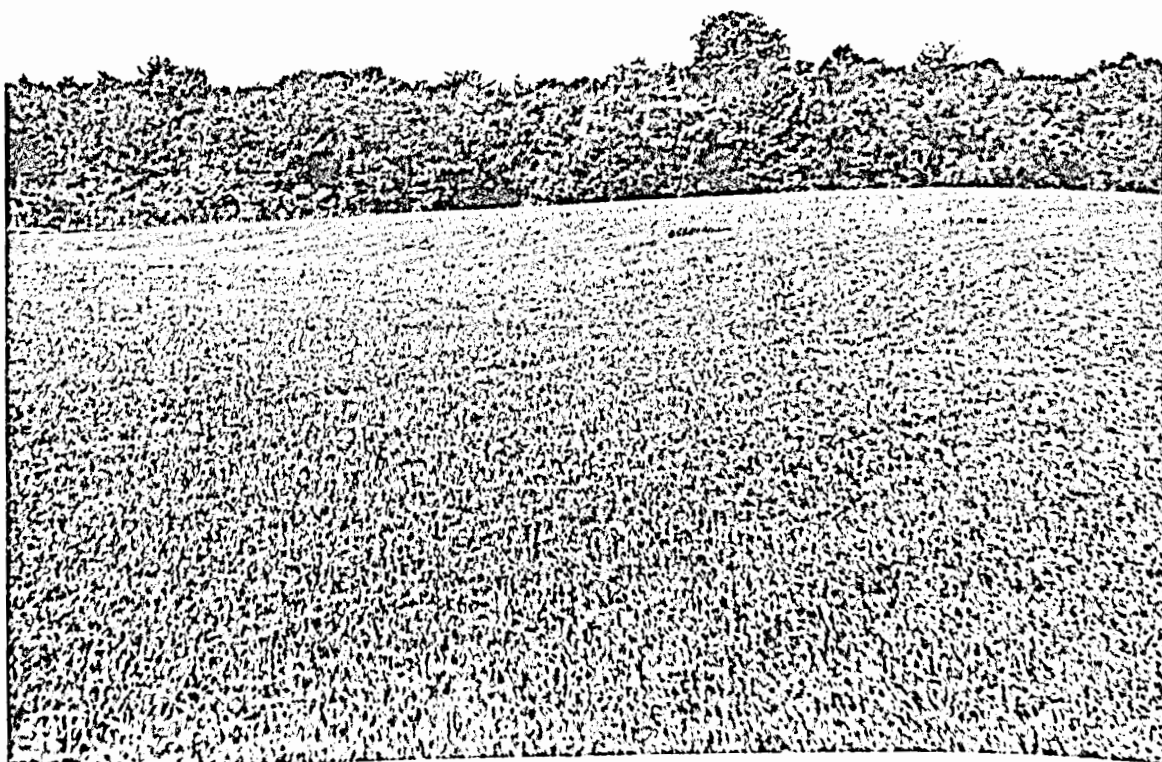


Plate 2. Undulating topography on the Wicomico plain near Worton.  
Land use is devoted to hay crops.



Plate 3. Dissection along a stream tributary on the Wicomico plain near Harris Wharf. A wooded area is located along the streambanks.

consists of unconsolidated beds of clay, sand, gravel, and boulders. The marine part has bedding that varies from place to place consisting of loams and sands in well-sorted layers. The fluvial parts of the formation have poor bedding and individual beds are lenticular and rarely traceable for any considerable distance. Large boulders and coarse pebbles are very common all over the northwestern section but gradually decrease in size and number toward the southeast.<sup>9</sup>

Tidal Marshes. The tidal marshes are located chiefly in the southwestern portion of the county with scattered areas along the Sassafras and Chester rivers. In these areas small sand bars and spits attached to one shore grow out across the mouths of embayments until they finally meet the opposite shore.<sup>10</sup> In many of these places shallow lagoons are formed and, when filled with debris, vegetable matter, and deposition of material from erosion of the adjacent land, they form extensive marshes.

The reclamation of these tidal marshes presents a major drainage problem. The possibility of reclaiming most of these tidal marshes is economically unsound because the marshes are too low for drainage operations. Some of the other tidal marshland may be reclaimed by shallow canals and open drainage ditches. The soil has the texture of loam or silt loam and in many places this material is underlain at a depth ranging from 15 to 20 inches by gray heavy silty clay. Vegetation in these areas is chiefly salt marsh grasses, cow lily, wild rice, and cattail plants. Generally, the land has no agricultural value, however, some areas that have been properly drained are used for cattle grazing. Today these areas are used chiefly for wildlife habitats and recreational grounds.

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<sup>9</sup>Ibid., p. 81

<sup>10</sup>Ibid., p. 47

## Hydrography

The drainage system of the county is relatively simple with numerous bays and inlets, and with small tributaries flowing north and south to the Sassafras and Chester rivers. No stream crosses the width of the county at any one point. All the streams, except the rivers on the county boundary lines, are short. The drainage system has undergone many changes resulting from changes in sea level, periods of cutting have been followed by periods of filling and the present valleys and basins are the results of these opposing forces.<sup>11</sup> The most important drainage anomaly is perhaps the manner in which the streams turn sharply to the east a few miles above their mouths, thus entering the Bay at right angles.<sup>12</sup> Most of the county is naturally well drained. In the western section of the county numerous bays and estuaries of the Chesapeake Bay are dominant. The courses of the Sassafras and Chester rivers and the minor detail of the drainage pattern show departures from the dendritic pattern due to the physiography of the region. There are some places where the courses of smaller streams have been controlled by wave-cut cliffs, meander form scarps, and bars and spits along the coast.<sup>13</sup>

Many small tributaries of the Chester and Sassafras rivers extend inland a few miles producing a dendritic pattern of favorable drainage outlets. The tributary streams of the Sassafras river system are numerous

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<sup>11</sup>Ibid., p. 54

<sup>12</sup>Wentworth, op. cit., p. 13

<sup>13</sup>Supra

and flow in deep narrow valleys from their sources, however, they are only a few miles in length. The tributary streams of the Chester river system have broad valleys with slopes of a gentle grade and penetrate the county for several miles inland.

In some areas there are no natural drainage ways, and because of the flatness of land, water remains on the surface for a long time during the rainy season. This produces a temporary water-logging and decreases the agricultural potentialities of soils. (See Plate 4) Shallow canals and open drainage ditches could be constructed to reclaim most of this land. In the southeastern part and in the Golts forest region, streams are absent over large areas. Cooperative drainage operations of several farms will be required before the land can be ameliorated.

#### Natural Vegetation

Originally most of Kent County was covered with deciduous and pine trees. Today, however, most of the trees are of secondary growth timber and consist mostly of hardwoods intermingled with pines. This mixed hardwood type is the most important since it covers 97 percent of the wooded area and comprises nearly the entire stand of timber.<sup>14</sup>

The virgin forests were cut very early in the history of the county. At present, woodlands occupy 15.5 percent of the total land area.<sup>15</sup> These woodlands consist of white, black, and red oaks, together with some chestnut, hickory, black gum, sweetgum, white elm, black locust, scrub pine,

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<sup>14</sup>Maryland Geological Survey, op. cit., p. 165

<sup>15</sup>U. S. Department of Commerce, Bureau of the Census, "1950 United States Census of Agriculture", Volume I, Part 14. U. S. Government Printing Office, Washington: 1951, County Table 1, p. 149

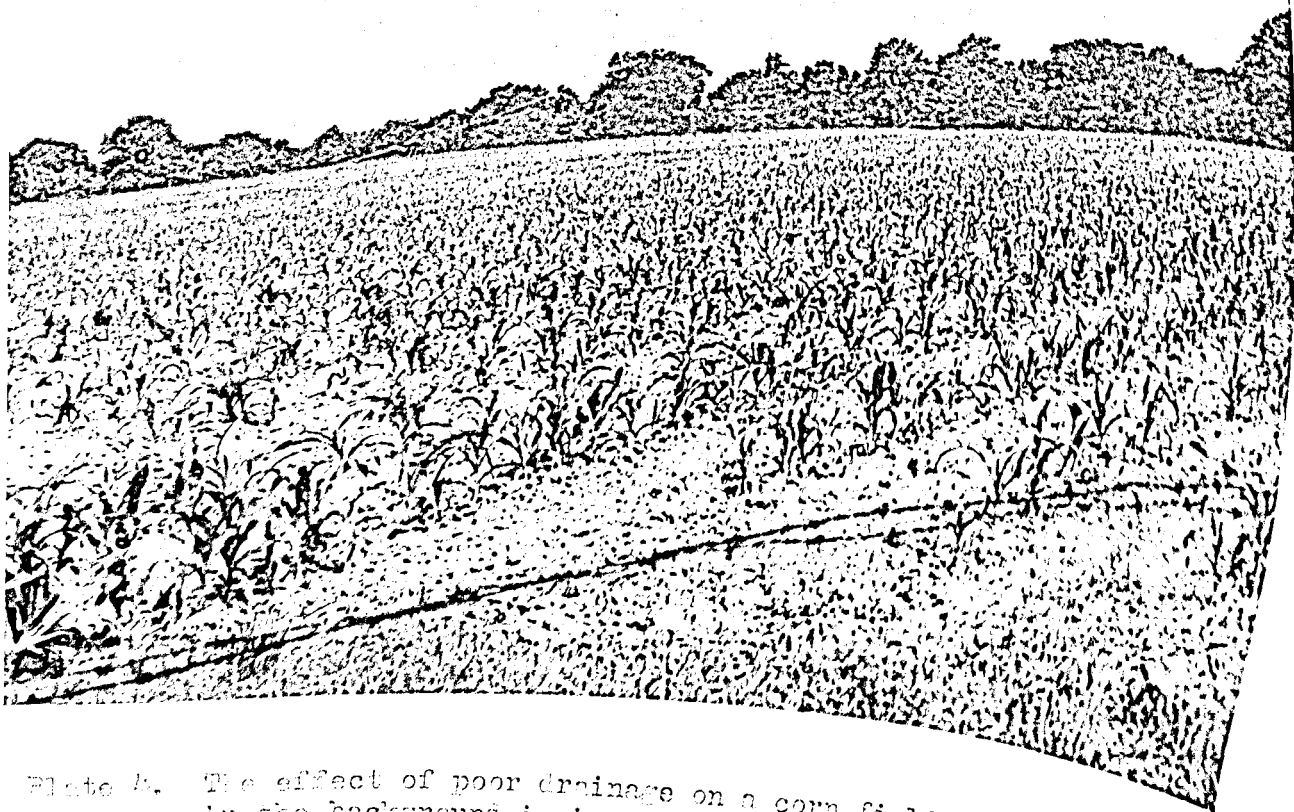


Plate 4. The effect of poor drainage on a corn field. In the background is in a low-lying section of the Chester river. The worked area

loblolly pine, and a few sassafras and dogwood.<sup>16</sup> Most of the woodlands are located on poorly-drained soils, in low-lying areas along the banks of streams and stream bottoms. On the poorly-drained soils of the county, Elkton and Portsmouth, white, Spanish and other oaks, beech, black gum, sweetgum, red maple, and loblolly pine comprise the main tree growth.<sup>17</sup>

In 1950, 5 commercial sawmills located in the county cut over a million board feet. There are a number of timber operators from Delaware who buy forest tracts in Kent County. Some of the timber cut in Kent County is used for rough lumber and quite a bit for basket logs. These logs are shipped into Delaware and New Jersey where they are sliced into thin sheets for the manufacture of baskets and crates. Kent County is one of the most<sup>18</sup> advanced counties insofar as forestry is concerned.

In view of the present forest conditions, conservation practices and the application of practical forestry to the management of woodlands will produce increased yields and better qualities of timber. Another factor that would improve the forest condition would be the removal of poor and undesirable trees that could be converted into firewood, thus a good stand of timber would be permitted to grow rapidly. A favorable balance between the amount of timber cut and the amount in growth is highly desirable to bring about optimum conditions in the natural vegetation of the county.

Land that is not desirable for field crops should be converted to the planting of trees best adapted to the region such as locusts, spruce pines, and loblolly pines that promise quick returns. The

<sup>16</sup>Winant and Bewley, op. cit., p. 8

<sup>17</sup>Supra

<sup>18</sup>Letter of March 26, 1952 from Adna R. Bond, Assistant Forester, Department of Forests and Parks, State Office Building, Annapolis, Maryland



loblolly pine thrives on low sandy ground adjacent to swamps while spruce pine prefer better drained light soils. Loblolly pine is in demand for lumber, especially for box boards<sup>19</sup> for which it is particularly adapted.

### Climate

The climate of Kent County is of an oceanic type with a long frost-free growing season and is relatively mild throughout the year. Extremes of heat and cold are rare. Winters are mild and summers are fairly humid and relatively mild.

The growing season is approximately 200 days in length, beginning in the middle of April and ending in the latter part of October. The mean annual precipitation of 43.71 inches is fairly evenly distributed throughout the year. The heaviest rainfall, 4.92 inches, occurs in August and the lightest, 2.65 inches, in November.<sup>20</sup> (These precipitation figures were obtained by averaging the data reported for Chestertown, Coleman, Millington, and Rock Hall.) Precipitation, in the main, is in the form of rain rather than snow. Temperatures throughout the year are relatively mild with an average January temperature of 34.7° and for July, 76.6°, over a length of record for 24 years.<sup>21</sup> Temperature anomalies along the coast are due mainly to the tempering effects of the Chesapeake Bay, Langford Bay, and the Chester and Sassafras rivers, rather than from topographic influences. These tempering effects modify the temperatures on the Western Shore which

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<sup>19</sup>Maryland Geological Survey, op. cit., p. 171

<sup>20</sup>U. S. Department of Commerce, Weather Bureau, "Climate of the States Maryland and Delaware", Agriculture Yearbook Separate No. 1839, U. S. Government Printing Office, Washington: 1941, p. 905

<sup>21</sup>Supra

is on the windward side of the county. A longer frost-free season by approximately ten days on the western portion than in the eastern part results.

The main farming enterprise throughout the winter months is confined to dairying and livestock. Winter wheat is grown on a small scale. Beef and dairy cattle are grazed from the last of March to the middle of November. The climate, as a whole, is conducive to dairying and livestock farming due to the long grazing season and the combination of good soil, topography, and an excellent water supply.

### Soils

Characteristics. The soils of Kent County are primarily products of the topography and climate. These soils belong to the group of forest soils of the Atlantic Coastal Plain which are not to be classified as true podzols, however, they belong to the grey-brown podzolic group of soils. The podzolic processes, aided by moderately heavy rainfall, have resulted in a degree of soil impoverishment due to leaching of the topsoil which was rendered acid.

The soils of the county have developed under a forest cover of hardwoods and pine intermixed, the deciduous trees predominating.<sup>22</sup> This condition brought about acid soils which require applications of lime to neutralize the acidity. A contributing factor to this acid condition is poor drainage resulting from water-logged and semi-swamp conditions in many areas.

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<sup>22</sup>Winant and Bewley, op. cit., p. 20

Soil limitations are due mainly to drainage conditions, erosion, and soil management. 54 percent of the soils are heavy-textured silt loams, 13.3 percent are loams, and 5.9 percent are sandy loams. 50.1 percent of the soils in the county are naturally well-drained, 29.8 percent are imperfectly drained, 11.2 percent are poorly drained, 1.3 percent are excessively drained, and 7.6 percent are miscellaneous soils (coastal beach, meadow, and tidal marsh).<sup>23</sup>

Erosion.- Erosion has been active in the undulating areas and in many places sediments have accumulated at the bases of slopes as a result of sheet-erosion. There is dire need to control soil erosion on sloping land and to establish drainage on the flat land that is suitable for cultivation. Damages from erosion and further erosion hazards decrease the utility of topsoil or what has been left of it. The data in Table 1

TABLE 1

ACREAGE AND PERCENTAGE  
OF EACH EROSION GROUP\*

Erosion Group	Area	
	Acres	Percent
No Apparent Erosion	32,873	18.1
Slight Erosion	77,108	42.4
Moderate Erosion	45,137	24.9
Moderately Severe Erosion	18,447	10.1
Severe Erosion	6,633	3.7
Very Severe Erosion	1,473	.8

\*Source: Ruble, op. cit., Table 10, p. 26

<sup>23</sup>Ruble, op. cit., p. 24

indicate that only 4.5 percent of the area is damaged by severe to very severe erosion; however, over 75 percent needs some special consideration and careful management to keep erosion under control. The major erosion problems exist on the steep-phase soils in the county which are located particularly along the Sassafras river, and in the southwestern region near Sandy Bottom and Langford. These steep slopes are subject to moderately severe to severe erosion when cultivated.

Liming.- The pH is one of the most important factors that affects the productivity of the soils. The data in Table 2 show that

TABLE 2

PERCENT OF SOIL SAMPLES  
TESTED IN 1951\*

Total Number of Soil Samples Tested	Breakdown of pH Values on a Percentage Basis					
	4.0-4.4	4.5-4.9	5.0-5.4	5.5-5.9	6.0-6.4	6.5-6.9
229	1	23	29	28	16	3

\*Source: Unpublished data from the University of Maryland Soils Laboratory

generally the soils in the county are fairly acid and that about 80 percent of them indicate the need of systematic liming. All of these samples tested were obtained from various farms in the county. Applications of lime depend upon the following factors: (1) requirements of the crop to be grown; (2) reaction of the soil; and (3) soil type. Data in Table 3 show the approximate amounts of lime recommended on the three most extensive types of soil in the county. From Table 3 it is discerned that silty clay loams require the greatest amount of lime per acre, and sandy loams require the

TABLE 3

APPROXIMATE AMOUNTS OF LIME RECOMMENDED  
FOR DIFFERENT SOIL CLASSES TO ATTAIN A pH OF 6.5\*

pH of Unlimed Soil	Tons of Lime Recommended Per Acre		
	Sandy Loams	Silt Loams	Silty Clay Loams
4.0	3.00	6.00	10.80
4.5	2.75	4.80	9.00
4.8	2.50	4.00	7.20
5.0	2.25	3.60	5.40
5.5	1.50	2.40	3.60
6.0	0.75	1.20	1.80

\*Source: Unpublished data from the University of Maryland Soils Laboratory

least amount. Approximately one ton of ground limestone will raise the reaction of sandy loam soils 1 pH toward neutrality, while about 1.8 tons are required to make the same change in silt loam soils, and about 2.5 tons in silty clay loams.

The pH reaction of sandy loams can be changed with small applications of lime applied at frequent intervals. Heavier applications are necessary to make the same change in silt loam soils, and still heavier applications in silty clay loams. In the long run, sandy loam soils need regular applications of lime (approximately 600 pounds per acre) at intervals from 2 to 3 years in order to maintain a pH from 6.0 to 6.5. Regular applications of lime (850 to 1,000 pounds per acre) on silt loams and silty clay loams are needed once every 3 years to maintain a pH from 6.0 to 6.5.<sup>24</sup> Farmers need to have soils tested every 3 to 4 years to see whether the pH level is being maintained.

<sup>24</sup>University of Maryland Soils Laboratory

Fertilizers.-- The needs for fertilizers depend upon the soil, the crop, the slope, and the erosion conditions. The application of sufficient quantities of proper fertilizers is extremely important in maintaining satisfactory yields. It is necessary to maintain a pH level that is high enough for uninhibited growth of crops in question. Vegetables and special crops need heavy applications of artificial fertilizers: 800 to 1,500 pounds per acre of 5-10-5, 5-10-10, and 5-10-15 mixtures. Corn and small grains, pasture, and hay crops grown in rotation need from 400 to 600 pounds per rotation of 5-10-10, 10-10-10, or 5-10-15 mixtures. A fertilizer such as 0-10-20 or 0-20-20 may be used if manure is applied; however, these mixtures are used only for alfalfa and legume grass mixtures and should not be used normally for wheat, corn, and vegetable crops.<sup>25</sup> By using manure, the expensive element, nitrogen, is omitted from the cost of fertilizer which is an economic gain for the farmer. Farm manure should be used whenever it is available. Soils have been improved considerably by large applications of manure resulting from increased dairying and livestock operations.

Cover Crops.-- At present, many farmers use hay sod as a cover crop to control erosion on undulating land. Organic material can be supplied to the soil by growing and plowing under cover crops such as small grains, rye grass, blue-grass, legume mixture, and crimson clover. Throughout the county a leguminous cover crop is needed within the corn and soybean crops to protect the soil from erosion. Cover crops can be sown in the early fall for winter protection or during other periods when the land is left idle.<sup>26</sup>

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<sup>25</sup>Maryland Extension Service, "Miscellaneous Extension Publication No. 1", January 1953 (one sheet)

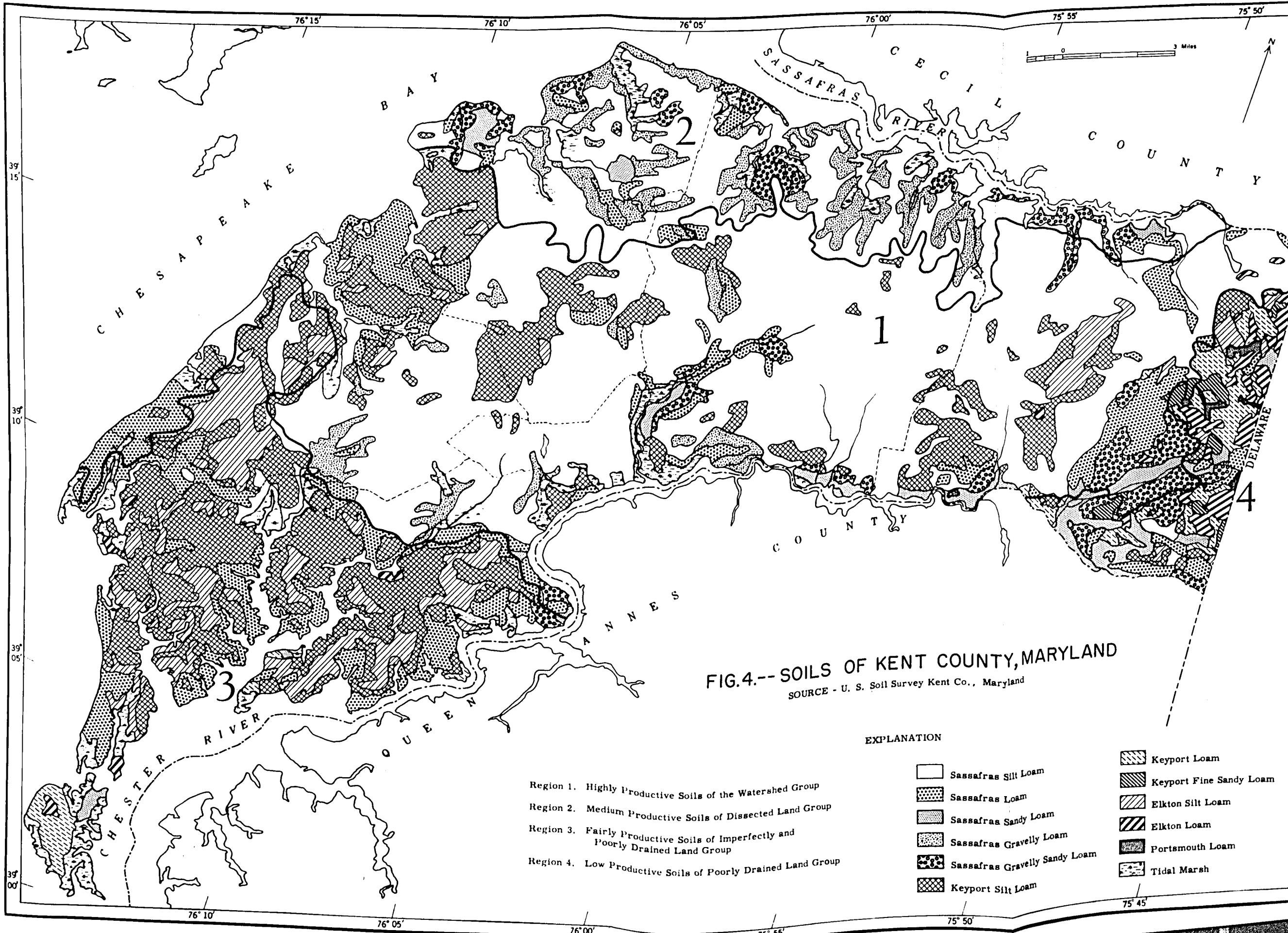
<sup>26</sup>F. L. Bentz, University of Maryland Soils Laboratory

Conservation Measures.-- Terracing, strip-cropping, and contour plowing are conservation measures that are used on undulating terrain to retain the topsoil and to prevent sheet and gully erosion.

Crop Rotations.-- Throughout the county there has been too much growing of intertilled crops such as corn and soybeans which give little protection to the soil and render it highly susceptible to erosion. There is need for a better crop rotation scheme with grasses and legumes to build up organic content of the soils, thus producing a more balanced input and output in the soils.

Classification. The soils in the county may be classified according to their economic values and are divided into four groups according to their relative productivity. In relation to the areas in which they occur, these soil groups correspond to the four topographic regions (See Fig. 4) within the county. Each region is occupied predominantly by soils of a certain productivity group. These four regional groups of soils are as follows: (1) highly productive soils of the watershed; (2) medium productive soils of dissected land; (3) fairly productive soils of imperfectly and poorly drained land; and (4) low productive soils of poorly drained land. The detailed 1948 Soil and Land Capability map of Kent County was used as a base to determine these representative regions, and the Relative Productivity of Maryland Soils map prepared by the Maryland Agricultural Experiment Station served as a base for the soil productivity groups.













Different soil types are not limited exclusively to any specific topographic region; however, a stated soil type may be predominant in one specific region and occur in small areas scattered throughout other regions, thus the regional boundaries of various soil groups are more or less



**FIG. 4.-- SOILS OF KENT COUNTY, MARYLAND**  
 SOURCE - U. S. Soil Survey Kent Co., Maryland

- Region 1. Highly Productive Soils of the Watershed Group
- Region 2. Medium Productive Soils of Dissected Land Group
- Region 3. Fairly Productive Soils of Imperfectly and Poorly Drained Land Group
- Region 4. Low Productive Soils of Poorly Drained Land Group

**EXPLANATION**

	Sassafras Silt Loam		Keyport Loam
	Sassafras Loam		Keyport Fine Sandy Loam
	Sassafras Sandy Loam		Elkton Silt Loam
	Sassafras Gravelly Loam		Elkton Loam
	Sassafras Gravelly Sandy Loam		Portsmouth Loam
	Keyport Silt Loam		Tidal Marsh



arbitrary for the convenience of discussion. For example, Sassafras silt loam occurs in all four topographic regions, however, it is dominant only in Region 1. (See Table 4)

Differentiation of these soil regions is based principally on differences in topography, drainage conditions, pH values, and susceptibility of soil erosion resulting from dissection and slope conditions. Economic criteria are based on the productivity and limitations of the soil, and entail problems of soil management, erosion, drainage control -- use of drainage ditches and tile -- and conservation practices.

Data in Table 5 show the adaptation of the dominant soil types in the county to particular crops and the effect of artificial fertilizers, lime, and manure on the crop productivity. For example, corn grown on Sassafras silt loam has a productivity value of 6 if no fertilizer is used; however, this productivity value is increased to 9 when fertilizer is applied.

#### Region 1 - Highly Productive Soils of the Watershed Group.-

This region is occupied principally by a group of slightly acid, well-drained soils which are considered to be the most highly productive for a wide variety of crops in the county. This group of soils includes three types of the Sassafras series: the silt loam, loam, and sandy loam. These soils need no special practices other than good farming methods and proper management. These deep medium-textured soils are located on nearly flat to undulating areas with scattered tracts of moderately well and imperfectly drained soils of the Coastal Plain. The types of farming are largely dairying, livestock, grain, and truck crops. The usual field crops and truck crops such as tomatoes and sweet corn may be grown safely on this land without danger of soil erosion; however, heavy applications of farm

TABLE 4

TYPES OF SOILS BY ACREAGE,  
AND PERCENT OF TOTAL LAND AREA\*

Soil Type	Acreage	Percent
Sassafras Silt Loam	<sup>27</sup> 51,958	<sup>27</sup> 28.7
Sassafras Loam	14,057	7.7
Sassafras Sandy Loam	8,224	4.5
Sassafras Gravelly Loam	4,549	2.5
Sassafras Gravelly Sandy Loam	4,391	2.4
Colts Neck Gravelly Loam	3,500	1.9
Colts Neck Silt Loam	1,403	.8
Greenwich Fine Sandy Loam	2,797	1.5
Greenwich Sandy Loam	95	.1
Choptank Loamy Sand	2,255	1.2
Evesboro Loamy Sand	151	.1
Beltsville Silt Loam	5,983	3.3
Keyport Silt Loam	24,566	13.4
Keyport Loam	6,471	3.6
Keyport Fine Sandy Loam	9,251	5.1
Morgnec Fine Sandy Loam	4,384	2.4
Ridgely Sandy Loam	1,105	.6
Woodstown Loam	1,394	.8
Woodstown Sandy Loam	1,048	.6
Alloway Silt Loam	829	.4
Elkton Silt Loam	13,403	7.4
Elkton Loam	1,507	.8
Elkton Fine Sandy Loam	3,577	2.0
Fallsington Loam	175	.1
Fallsington Sandy Loam	258	.1
Pamlico Muck	97	.1
Portsmouth Loam	485	.3
Coastal Beach	201	.1
Meadow	7,700	4.3
Tidal Marsh	5,857	3.2
TOTAL	181,760	100.0

<sup>27</sup>Includes Butlertown silt loam -- 24,850 acres, 13.8 percent

\*Source: Ruble, op. cit., Table 8, p. 24

TABLE 5

## CROP PRODUCTIVITY RATINGS BY SOIL TYPES\*

Soil Type	Corn	Barley	Wheat	Oats	Mixed Hay	Alfalfa	Leafy Vegetables	Fruit-Type Vegetables	Permanent Pasture	Potatoes
Sassafras Silt Loam	9(6)	9(6)	9(6)	6(4)	8(6)	7(5)	7(5)	8(6)	7(6)	8(6)
Sassafras Loam	9(6)	9(6)	9(6)	6(4)	8(6)	7(5)	7(5)	8(6)	6(4)	8(5)
Sassafras Gravelly Loam	8(5)	7(5)	7(5)	5(3)	7(5)	7(5)	5(4)	8(5)	6(4)	8(5)
Sassafras Gravelly Sandy Loam	8(5)	7(5)	7(5)	5(3)	7(5)	7(5)	5(4)	8(5)	6(4)	8(5)
Sassafras Sandy Loam	8(5)	7(5)	7(5)	5(3)	7(5)	7(5)	5(4)	8(5)	6(4)	8(5)
Elkton Loam	8(5)	7(5)	7(5)	-	7(5)	-	5(4)	8(4)	6(4)	8(5)
Keyport Loam	6(4)	-	-	-	6(4)	-	4(3)	6(3)	7(4)	-
Elkton Silt Loam	8(5)	7(5)	7(5)	-	7(5)	-	5(4)	8(5)	6(4)	-
Keyport Silt Loam	5(3)	-	-	-	5(3)	-	-	6(4)	-	-

\*Source: O. C. Bruce and J. E. Metzger, "The Soils of Maryland Productivity Classification", Bulletin No. 351, College Park, Maryland: The University of Maryland Agricultural Experiment Station, July 1939, Table 15, p. 19

Notes:

- Values outside of parenthesis indicate the index of soil productivity after applications of lime, manure, and/or mineral fertilizer.
- Values inside of parenthesis indicate the index of inherent productivity of the soil (without liming, manuring, or fertilization).
- When a dash is used, it is not advisable to include the crop in the farming program.
- In the crop production ratings, the highest value is 10, and all other values are relatively lower.

manure and artificial fertilizers are needed if this is done. Large quantities of manure are applied annually in the dairy sections and have increased the productivity of the soils. Prosperous farms with large houses, well-kept barns and silos, and modern equipment are typical features of the landscape in this region.

Small scattered areas of steep-phase soils, particularly in the southwestern part, have need of local erosion control measures introduced by the Soil Conservation Service and the County Agent. Farmers are becoming more aware of the necessity to prevent soil erosion and save the topsoil for cropland. The widely scattered tracts of the imperfectly drained Keyport and Elkton soils are located on flat topography and in depressions requiring drainage measures and heavy applications of lime and fertilizers to attain a high level of productivity. Overflow damage from stream tributaries affects the meadow and marshlands. These problem areas are due to the physical land conditions and differences in the types of agricultural practices.

Recommended farming and conservation practices for this region according to land capability and use are: (1) desirable rotations of row crops on a 4-year schedule; (2) regular applications of lime, fertilizer, and manure on cropland and permanent pasture areas; and (3) grazing and weed control on all pasture land, on 3- to 5-year pastures: orchard grass, timothy, alfalfa, and ladino clover, and on permanent pastures: Kentucky bluegrass, white clover, and Korean lespedeza.

Sassafras Silt Loam.<sup>28</sup> --- This is the most extensive and

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<sup>28</sup>Includes Butlertown silt loam which has similar characteristics to Sassafras silt loam with the exception of the parent material which is deep silt.

important soil of the watershed group. It occupies 51,958 acres or 28.7 percent of the total land area in the county but only small amounts of this total are located in the other regions. The topsoils are grayish-brown to light-brown and have an average thickness of about 12 inches. The subsoil is yellowish-brown or brown heavy silt loam with a thickness ranging from 36 to 48 inches.<sup>29</sup> The texture and structure render the subsoil retentive of moisture, artificial fertilizers, and manure. The parent material is silt over sand and gravel. Natural drainage of this soil is good. Aeration and oxidation are good throughout the soil profile. This is one of the most productive soils in the county with over 90 percent of it in crops or rotation pasture. This soil is in good physical condition to start work in early spring. The principal crops grown are corn, wheat, hay (timothy and red clover) (See Plate 5), and pasture grasses. Truck crops such as sweet corn, tomatoes, and asparagus, do exceedingly well and produce high yields. Yields of corn range from 50 to 60 bushels and over per acre, wheat from 20 to 30 bushels per acre, and hay about 2 tons per acre under ordinary farm management.<sup>30</sup>

Sassafras Loam.-- This soil is less extensive and is located in scattered areas with the largest concentrations in the eastern part. Sassafras loam occupies 14,057 acres or 7.7 percent of the total land area in the county. The topsoil is grayish-brown and ranges from 6 to 8 inches in thickness and the subsoil is reddish-brown loam and is from 24 to 36 inches thick.<sup>31</sup> The parent materials are sand and gravel. The surface terrain is slightly more undulating than that of the Sassafras

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<sup>29</sup>Ruble, op. cit., p. 24

<sup>30</sup>Dr. Bentz, University of Maryland Soils Laboratory

<sup>31</sup>Ruble, op. cit., p. 24

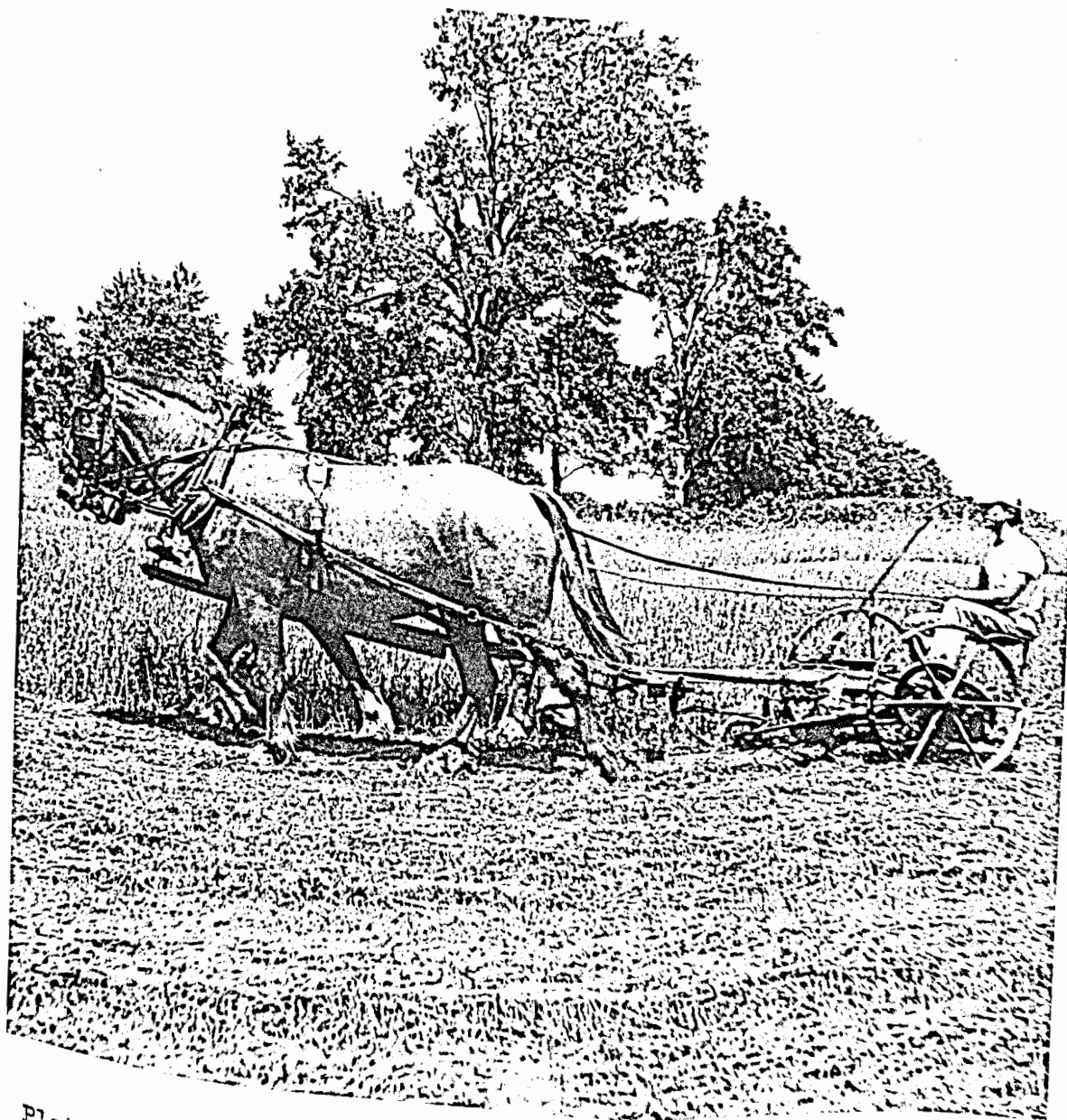


Plate 5. Cutting timothy and red clover for hay on Sassafras silt loam soil.

silt loam. Excellent surface and internal drainage have produced good aeration and oxidation in the soil. This soil is well-adapted to general farming and is utilized in the production of a wide range of crops with satisfactory yields. It is especially adapted to truck crops such as sweet corn, tomatoes, peas, and asparagus. Liming and fertilizers are necessary for high yields on this soil. Wheat yields from 20 to 30 bushels per acre and corn from 50 to 60 bushels and over per acre and are obtained under ordinary farm management.<sup>32</sup>

Sassafras Sandy Loam.-- This soil is not extensive, occupying 8,224 acres or 4.5 percent of the total land area of the county, and is located mainly in the Millington and Chestertown districts. It is well-adapted to truck crops such as sweet corn, tomatoes, peas, and sweet potatoes. Some corn is grown but only fair yields are obtained. Maintaining soil productivity by heavy applications of artificial fertilizers, lime, and manure is necessary for favorable yields. About 80 percent of this land is cultivated and the remainder is in pasture and woodland. Some areas are too undulating for cultivation and should be reserved for pasture and woodland. The surface and internal drainage are good.

Region 2 - Medium Productive Soils of Dissected Land Group.--

This region is occupied largely by a group of well-drained soils which are acidic and eroded in places due to dissection and slope conditions. Gently sloping or undulating areas are intricately interspersed with steep slopes and bordering inlets (See Plate 3) from the Sassafras river and Stillpond Creek. The principal soils of this group are Sassafras gravelly loam and

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<sup>32</sup>Dr. Bentz, University of Maryland Soils Laboratory

Sassafras gravelly sandy loam. These soils are susceptible to erosion and need careful management on slopes to save the topsoil. The soils are medium textured and well-drained with a pH value ranging from 4.5 to 4.9. Land is devoted chiefly to dairying, feed grains, and cash grains. Sloping areas are best suited to pasture, and moderate slopes may be used for cropland provided that contour plowing, terracing, and diversion ditches are used. Excessively-drained steep slopes have brought about poor productivity and destruction of the topsoil. Erosion susceptibility, erosion hazard, and erosion damage already inflicted have limited the utility of these soils. Intensive practices and limited use are required on excessively drained leached soils. Poor management and poor agricultural practices can easily ruin the soils. Overflow and poor drainage conditions are prevalent in the tidal marshes and meadows of this region.

In the northwestern part of this region, a well-defined hardpan has been developed and consists of a laminated fine sandy clay material which ranges from 18 to 24 inches below the surface.<sup>33</sup> Sassafras gravelly loam and Sassafras gravelly sandy loam are located on undulating topography with good natural drainage. General farm crops and truck crops such as sweet corn, tomatoes, and peas, are grown on this group of soils. Steep slopes that are more or less gullied or eroded are mainly in pasture or woodland and should not be used for cultivation.

Region 3 - Fairly Productive Soils of Imperfectly and Poorly Drained Land Group.- This region is occupied principally by a group of medium to heavy textured imperfectly to poorly-drained Coastal Plain soils

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<sup>33</sup>Winant and Bewley, op. cit., p. 22



which are beset with drainage and soil management problems. Erosion is a local problem in this region affecting approximately 1,000 acres of undulating land made up of many small ridges and depressions. The predominant topography is nearly flat with local areas of sloping relief. This group of soils includes principally the Keyport and Elkton silt loams. These soils tend to pack when drying causing difficulties in cultivation.

Types of farming are largely dairying, feed grains, cash grains, and truck crops. The soils are used successfully for agriculture but heavy applications of lime are necessary to precede artificial fertilizers and other improvement measures in order to obtain satisfactory results. These soils are low in organic matter with a pH value ranging from 4.0 to 4.9 and need artificial drainage if used for crop production. There is need for large capital investments on most farms in the region to increase productivity of the soils and to improve the farms. Due to high prices for agricultural products in the past 12 years, greater use of these marginal soils has resulted. Soils of this group cost more to maintain than those in Region 1 and are limited in the number of crops that can be grown successfully. The poor physical condition which prevents proper aeration and water movement in the soil causes special problems.

Keyport Silt Loam.-- This soil occupies 24,566 acres or 13.4 percent of the total land area in the county with probably more than one-half of the total acreage in this region and the remainder scattered in isolated areas in Regions 1 and 4. The topography is level to gently sloping. The grayish-brown topsoil ranges from 8 to 12 inches in thickness and is mellow, friable, and easily tilled with good moisture conditions. The yellow or yellowish-brown subsoil is composed of heavy silt loam or silty clay loam with a thickness ranging from 15 to 18 inches.

The underlying materials consist of silt, clay, and fine sand. Surface drainage is generally good, however, the internal drainage is imperfect. A large percentage of this soil is cultivated or used for pasture. Heavy applications of lime, fertilizer, and manure are needed to maintain productivity. Corn, wheat, and tame hay are the most important crops grown on this soil and produce satisfactory yields when the growing season is not excessively wet. Corn yields approximately 30 bushels per acre, and wheat 20 bushels and under per acre under ordinary management conditions.<sup>34</sup>

Elkton Silt Loam.-- This soil occupies 13,403 acres or 7.4 percent of the total land area in the county with scattered isolated areas in Regions 1 and 4. The topography is predominantly flat. This soil is poorly drained (See Plate 6) and the expense of maintaining drainage ditches or tile must be considered if this soil is cultivated. The topsoil ranges from 8 to 10 inches in thickness<sup>35</sup> and is composed of smooth floury gray silt loam. A thick heavy clay subsoil is located about 12 inches below the surface that prevents adequate water movement and causes poor aeration and oxidation in the soil. The subsoil material is highly mottled yellow and gray or bluish gray silty clay with a thickness ranging from 30 to 40 inches.<sup>36</sup> When wet, this subsoil is plastic and sticky. The underlying parent materials are clay and silt. This soil is highly acidic and requires 1,000 to 3,000 pounds of lime per acre to correct the acidity. Land is devoted mainly to hay, pasture, and woodland.

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<sup>34</sup>Dr. Bentz, University of Maryland Soils Laboratory

<sup>35</sup>Ruble, op. cit., p. 24

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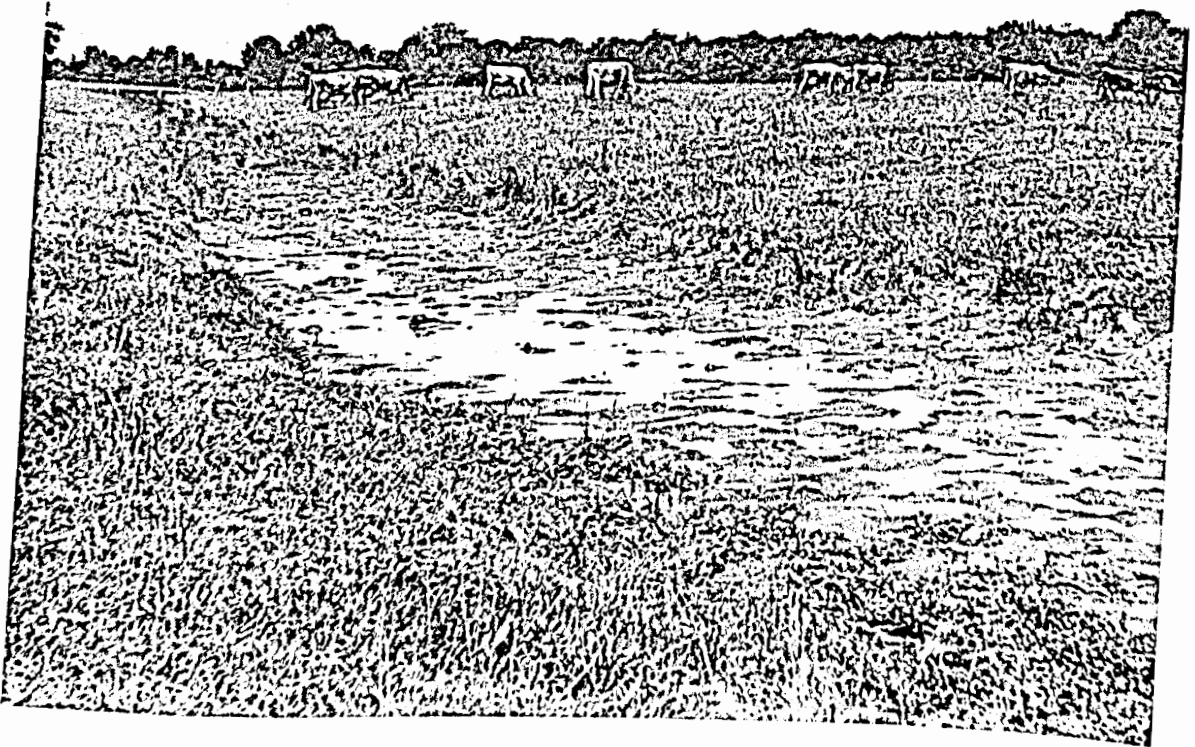


Plate 6. A silted drainage ditch on Elkton silt loam soil showing neglect of drainage maintenance. A herd of dairy cattle are grazing on permanent pasture in the background.

If adequately drained, this soil is moderately productive for crops. Fair yields of wheat and hay can be produced when soils are properly managed, well-drained, limed, and fertilized. Timothy is grown in many areas and is especially well adapted to this soil. Large canning companies grow tomatoes on a commercial scale. Corn yields about 30 bushels per acre and wheat 20 bushels and under per acre under ordinary management conditions.<sup>37</sup>

Region 4 - Low Productive Soils of Poorly Drained Land Group.-

This region is occupied by a heterogeneous group of intricately mixed soils with respect to productivity and drainage and have a pH value ranging from 4.0 to 4.9. The principal soils of this group include Elkton loam and Keyport loam. The medium textured topsoil of these soils is usually underlain by a heavy clay subsoil layer that hinders movement of water up and down in the soil profile. Deep-rooted crops such as corn, alfalfa, and wheat give low yields due to the shallow depth from the topsoil to the heavy clay subsoil preventing good root development. Excessive moisture, low pH value, and poor drainage conditions have limited the capabilities of these soils. Deficient aeration and oxidation in the soil are harmful to plant growth. Artificial drainage (open ditches or small canals) are required on soils located in slight depressions to maintain a satisfactory level of productivity. Liming is required and should precede fertilizers on most soils in this region before they can be utilized successfully for agricultural purposes. Large capital investments are needed to improve the drainage and raise the productivity of soils in this region.

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<sup>37</sup>Dr. Bentz, University of Maryland Soils Laboratory

The Elkton soils of this group require from 1,000 to 3,000 pounds of lime<sup>38</sup> per acre to correct their reaction.

Region 4 is devoted largely to dairying with feed grains, mixed hay, and some truck crops grown on the better drained soils. Tomatoes are grown on a commercial scale by large canning companies.

Economically, these soils present problems of: (1) large capital investments for drainage control; (2) difficulty in cultivation; (3) poor physical condition before farming operations can be started in the spring; and (4) difficulty in maintenance.

Portsmouth loam is a minor soil of this group and when drained, aerated, and limed (by using 2,000 to 3,000 pounds<sup>39</sup> per acre) will produce fair yields of corn and fruit types of vegetables.

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<sup>38</sup>University of Maryland Soils Laboratory

<sup>39</sup>Winant and Bewley, op. cit., p. 18

## CHAPTER III

### CULTURAL BACKGROUND

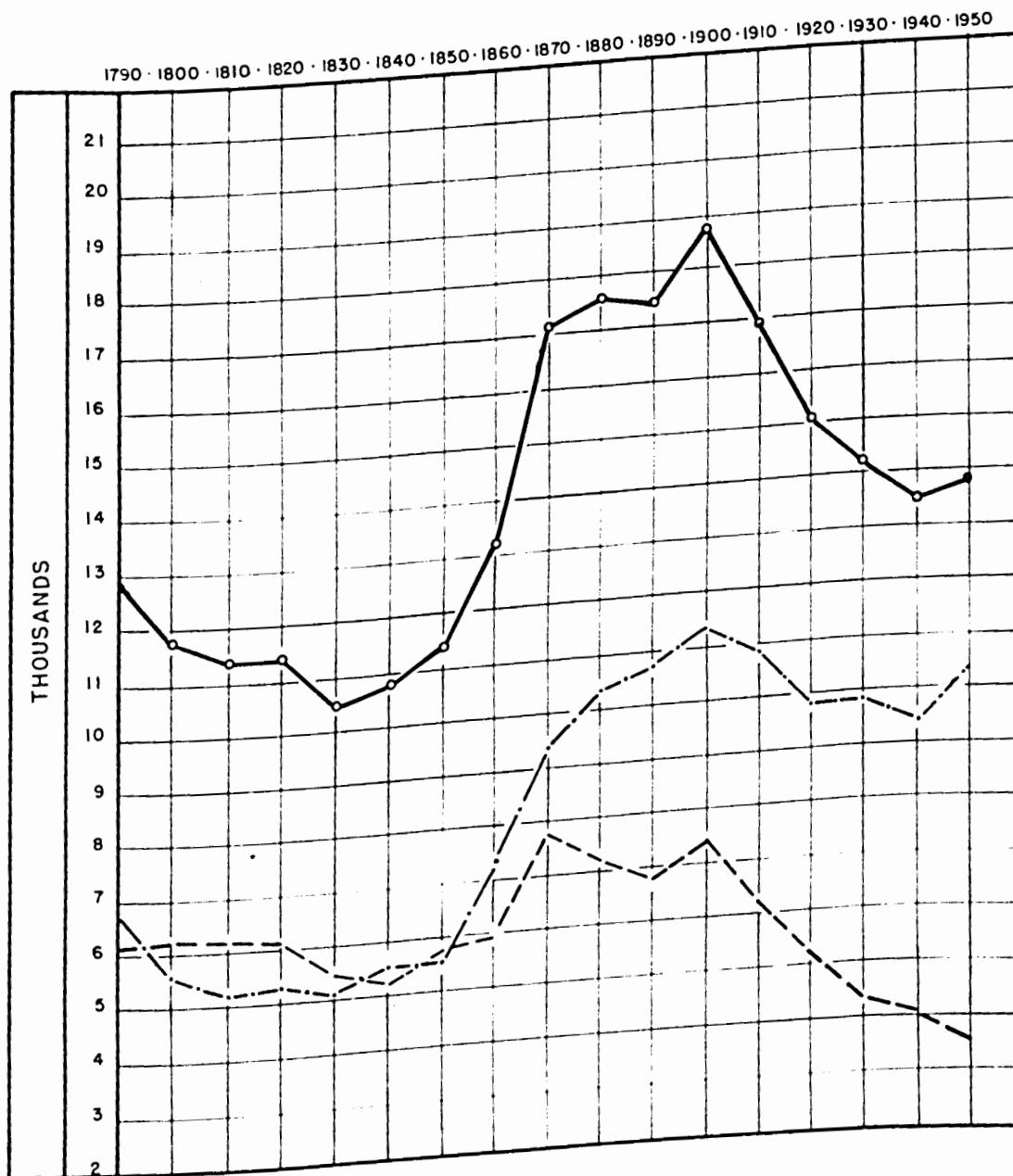
#### Cultural Trends

Adequate demographic data are essential for the comprehension of the evolution of land use and are of paramount importance in the planning and development of a county. In Kent County many changes have taken place in the number and distribution of population from its first Federal Census in 1790 up to the present time. (See Fig. 5)

The trend toward an increase in population in Kent County began in 1830 and reached its peak in 1900. From 1900 there was a gradual decline in population until 1940. From 1940 to 1950, births slightly exceeded deaths producing a net increase of 1.6 percent. (See Fig. 5) The white population of the county increased 7.5 percent during this period while the non-white decreased 12.2 percent. Since 1940 there has been a great deal of intra-county and inter-county movement of population. Large numbers of "outsiders", particularly big business men, have moved into the county for the purpose of establishing manors and restoring Colonial mansions. (See Plate 7)

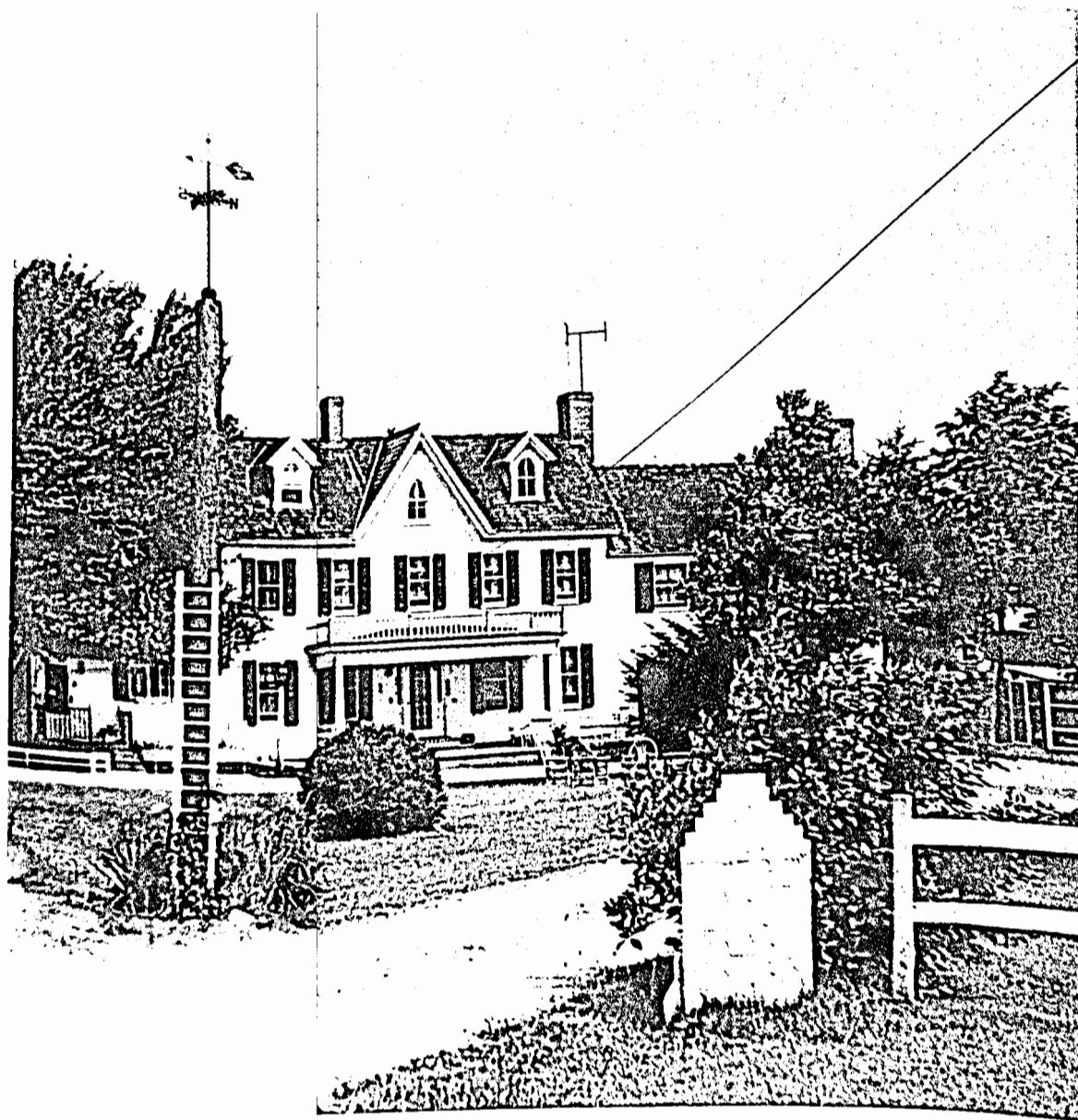
The total population in 1950 was 13,677 with a rural population of 10,534, and an urban population of 3,143. There has been a steady decline in rural population since 1900. The rural population is essentially homogeneous and is evenly distributed throughout the county. Homogeneity has resulted from (1) an ethnic group of English ancestry who settled in the county during the Colonial period; (2) an insignificant amount of

FIG. 5.--POPULATION TRENDS IN KENT COUNTY,  
1790-1950.



LEGEND:  
 —○— TOTAL POPULATION  
 - · - · - WHITE POPULATION  
 - - - - NONWHITE POPULATION

SOURCE: U.S. BUREAU OF THE CENSUS, CENSUS OF POPULATION



Colonial mansion near Lynch.



in-migration to the county since Colonial days; (3) the main enterprise in the past 300 years has been farming; and (4) a strong familial tie between father and son with the son following his father's occupation. Chestertown, the largest town in the county, is the county seat with a population of 3,143. Many small villages are located throughout the county. Betterton, Tolchester Beach, and Rock Hall are summer resorts on the Chesapeake Bay.

The trend of the negro population in the county coincides with rural migration to industrial centers where better opportunities and higher wages are available in marginal-type jobs. From 1870 to 1900 the surplus of negro births over negro deaths was drained off by migrations from the area. The negro population in the county began its rapid decline after 1900, and during World War I city industries attracted a mass of this unskilled rural labor.

The negro migration has been far greater than the white migration. This is to be expected since the white population dominates business and professions, hence the negroes have less at stake than do the whites, and in such a culture are marginal. Many of the negroes are employed as farm laborers and domestics; however, due to low wages, this source of labor has declined. There is also a large number of negro workers employed in canneries, fertilizer factories, and flour mills in Chestertown, Rock Hall, and Millington. This valuable source of cheap labor supply has resulted in a need for farm labor during the planting and harvesting seasons and is a major problem confronting the Kent County farmers.

Long isolation from the rest of the nation has been a major factor in producing a homogeneous population in the history of the county. This condition has brought about a clannish, conservative, and provincial attitude. The typical Kent County Shoreman is not an advocate of change

and believes he knows how to live his life in the manner in which generations before him faced the exigencies of life. This culture is deep-rooted and is expressed by the way he farms and lives his life. Thus has been developed a philosophy of life that reverts to the long periods of isolation and to the historical development of social and cultural mores.

Population Growth, Distribution, and Migration. Fig. 5 shows five rather distinct periods of population development in the county: (1) a period of decline from 1790 to 1830; (2) a period of rapid settlement and development from 1830 to 1870; (3) a period of gradual population increase from 1870 to 1900; (4) a period of sharp decline from 1900 to 1940; and (5) a period of slight increase from 1940 to 1950.

In the early period, the population decreased steadily due to better opportunities elsewhere, expansion and agricultural development of the Midwest, availability of good farm land in other areas, and development of urban centers along the Atlantic Coastal Plain.

The second period from 1830 to 1870 marks the influx of immigrants mainly from the British Isles, Germany, and a few from the Mediterranean area. Many small flour mills located along the streams offered opportunities to the immigrants and young people not needed on the farms. The sharp rise in population from 1860 to 1870 was caused by the migration of people from the South whose land and landholdings were devastated during the Civil War. Another factor of paramount importance was the completion of the Delaware Railroad (Pennsylvania Railroad System) which enabled transportation and communication in and out of the county thus mitigating the county's almost complete isolation.

The period from 1870 to 1890 was marked by a relatively stable population growth; however, from 1890 to 1900, a sharp rise in population

resulted. The importance of the peach and pear industry during this decade was responsible for increased migration to the county.

After 1900, with the declining significance of the peach and pear industry, the population started declining sharply. A gradual change-over from grain farming was brought about in 1915 with the introduction of the dairy industry. Farm production could be maintained with much less labor through the use of farm machinery, the tractor, and the pneumatic tire. The period between 1910 and 1920 shows a sharp decline in both the white and negro population resulting from World War I. Better opportunities and higher wages were offered by war-time industries in large urban centers. From 1920 to 1940 there was a gradual decline in population caused mainly by the migration of the negro population.

The slight increase in population from 1940 to 1950 was apparently due to World War II which started a back-to-the-farm movement resulting from high prices and a high market demand for farm produce. This increase in population is reflected in the Chestertown, Fairlee, and Worton districts. (See Table 6) The largest increase was in the Chestertown district. A decrease was found in the Massey, Kennedyville, Edesville, and Pomona districts with the largest decline in Massey which resulted from the influx of "city farmers" -- mainly big business men from out-of-state -- who have bought small farms and consolidated them into large estates with dairying and beef cattle production as the chief interest. The displacement of farmers by machinery and farm consolidations has brought about a trend toward a decreasing number of farms and farmers and a subsequent migration of these people to Chestertown and nearby urban centers outside the county.

County population migration from 1940 to 1950 varied in extent and

TABLE 6

## POPULATION OF MINOR CIVIL DIVISIONS, 1870-1950\*

Year	Minor Civil Divisions							Total Population
	Masseys District 1	Kennedyville District 2	Worton District 3	Chestertown District 4	Edesville District 5	Fairlee District 6	Pomona District 7	
1870	4,419	3,247	2,454	3,639	3,343	-	-	17,102
1880	3,975	3,191	2,631	4,126	3,682	-	-	17,605
1890	3,660	3,008	2,551	4,227	4,025	-	-	17,471
1890	3,660	3,008	2,551	4,227	4,025	-	-	18,786
1900	3,635	3,066	2,253	3,242	3,444	1,685	1,461	16,957
1910	3,342	2,391	2,041	2,941	3,207	1,700	1,335	15,026
1920	2,980	2,224	1,983	2,662	2,711	1,327	1,139	14,242
1930	2,620	1,952	1,861	2,991	2,712	1,161	945	13,965
1940	2,295	1,854	1,671	2,920	2,738	1,067	920	13,677
1950	2,242	1,645	1,685	3,395	2,732	1,102	876	

\*Source: U. S. Bureau of the Census Population Reports

kind with the population density. Kent County had 681 out-migrants or 5.1 percent between 1940-1950.<sup>40</sup>

### Transportation Aspects

An efficient distribution of farm products is vital to farmers in the county. Main thoroughfares throughout the county are adequate but some of the lateral or side roads (See Plate 8) which are used mostly by the dirt farmers are in fair or poor condition resulting in economic and social handicaps. It is generally the case that methods of production of crops have improved faster than methods of marketing and distribution so that the farmers can produce more than they can market at fair prices. Greater efficiency on the farm and in the home ameliorate and offset the effects of low-priced farm products. High cost of labor, equipment, and supplies make necessary a greater economy in marketing and distribution. Local transportation of farm produce within the county is mainly by trucks and automobiles equipped with trailers. The 1950 Census of Agriculture reported 779 automobiles and 548 motortrucks for the county in that year. The county has 389 miles of rural roads as of 1948.<sup>41</sup> Fig. 2 shows that Route 213 is the only Federal highway in the county.

At present a construction program for the improvement of lateral roads is in progress to facilitate farm to market transportation. Another project is underway in the eastern part of the county -- a 4-lane divided super-highway via Sassafras and west of Millington (See Fig. 2) which will

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<sup>40</sup> Maryland State Planning Commission, NewsLetter, Vol. V, No. 3, Baltimore: March 1952

<sup>41</sup> Mileage of rural roads compiled by the Bureau of Public Roads on the basis of State Reports, 1948

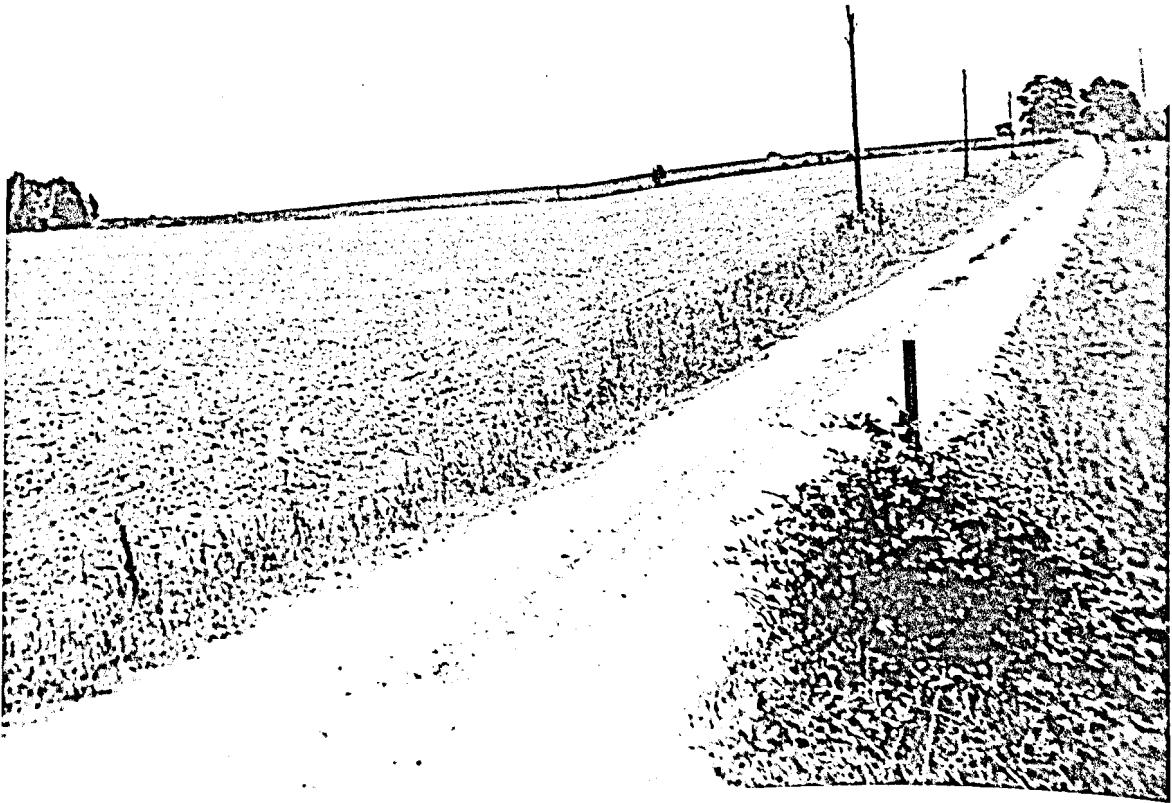


Plate 8. A typical side road in the central part of the county.

connect the Delaware Parkway with the New Jersey Turnpike forming a super highway from the George Washington Bridge to the Chesapeake Bay Bridge approach in Queen Annes county.

Mr. J. D. McVean has stated:

The super-highway if it follows the course as surveyed will not do serious damage to more than 5 or 6 farms, since the course laid out will be quite largely through woods and swampy ground that has little agricultural value. The supposition is that the road will take 200' right-of-way and be a limited-access highway, which means that some farms will be divided so that farmers may have to travel with equipment 8 to 10 miles to get to the field across the new road from his farm-stead. I believe that there will be some swapping between farmers to avoid so much trouble in reaching the cut-off fields. The road will extend only 10 or 12 miles in Kent. I expect that the super-highway will not have too much harmful effect, nor do I anticipate that it will benefit the County to any great extent.<sup>42</sup>

Today, as in the not too distant past, the trade and economy of the county has been focused toward the Philadelphia and Wilmington markets rather than west to Baltimore because of their proximity, better highways, and direct rail transportation. The barriers formed by the Chesapeake Bay and the Sassafras river have made Baltimore a rather inaccessible market. Fig. 6 shows distances from Chestertown to nearby urban centers.

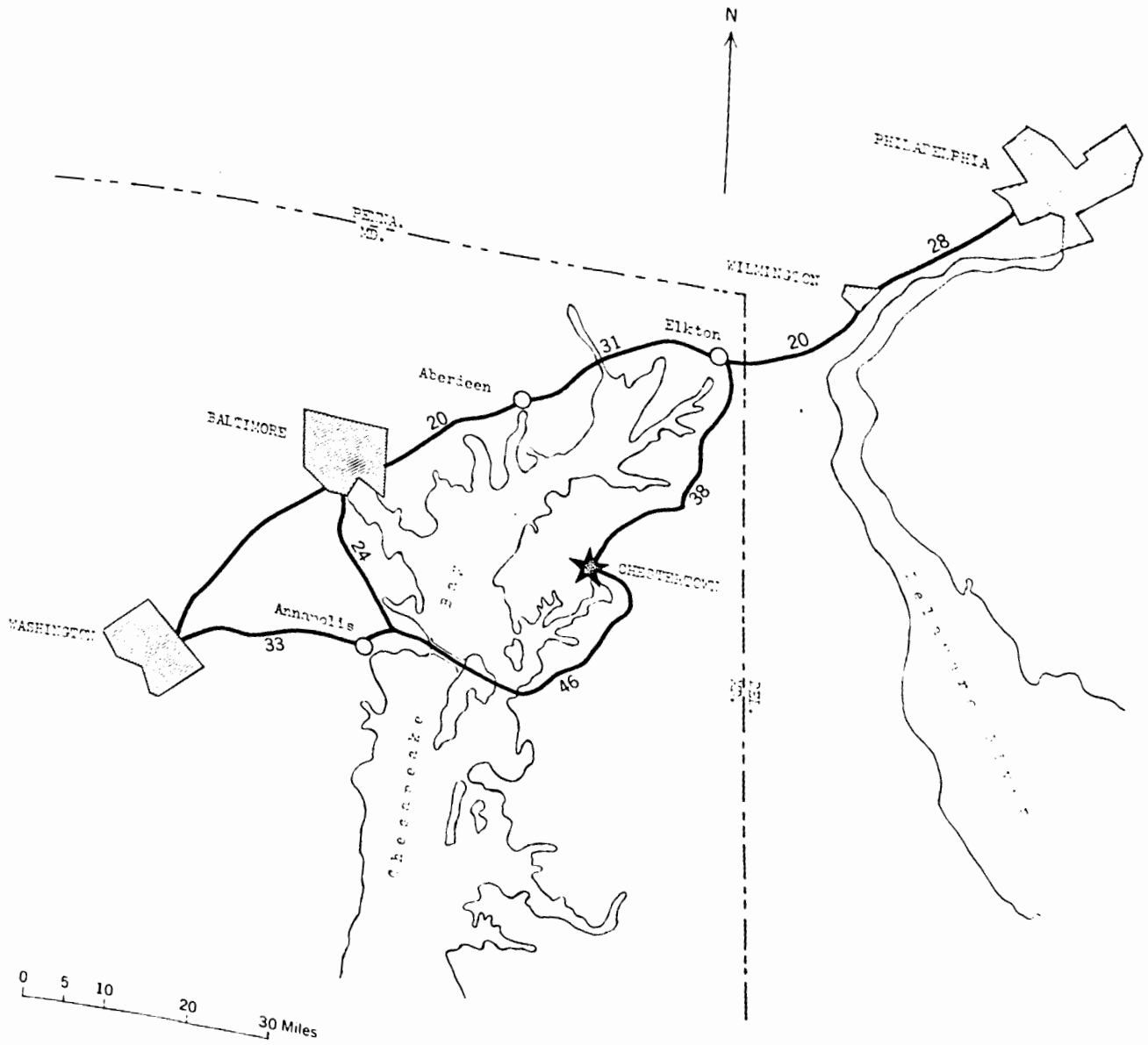
Air transportation is of minor significance in the county; however, there are several "city farmers" who own airplanes and have an air-strip on their farms. There is an airport on the outskirts of Chestertown that is used on a small-scale commercial enterprise.

The Chesapeake Bay Bridge offers greater accessibility to the Western Shore of Maryland, and the urban centers of Baltimore and Washington. (See Fig. 6) The Bridge should have an effect in extending dairying,

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<sup>42</sup>Letter dated January 17, 1952 from J. D. McVean, County Agent of Kent County, Chestertown, Maryland

FIG. 6 .--DISTANCES FROM CHESTERTOWN, MARYLAND, TO NEARBY URBAN CENTERS





livestock, and truck crop operations, and also the possibility of bringing the Washington market within range of the Kent County farmer. Benefits accruing to agriculture will be in the form of increased land values and greater demands for farm produce.

The automobile and the present road improvement program have encouraged people to commute to urban centers for employment. With the completion of the Bay Bridge, an increased amount of commuting to the Western Shore is quite likely.

J. D. McVean, County Agent of Kent County, has summed up his impressions of the effects of the Bay Bridge on the economy of the county as follows:

Outside of those who ride the bridge as a novelty or those who go to College Park, Washington, or South, my judgment is that relatively few Kent people . . . . . will use the bridge.

Likewise it is my impression that the farm trucks will continue to go around the head of the bay rather than pay toll over the bridge. This certainly has been true as it applies to the use of the ferry. From Chestertown to Baltimore via the bridge will be about 70 miles. Baltimore is 88 miles from Chestertown by road. Heavily loaded commercial trucks may use the bridge for return trips (loaded) to save mileage and to escape the hills on Route 40 - i.e. less strain on motor and brakes.<sup>43</sup>

Another factor that is likely is the increased shipment of livestock to Baltimore as truckers learn of the facilities and higher prices offered by the Union Stockyards in Baltimore.<sup>44</sup>

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<sup>43</sup>J. D. McVean, letter cited, footnote 42

<sup>44</sup>Maryland State Planning Commission, "Probable Economic Effects of the Chesapeake Bay Bridge on the Eastern Shore Counties of Maryland", Pub. No. 62, Baltimore: April 1950, p. 24

## CHAPTER IV

### EVOLUTION OF LAND USE

#### Historical Background

Kent is the second oldest county in Maryland and originally encompassed all the land area on the Eastern Shore of Maryland. St. Marys, the oldest county in Maryland, encompassed all the land area on the Western Shore of Maryland. Kent was first settled by people of English descent who settled mainly along the Chesapeake Bay, and the Sassafras and Chester rivers. During this early period water transportation played a very important role in the development of the region and was the major means of communicating with outside areas. The county was named for Kent County, England, the name, however, being first applied to Kent Island where a trading post was established by William Claiborne in 1631. This settlement was mainly for the purpose of trading with the Indians, but with the increase of settlers, farming soon became the chief pursuit. In 1707 the boundaries of the county were established approximately as they are at the present time though the eastern boundary was not definitely fixed until 1750.<sup>45</sup>

Chestertown, long a port of entry on the Eastern Shore, was laid out in 1706 on part of a grant of land known as "Stepney".<sup>46</sup> Chestertown owes its founding chiefly to tobacco. During Colonial days it was one

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<sup>45</sup> Maryland Geological Survey, op. cit., p. 22

<sup>46</sup> Swepson Earle, "The Chesapeake Bay Country", Thomsen-Ellis Company, Baltimore: 1929, p. 327

of the leading ports in this area. This town was settled almost exclusively by English people. Two-story red brick double-front homes with a front facing the water and a front facing the street were constructed on the waterfront facing the Chester river.

Landholdings in the county stem mainly from large manorial estates. The following information was collected from the land records in the Maryland Archives at St. Johns College, Annapolis. This table shows the largest landholdings recorded in Kent County in chronological order from 1640 through 1736:

<u>Year</u>	<u>Name of Tract</u>	<u>Acreage</u>	<u>Year</u>	<u>Name of Tract</u>	<u>Acreage</u>
1640	Allen Neck	66	1670	Pentridge	1,000
1650	Parsons Point	500	1683	Mechays Purchase	150
1651	Rich Neck	1,000	1684	Price	422
1658	Verina	1,000	1695	Mill Forke	1,403
1663	Drayton Manor	1,200	1708	Worton Manor	3,200
1664	Thornton	1,000	1724	Comegys	472
1666	Smith	1,000	1735	Millers Purchase	949
1667	New York	800	1736	Mitchells Park	1,650
1668	Whitfield	493			

These manorial estates have the unique background of having remained in the possession of the same family for over 200 years.

#### Tobacco-Farming Period (1647-1720)

During the Colonial period, land use was devoted mainly to subsistence crops and tobacco growing with little attention being paid to production of foodstuffs for the market. Tobacco growing was of great importance to the area and served as an economic base up until 1720. The importance of this crop is manifested in its manifold uses during this period -- medium of exchange, payment of wages, taxes, debts, and buying of slaves.

Tobacco planting began as an easy crop for the settlers, and as an occasional maker of great fortunes. Tobacco was grown in soil especially suited for its growth and became the staple crop of the province because of the high demand for it in European markets. Hundreds of thousands of hogsheads of tobacco were shipped out of many tidewater ports such as Georgetown, Sassafras, and Chestertown. Tobacco planting conformed excellently to the conditions of Colonial life. With the aid of negro slave labor and white indentured servants, one man could produce a greater value in tobacco than in other crops. The growing of tobacco was accomplished in an extravagant manner with the soils of many farms being depleted of their nutrients. Very little regard was given to restoring nutrients to the soil and to applying land use practices. During this period there was an abundance of free and rich soil, thus after a plot of land was "mined out" and depleted of its nutrients, as often was the case, men of influence could easily secure large grants of new land.

Building materials and blue stones which were used to pave the approaches to the wharves were brought to the county in ships from England. Tobacco, being the staple crop for economic exploitation, was traded for these materials, clothing, and other manufactured articles.

Tobacco culture on the Eastern Shore declined after 1720 when new tobacco-growing areas opened up on the Western Shore that produced better tobacco than was possible in the Eastern Shore's climate and soils. This decline of tobacco was further attributed to (1) constant cultivation that exhausted the soil and consequently lowered the quality of the crops; (2) effect of the salt spray that produced a dense leaf structure rather than a spongy leaf structure that was desired by the Old World merchants;<sup>47</sup>

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<sup>47</sup> Dr. Orman E. Street, Agronomy Department, University of Maryland

and (3) greater profits obtained from growing wheat. These factors together with the excessive transportation rates to Europe, the exorbitant import duties levied by the crown, and the charges exacted by merchants in England for credits on manufactured goods further lessened the profits from tobacco during this period.<sup>48</sup>

Land ownership in the county during the Colonial period was similar to that in England whereby landed wealth was the one essential mark of power, prestige, and gentility. During this period the fortunes of all but a few of the people were determined by their connections with tobacco growing. White indentured servants, negro slaves, and great landed wealth were the advantages of the large landholders. The usual tenancy agreement was a one-third share system commonly employed throughout the tobacco regions with the rent of the land alone valued at one-third of the crop, the furnishing of provisions and materials at one-third, and the labor at one-third.<sup>49</sup> Tenants on the proprietary manors during the last few years of their terms put in such quantities of tobacco that the land was left impoverished and depleted of its nutrients.<sup>50</sup> In the last generation before the Revolutionary War, approximately 1740-1775, economic and social differentiations were dominant aspects of county life. At the base of the pyramid there was a large group of small landholders, whereas at the top, there was a small number of large landholders who owned and operated huge manors that were obtained by grants.

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<sup>48</sup> Maryland Work Projects Administration, "Maryland A Guide to the Old Line State", Oxford University Press, New York: August 1940, p. 61

<sup>49</sup> \_\_\_\_\_, "History of Southern Agriculture", Farmer's Register, Volume I, p. 407

<sup>50</sup> Clarence P. Gould, "The Land System in Maryland, 1720-1765", The Johns Hopkins Press, Baltimore: 1913, p. 70

By the middle of the eighteenth century, the average landholding varied from 250 to 300 acres in the county. Nearly one-fourth of all the land was held in parcels of from 50 to 250 acres by men who owned no other land and cultivated their clearings either by their own labor or by that of a few slaves.<sup>51</sup> These small landholders had little surplus cash, thus they could not afford to rejuvenate their soils which had been depleted of their nutrients by a monoculture economy based on tobacco. Most farmers, in general, raised small patches of tobacco to pay off land-rents.

#### Grain-Farming Period (1720-1870)

This period is marked by a gradual changeover in land use from the growing of subsistence crops and tobacco during Colonial days to grain farming which was probably brought about by several factors: (1) a great demand for corn and wheat by England and the West Indies; (2) optimum climatic and soil conditions for the growing of corn and wheat; and (3) the tying in of grain farming with sheep culture that was being introduced as a result of excellent demands for wool. Grain and sheep culture gradually became a going concern which was an economy based on wheat, corn, and wool.

After the Revolution, with the rapid growth of population and the need for new sources of agricultural income, many newcomers settled in outlying sections where wheat was cultivated as a money crop.<sup>52</sup> Later, economic emphasis was based on other cash grains (oats, corn, rye) and hay along with the breeding of cattle. Large quantities of grain and

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<sup>51</sup>Charles A. Barker, "The Background of the Revolution in Maryland", Yale University Press, New Haven: 1940, p. 30

<sup>52</sup>Maryland Work Projects Administration, op. cit., p. 62

livestock were shipped to other parts of the South Atlantic states, New England, off-shore Atlantic islands, and England. Trade was facilitated by rather close ties between planters of the area and merchants in England.<sup>53</sup> Dairy farming was of minor significance with milk products from small herds used chiefly for home consumption. Throughout the nineteenth century, grain farming in one form or another was a major source of land utilization throughout the county but a brief fruit period overshadowed its importance.

#### Fruit Period (1870-1920)

The fruit period began with the conversion of thousands of acres of former grain-farming land to peach orchards. By 1880 there were over 1,500,000 peach trees in the county.<sup>54</sup> This sudden rise of the peach industry was due to high demands and excellent prices from urban centers (Baltimore, Philadelphia, New York), good soils, and optimum climatic conditions. The tempering effects of the Chesapeake Bay and the Chester and Sassafras rivers favored the production of fruit particularly along the littoral sections.

The importance of the peach industry in the county is aptly shown by the following quotation:

Indeed, it might be said that Kent County is now and has been for some years the great peach garden of the Peach belt, the county furnishing nearly 2 million packages of peaches, alone to the markets of the world during the season of 1891.<sup>55</sup>

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<sup>53</sup> Charles B. Clark, "The Eastern Shore of Maryland and Virginia", Lewis Historical Publishing Company, New York: 1950, Vol. I, pp. 92-101

<sup>54</sup> Ruble, op. cit., p. 21

<sup>55</sup> J. Thomas Scharf, "The Natural and Industrial Resources and Advantages of Maryland", C. H. Baughman and Company, Annapolis: 1892, p. 91

Of economic significance to the peach industry was the introduction of peach driers which were a means of keeping peaches from decaying and saving them for a better market at a later time. The old pier at Harris Wharf (See Fig. 2) was a significant and an important center for the shipping of peaches to Baltimore, Philadelphia, and New York. In some cases as high as 1,500 baskets of peaches were sent out in one day.<sup>56</sup>

Farmers along the Bay found the peach a paying crop and often \$20,000 to \$50,000 per year was clear profit from an average crop for large growers. Baltimore was the central market and due to cheap water transportation was the nearest and most accessible.<sup>57</sup> Fig. 7 shows that the peak year for peach production was in 1890, with a yield of 83,265 bushels; however, by 1910 the yellows and blight diseases had killed off many of the best orchards and by 1920 peaches became insignificant with a yield of only 8,691 bushels. Peaches never regained their initial importance because the farmers feared the return of the blight and yellows diseases.

After the peach boom of the 1890's, the Kieffer pear became the financial salvation of the Kent County farmer.<sup>58</sup> Peach trees were uprooted and former peach orchards became pear orchards. The Kieffer pear produced a very profitable cash crop for the Kent County farmer.

Fig. 7 shows that the greatest increase in pears occurred between 1890 and 1900 with yields of 14,403 and 105,458 bushels, respectively.

<sup>56</sup>Interview with W. B. Harris, Kent County farmer, Worton

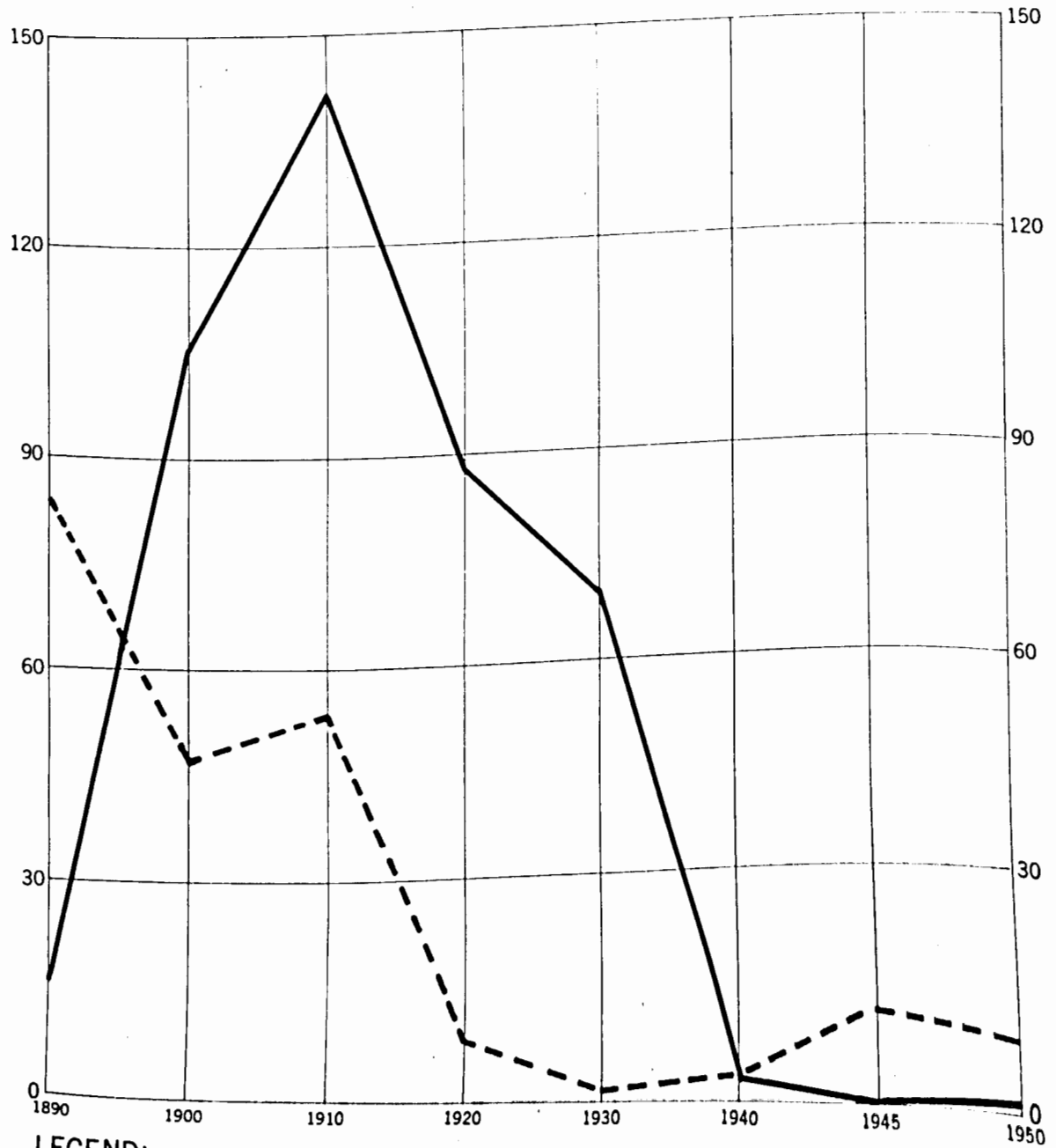
<sup>57</sup>Fred G. Usilton, "History of Kent County, Maryland", No Publishers. 1916, pp. 163-164

<sup>58</sup>Ibid., p. 164



FIG. 7 .--PEAR AND PEACH PRODUCTION IN KENT COUNTY,  
1890-1950.

THOUSAND  
BUSHELS



LEGEND:

- PEAR
- - - PEACH

SOURCE: U. S. BUREAU OF THE CENSUS, CENSUS OF AGRICULTURE

The peak year for pears was in 1910 with a yield of 141,396 bushels. Pear production gradually declined after 1910 resulting from pear blight, poor yields, and competition from other areas.

Today, pear production represents only 60 bushels as reported in the 1950 Census of Agriculture.

## CHAPTER V

### LAND USE TRENDS (1920-

#### General Characteristics of the Eastern Shore

Throughout the Eastern Shore there has been a significant change in agriculture and farming methods in the past ten years. This is due basically to the commercial broiler industry and the increasing demand from Atlantic Coastal Plain urban markets for canned, frozen, and fresh vegetables and fruits, and dairy products. With these changes, the Eastern Shore has been plagued with a scarcity of farm labor resulting from a migration of permanent farm laborers from the area to defense industries in urban centers, mainly Philadelphia and Wilmington. During the harvesting season the farmer is dependent more than ever before upon unsatisfactory migrant labor from the southeastern states. On large truck-crop farms, farm labor is augmented by imports from Jamaica, Puerto Rico, and the Bahamas. Another trend has been toward labor-saving machinery designed for specific purposes and greater specialization of crops, for example, combines for peas, lima beans, etc. Most of the canneries use assembly-line operations that are geared to speed up production.

Some of the characteristics of the area south of the Choptank river are: (1) remoteness from urban markets; (2) light-textured warm soils that are conducive to early maturing truck crops; (3) high degree of absentee ownership and tenant farming that is more adapted to truck crops and broilers than dairying; (4) local labor more familiar with truck crops and broilers than knowledge of dairying; and (5) longer growing season.

Truck-crop farming in this area is located primarily between the Choptank and the Wicomico rivers, and is chiefly for northeastern markets and for Eastern Shore canneries. Truck crops are about the same type throughout the Eastern Shore with the exception of sweet potatoes which are grown principally in the Wicomico river area, and Irish potatoes which are grown chiefly in the Pocomoke river region. The area south of the Choptank river has one of the lowest percentages of rural electrification, 81.5, on the Eastern Shore.

The counties immediately surrounding Kent consist principally of dairying, livestock, and general farming with large acreages devoted to corn, wheat, barley, and hay. These counties are favorably located for the dairying and livestock industry due to the following reasons: (1) proximity to large urban markets; (2) heavy-textured soils that are conducive to pasture, hay, and grain farming; and (3) high percentage of full owner- and part owner-operated farm units. In the past twenty-five years, farming in this section has shifted from cash grains to dairying which is the principal enterprise. Livestock breeding and fattening are also important. Within the past several years there has been a trend toward an increase in beef cattle and swine brought about by "outsiders" (city farmers) who have introduced new breeds of beef cattle (Black Angus and Shorthorn) on their large estates. These northeastern counties have the highest percentage (over 90) of rural electrification on the Eastern Shore.

To the east in Delaware, dairy and grain farms predominate in the northern half and 91 percent of these farms have rural electrification. Broiler production, found in the southern half of Delaware and adjacent Maryland counties south of the Delaware state line, has resulted from

cheap and skilled labor supply and cheap land. It is significant to note that this southern half of Delaware has only 79 percent rural electrification but on the other hand, leads all other areas on the Eastern Shore in the value of farm products sold (\$68.4 million) in 1950.

Some of the localized advantages of Kent County over these surrounding areas are (1) the largest average size farm unit, 225 acres, forming a sound economic basis to meet the demands of increased mechanization and specialization in dairying and livestock farming; (2) next to the largest value of land and buildings per farm, \$21,701; (3) the highest percentage of rural electrification, 97.8; (4) the highest degree of mechanization per farm unit, 3.52; and (5) the highest percentage of land in farms, 86.2, on the Eastern Shore.

#### Major Uses of Land

Land use in Kent County may be categorized into four main classifications: cropland, pasture land, woodland, and idle land.

Table 7 shows that the effects of the nation-wide depression in the late 1920's caused a withdrawal of 6,340 acres of farm land which became woodland and fallow.

Between 1930 and 1940 there was an increase of 3,429 acres in farm land but a decrease of 7,091 acres in cropland. The drop in total cropland and cropland harvested resulted from the introduction of hybrid seeds, use of lime, artificial fertilizers, and manure, whereby higher yields were obtained from less acreage harvested. For example, acreage in corn increased only 3,593 but there was a substantial increase of 219,602 bushels.

From 1940 to 1945 there were decreases of 8,783 acres in farm land and 5,480 acres in cropland although there was a 9.9 percent rise in cropland

TABLE 7  
 FARM ACREAGE ACCORDING TO LAND USE,  
 1920-1950\*

Land Use	1920	1930	1940	1945	1950
Approximate Land Area	180,480	180,480	<sup>b</sup> 181,760	181,760	181,760
Land in Farms	165,800	159,460	162,889	154,106	156,719
<u>Cropland, Total</u>	<sup>a</sup> <u>132,726</u>	<u>90,586</u>	<u>83,495</u>	<u>78,015</u>	<u>88,318</u>
Harvested	-	77,703	69,821	72,934	78,336
Crop Failure	-	927	753	506	-
Idle or Fallow	-	11,956	12,921	4,575	9,982
<u>Pasture Land, Total</u>	-	<u>31,589</u>	<u>31,940</u>	<u>34,854</u>	<u>29,598</u>
Flowable	-	27,733	31,940	27,129	23,885
Other Pasture	-	3,856	-	7,725	5,713
<u>Woodland, Total</u>	<u>21,608</u>	<u>22,832</u>	<u>26,423</u>	<u>25,782</u>	<u>28,179</u>
Pastured	-	2,691	-	1,005	3,491
<u>All Other Land</u>	<u>11,466</u>	<u>14,453</u>	<sup>c</sup> <u>21,031</u>	<u>15,455</u>	<u>10,624</u>

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950

<sup>a</sup>Includes total pasture land

<sup>b</sup>Change due to remeasurement of the United States, States, and counties

<sup>c</sup>Includes "other pasture" and "woodland pastured"

harvested. A drop of 8,346 acres in fallow land resulted from high farm prices, and increased consumer and Armed Forces demands for farm products.

Between 1945 and 1950 total cropland increased 10,303 acres resulting from the reclamation of imperfectly-drained (See Plate 9) and poorly-drained areas into cropland. An increase of 5,407 acres of fallow land was caused by the termination of World War II and an economic recession in the late 1940's. Marginal land that was formerly used for cropland and pasture reverted to woodland which showed a gain of 2,397 acres. In 1950 Kent County had 156,719 acres in farms which consisted of 56.4 percent in cropland; 18.9 percent in pasture land; 18.0 percent in woodland; and 6.7 percent in all other land. (See Fig. 8)

In the past ten years there has been a trend toward an increase in cropland, woodland, and reclamation of marginal land. Most of the cropland is planted in grain or hay crops, with truck crops being of secondary importance. Land adjusted to its best utility and economic aspects in the county is directed toward dairy and livestock production which may be considered the most effective land use over most of the county with lesser acreages being profitably devoted to truck crop production.

#### Trends and Types of Agricultural Land Use

Dairying. Dairy farming is an enterprise well adapted to the physiography, soils, and climatic conditions of the county. Both the climate and the soil are well adapted to the production of hay and grain crops (See Plate 10) for dairy cattle and livestock. The well-drained soils on undulating relief favor the establishment of easily maintained erosion-free grassland. Streams provide good drinking water for livestock and adequate rainfall throughout the year permits grazing by livestock



Plate 9. A recently constructed drainage ditch on an imperfectly drained corn field.



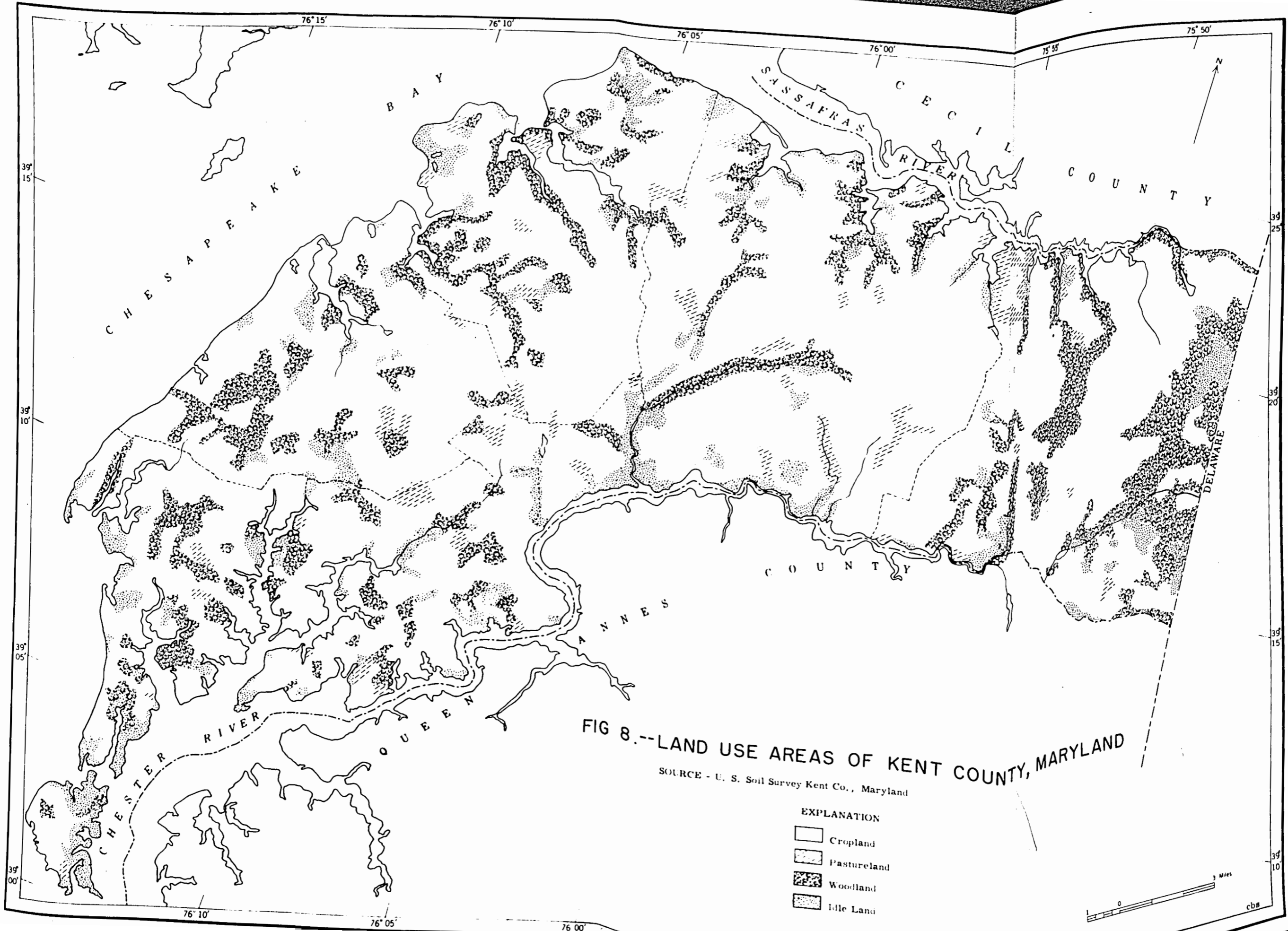
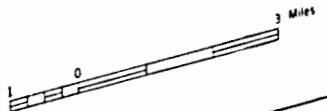


FIG 8.--LAND USE AREAS OF KENT COUNTY, MARYLAND

SOURCE - U. S. Soil Survey Kent Co., Maryland

EXPLANATION

- Cropland
- Pastureland
- Woodland
- Idle Land



cbs



Plate 10. A land use pattern showing fields of corn and wheat in the background and hay in the foreground.

which return various minerals and nutrients to the soil. The typical dairy farm in the county has a plot of wooded land generally located in low-lying areas and along the stream banks which serves as an excellent shaded area for cattle during the summer months.

Commercial dairying in Kent County received its initial impetus owing to a growing demand for fluid milk by the nearby Philadelphia and Wilmington milksheds. Fluid milk production in the county began in 1915 when good railroad facilities became available for shipping milk to Philadelphia and Wilmington. After 1915, three receiving stations for milk were established in the county -- Wills-Jones-McEwen at Kennedyville; Hauptfuhrer at Worton; and Harbison at Massey.

Dairying has been the chief agricultural pursuit of the Kent County farmers since 1920. Data in Table 8 show that from 1920 to 1930 there was a significant decline in the amount of butterfat sold and churned which brought about a noticeable rise in the production of fluid milk.

Between 1930 and 1940 there was a substantial increase of over 1,500,000 gallons of fluid milk with dairy products valued at almost \$1 million.

During 1940 and 1945 a marked increase of over  $2\frac{1}{2}$  million gallons of fluid milk resulted from increased demands of the Armed Forces and lucrative prices offered by the nearby urban centers.

In the past five years fluid milk production has increased almost 2 million gallons along with an addition of 1,108 dairy cows. This has resulted from the following factors: (1) culling-out low producing animals; (2) scientific breeding (artificial insemination); (3) antibiotics (antibacterial substance put in feeds to improve the growth of animals and used as a therapeutic); (4) better breeds of cattle; and (5) improved feeds

TABLE 8

VALUE AND PRODUCTION OF DAIRY PRODUCTS,  
1920-1950\*

Value and Production	1920	1930	1940	1945	1950
Total Value of Dairy Products	\$572,081	\$752,012	\$997,872	\$1,640,437	\$2,367,615
Milk Produced (gal.)	2,207,023	3,083,842	4,713,036	7,354,787	9,247,187
Daily Production of Milk (gal.)	5,553	9,806	12,912	20,150	23,234
Butterfat Sold (lb.)	498	90	-	1,550	855
Butter Churned on Farms (lb.)	73,088	18,037	12,300	-	9,880

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950

such as legumes in the livestock's diet. In turn, the total value of dairy products increased over \$700 thousand.

Data in Table 9 show a high degree of mechanization (tractors

TABLE 9  
SPECIFIED FACILITIES AND EQUIPMENT,  
1930-1950\*

Item	1930	1940	1945	1950
Tractors	265	481	692	1,068
Mototrucks	220	314	401	548
Milking Machines	-	-	-	348
Grain Combines	-	-	-	286
Corn Pickers	-	-	-	199

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1930 through 1950

(See Plate 11), mototrucks, and milking machines). The use of the tractor has caused a steady decline in horses and mules since 1930 with the greatest drop, 72 percent, occurring between 1940 and 1950, and in their place new barns and pasture have been taken over by more dairy herds. Recently constructed silos have been built on many dairy farms to store hay silage and buildings have been constructed to house larger herds with efficiency and sanitation in mind. (See Plate 12)

Time and motion studies in the milking routine have resulted in the establishment of ten "milking parlors" (See Plate 13) in the county that offer the following advantages: (1) labor saving; (2) greater sanitation and health conditions among the cows; and (3) faster milking operations. For efficient "milking parlor" operation, good management is a prime requisite. The dairy policy in the county is to offer premiums

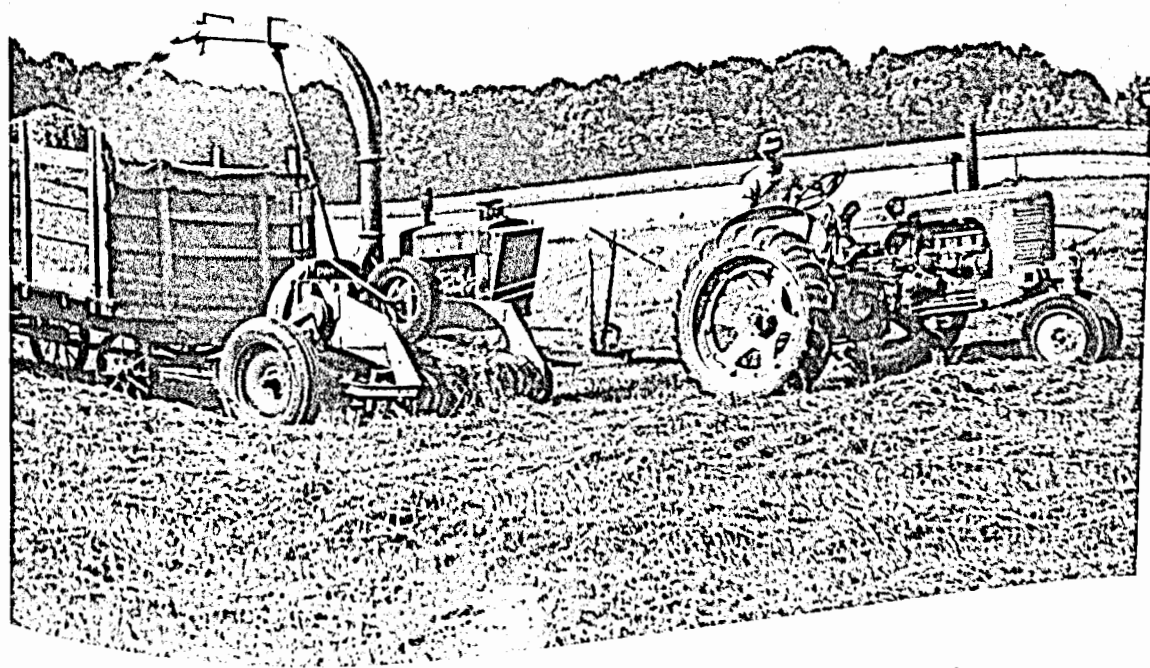


Plate 11. A tractor pulling a field harvester that is chopping  
"wind row" alfalfa.

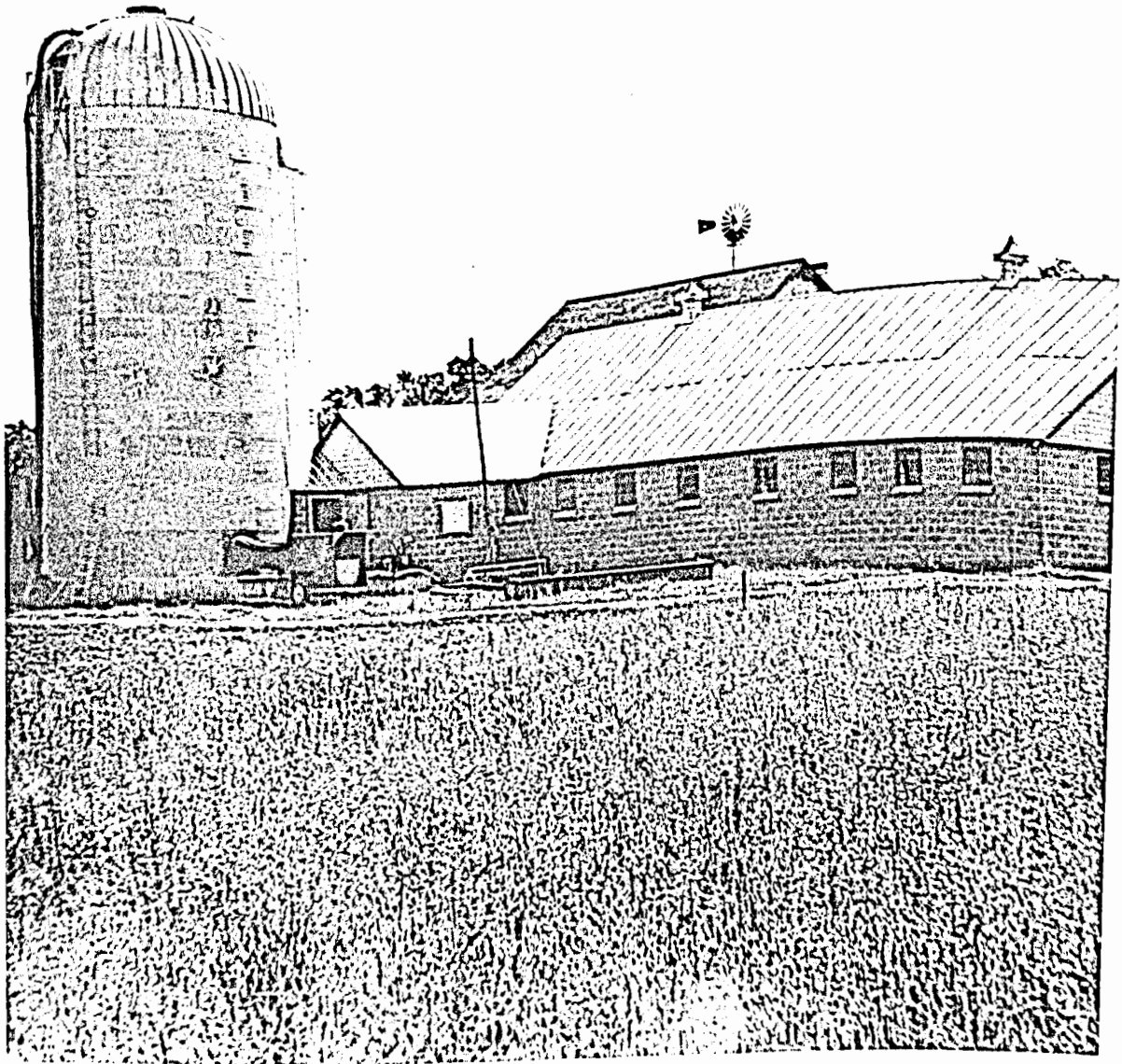


Plate 12. A typical Kent County dairy farm showing a new barn, silo, and milkshed. A field of alfalfa is in the foreground.



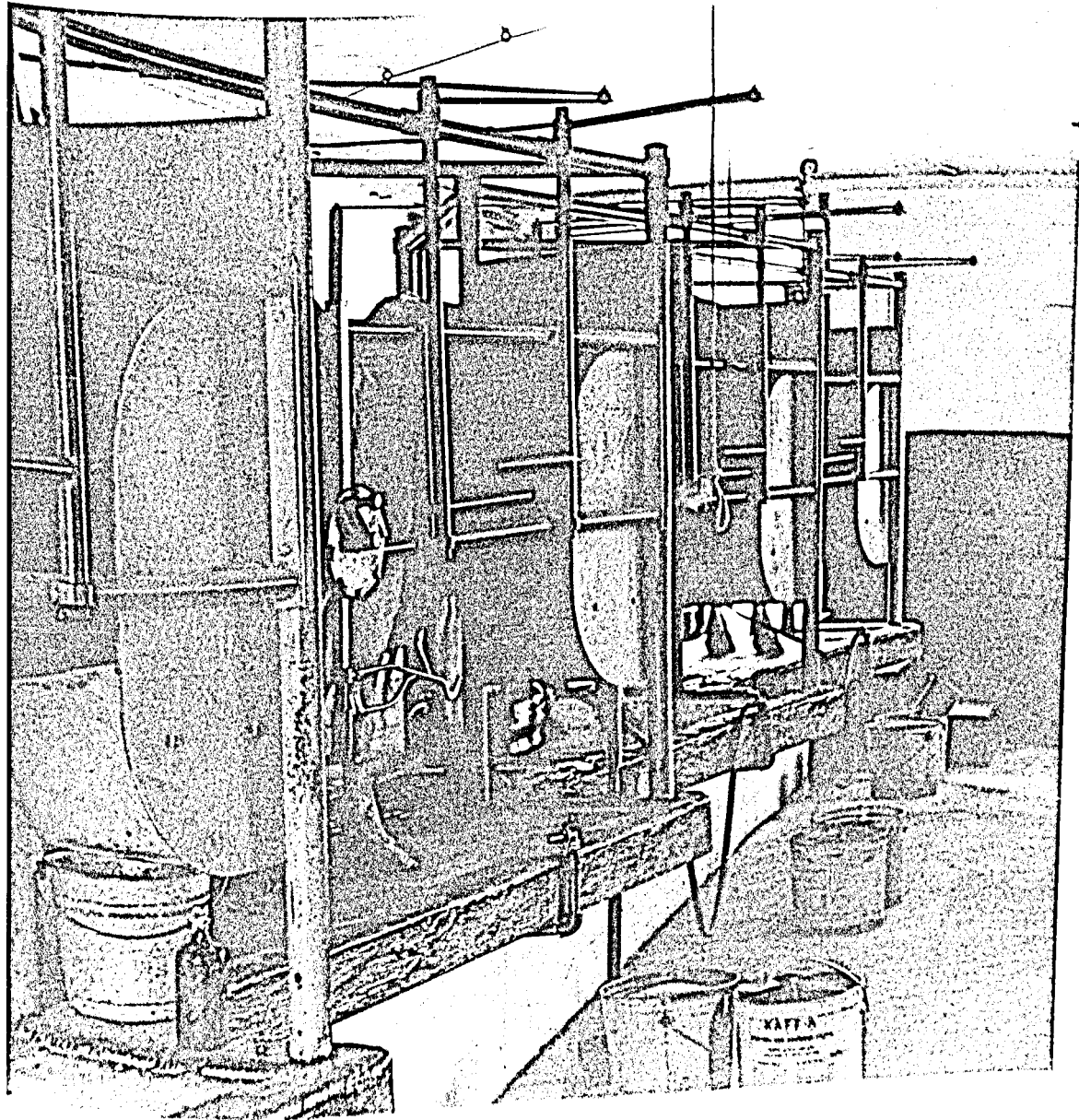


Plate 13. A milking parlor with 2 dairy cows in stalls demonstrating assembly line technique in milking.



for high production in the fall and winter months and premiums for low production in the summer months to level-out milk production for the year. The rise in cost of mechanized farm and dairy equipment has forced the Kent dairy farmer to specialize and make increased profits through a greater volume at the lowest possible cost per unit of production. The lowest possible cost of producing milk is by using pasture. Grain-feeding is the most expensive, therefore it is imperative for dairy farms to have high quality hay and pasture programs.

Data in Table 10 show that dairying is the outstanding agricultural

TABLE 10

VALUE OF FARM PRODUCTS SOLD BY TYPE OF FARM,  
1945-1950\*

Type of Farm	Value of Farm Products Sold	
	1945	1950
Dairy	\$1,640,437	\$2,367,615
Livestock	366,366	805,377
Grain Crop	904,577	1,636,322
Truck Crop	363,554	359,604
All Other	323,896	259,422
Total	\$3,598,830	\$5,428,340

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1945 and 1950

pursuit in the county leading all other types of farm products with over 40 percent of the total value of all farm products sold in 1950. The average daily production per cow (3.3 gallons) exceeds that of any other Maryland county on the Eastern Shore.

An economic base for the present dairy industry is found in large urban centers such as Philadelphia, Baltimore, and Wilmington located not too distant from the county. (See Fig. 6) Kent County did not come under the Baltimore milkshed until after 1948 resulting from increased consumer demands for dairy products. The proximity of such markets, the low cost of good truck transportation, and the demand for dairy products are most desirable factors toward an increased dairy industry along the most modern lines of development. The following data, compiled by Mr. J. D. McVean, Kent County Agent, give a percentage distribution of milk sent out of Kent County during 1951:

60.6	Philadelphia
20.2	Baltimore
9.4	Wilmington
6.0	Greensboro, Maryland (Pet Milk Co.)
(3.8)	(Local distribution)

At the present time three local receiving stations in the county -- Supplee-Wills-Jones at Worton, Harbison Dairies at Massey, and Breyers Ice Cream Company at Millington -- ship 60.6 percent of the total output of Kent County raw milk to Philadelphia. 3.8 percent of the total output of milk is distributed locally by Gill Brothers Dairy located in Chestertown.

The demand for Kent County milk is excellent and the returns are favorable for the farmer. As population increased in nearby urban centers, the demand for dairy products expanded and led to the establishment of new residential areas in former agricultural sections contiguous to urban centers. Agricultural areas that formerly supplied these centers with dairy products have been swallowed up in the transition and have resulted in increased county expenses and heavy taxation. This in turn has made dairy farming unprofitable in these counties, hence new units of dairying have been established in counties such as Kent located further from urban

centers. As a result, Kent County is more than ever before under the influence of the Philadelphia, Baltimore, and Wilmington milksheds. Kent County milk through the Philadelphia milkshed goes into New Jersey areas such as Atlantic City and many cities adjacent to New York City. The Bay Bridge will furnish easy access to Washington, D. C., thus in the future it is conjectured that milk shipments into this milkshed will increase the demand on the dairying industry throughout the county. In prospect, an increasing trend is expected toward larger dairy farms and greater land use devoted to the dairying enterprise.

Livestock. Data in Table 11 show increases in beef cattle and

TABLE 11

NUMBER OF LIVESTOCK,  
1920-1950\*

Livestock	1920	1930	1940	1945	1950
Dairy Cattle	10,669	11,388	12,088	15,219	16,327
Beef Cattle	214	367	393	1,252	1,347
Swine	8,809	7,958	6,198	7,301	10,191
Sheep	7,218	15,672	2,278	1,455	1,901
Horses and Mules	7,883	5,667	4,211	2,844	1,186

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950

sheep and a decline in swine during 1920 and 1930. Horses and mules dropped considerably resulting from the use of the tractor and truck which supplanted their need. From 1930 to 1940 there was a substantial decline of sheep resulting from low market and consumer demands. Between 1940 and 1945 there were sizable increases of beef cattle and swine resulting from heavy demands for meat products by the Armed Forces and the nearby urban markets.

The value of beef products sold increased 10 percent of the total value of all farm products sold during 1945 and 1950. By 1950 the value of all livestock products represented 15 percent of the total value of all farm products sold.

Livestock is generally grass-fattened which has resulted in increased acreages of pasture and forage crops. From an economic and agricultural standpoint toward greater permanency in agriculture, pasture and grass-fattening of livestock are the most profitable operations for the area farms. It has been estimated that from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  pounds per day can be added to each steer from grass pastures. Pure-bred herds of Black Angus and Shorthorn beef cattle (See Plate 14) are the most dominant breeds in the county.

Grain-Farming. Grain farming is ideally adapted to the topographic, climatic, and soil conditions in the county. Table 12 shows that corn, wheat, barley, soybeans, oats, and hay (mainly clover, timothy, and alfalfa) (See Plate 15) are the principal crops grown. Corn and wheat represent 63.2 percent and hay 19.7 percent of the total cropland harvested in 1950. Grain farming ranks second, 30.1 percent, in the total value of farm products sold. (See Table 10)

In 1920 corn was the leading crop in production because it was planted on the better land in the county; however, wheat led in acreage in view of the fact that it was planted quite often on marginal land. During 1920 and 1930 corn declined 46.5 percent in production and 26.8 percent in acreage which was attributed to the Depression of 1929, low market prices, and an inelastic consumer demand for farm products. On the other hand, wheat production gained 42.3 percent although there was a 13.3 percent drop in acreage.

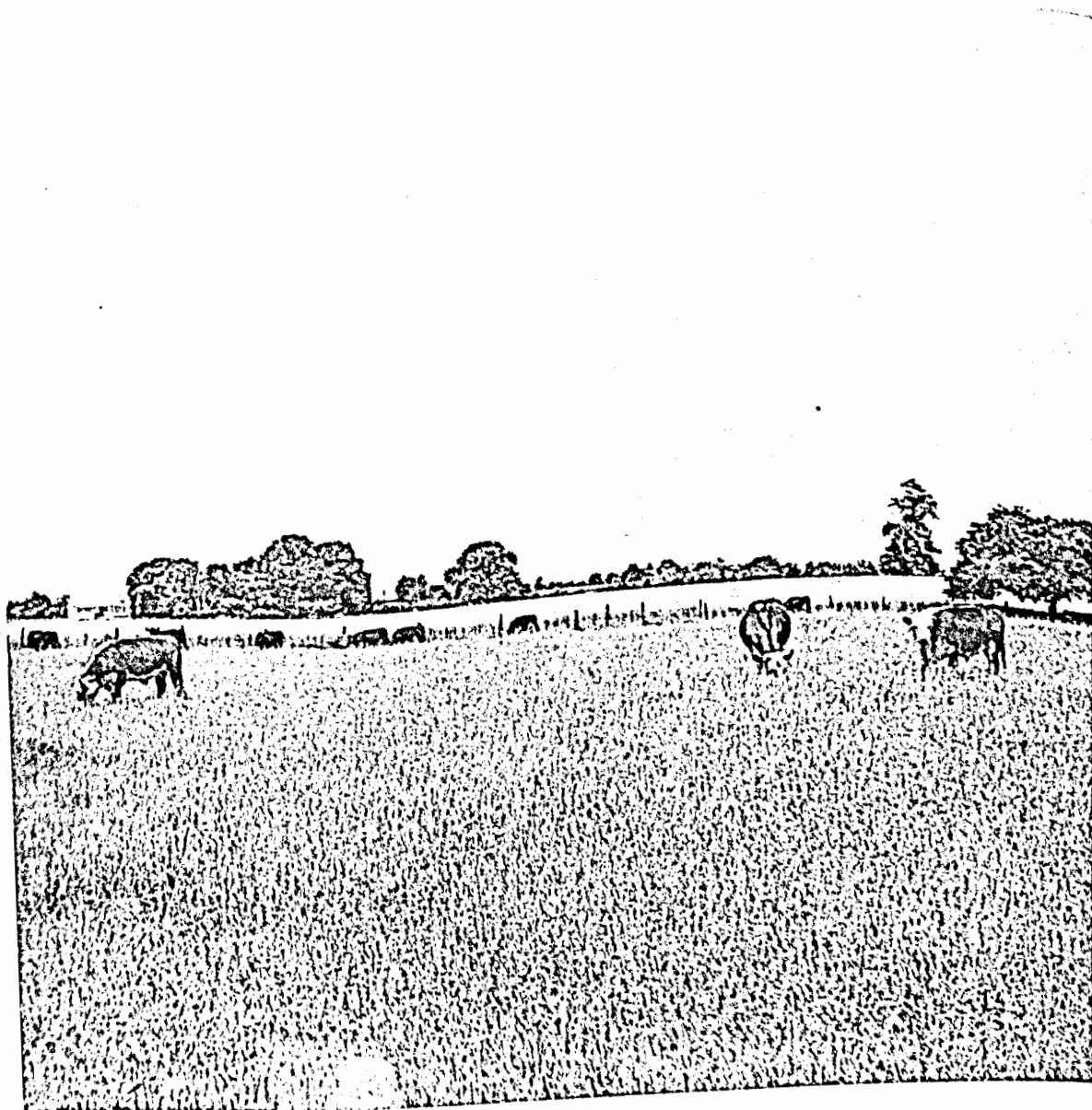


Plate 14. A herd of Shorthorn beef cattle.

TABLE 12  
SPECIFIED GRAIN CROPS HARVESTED BY ACREAGE AND YIELD, 1920-1950\*

Year, Acreage, Yield	Grain Crops (Bushels)						Hay (Tons)			
	Corn	Wheat	Barley	Soybeans	Oats	Rye	Clover or Timothy	Alfalfa	Lespedeza	Other Hay Crops
1920: Acreage	26,895	43,963	1	-	452	174	6,899	1,002	-	913
Yield	740,296	507,777	8	-	6,583	2,185	7,617	2,048	-	906
1930: Acreage	19,675	38,109	61	558	819	80	7,441	1,447	-	881
Yield	396,154	722,793	1,300	239	17,562	520	6,863	2,577	-	1,060
1940: Acreage	23,268	24,139	1,658	5,654	721	26	7,228	1,496	84	782
Yield	613,756	438,443	41,317	8,157	20,794	558	9,262	3,247	61	768
1945: Acreage	23,252	21,156	3,832	5,711	677	109	9,633	2,150	83	159
Yield	830,167	476,633	111,137	30,851	21,443	1,987	10,520	5,458	79	226
1950: Acreage	27,581	21,945	4,633	3,076	823	94	11,309	2,831	760	528
Yield	1,160,762	419,301	146,077	39,955	25,932	1,397	16,600	6,685	968	769

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920-1950

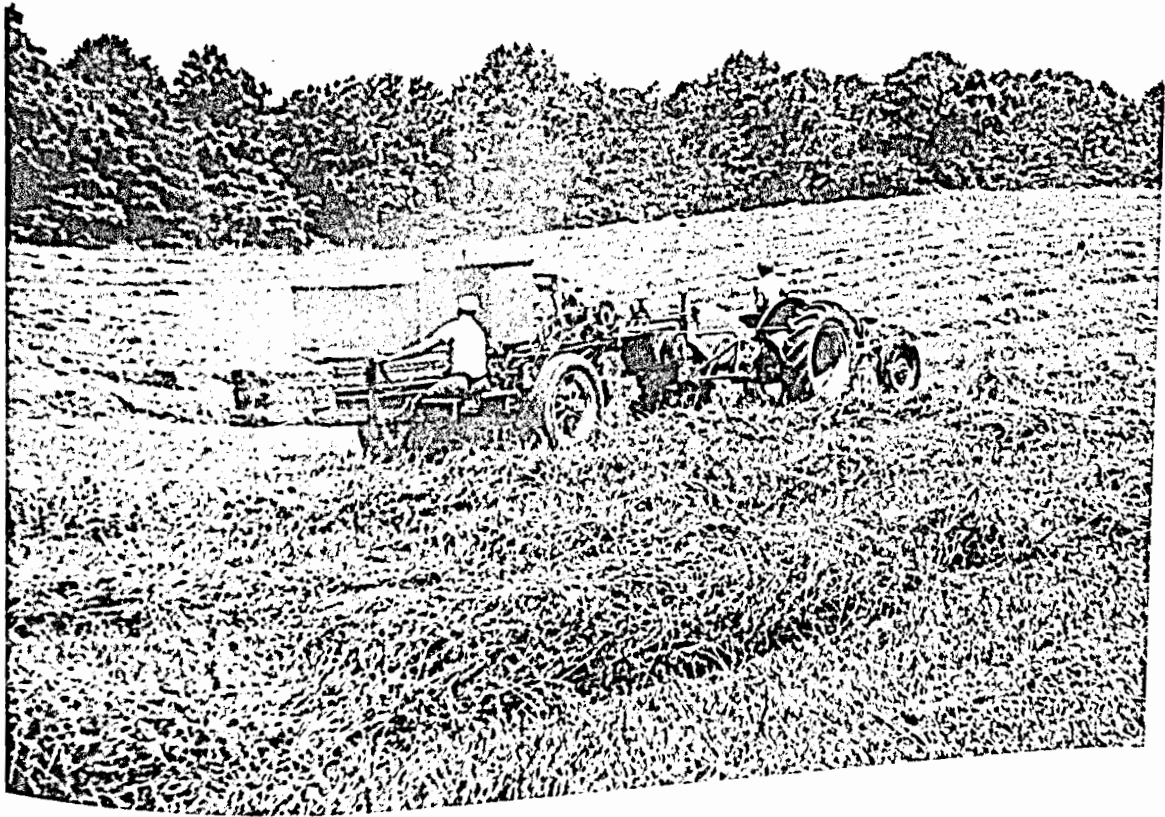


Plate 15. Baling freshly-cut alfalfa.

The period between 1930 and 1940 marked a 35.5 percent increase in the production of corn caused by the introduction of hybrid seeds and the extensive use of farm manures and fertilizers. During this same period, there was a 39.3 percent loss in wheat production along with a decrease of 14,130 acres. Land that was formerly used for wheat was converted principally to soybeans and barley.

Corn production increased 26.1 percent between 1940 and 1945 owing to improved cropland and better farm management. Barley production increased 62.8 percent with an addition of over 2,000 acres resulting from its demand as a feed grain for livestock. Soybeans showed a gain of 22,694 bushels due to its uses as feed for livestock and in crop rotations. Wheat yields increased slightly owing to improved seeds and farm management which gave greater yields on fewer acres. The principal uses of wheat, apart from its use as a bread crop, are: (1) a part of the crop rotation scheme; (2) a follow-up crop for clover; (See Plate 16) (3) bedding material for dairy cattle; and (4) supplying organic material to the soil.

By 1950 corn became the dominant grain crop due to some of these contributing factors: (1) greater demand for cattle feed; (2) improved hybrid seeds; (3) greater use of fertilizers and lime; (4) conservation practices; (5) mechanization; and (6) improved farm management. Corn is used extensively as a feed grain and fodder for livestock herds.

Barley and soybeans have increased steadily in production and acreage because of their growing importance as a livestock feed. Land that is too wet for corn is ideally suited for soybeans.

Rye is relatively insignificant as a grain crop in the county being used chiefly as pasture for dairy and livestock herds. Rye, barley, and wheat acreages are often used exclusively for grazing areas.



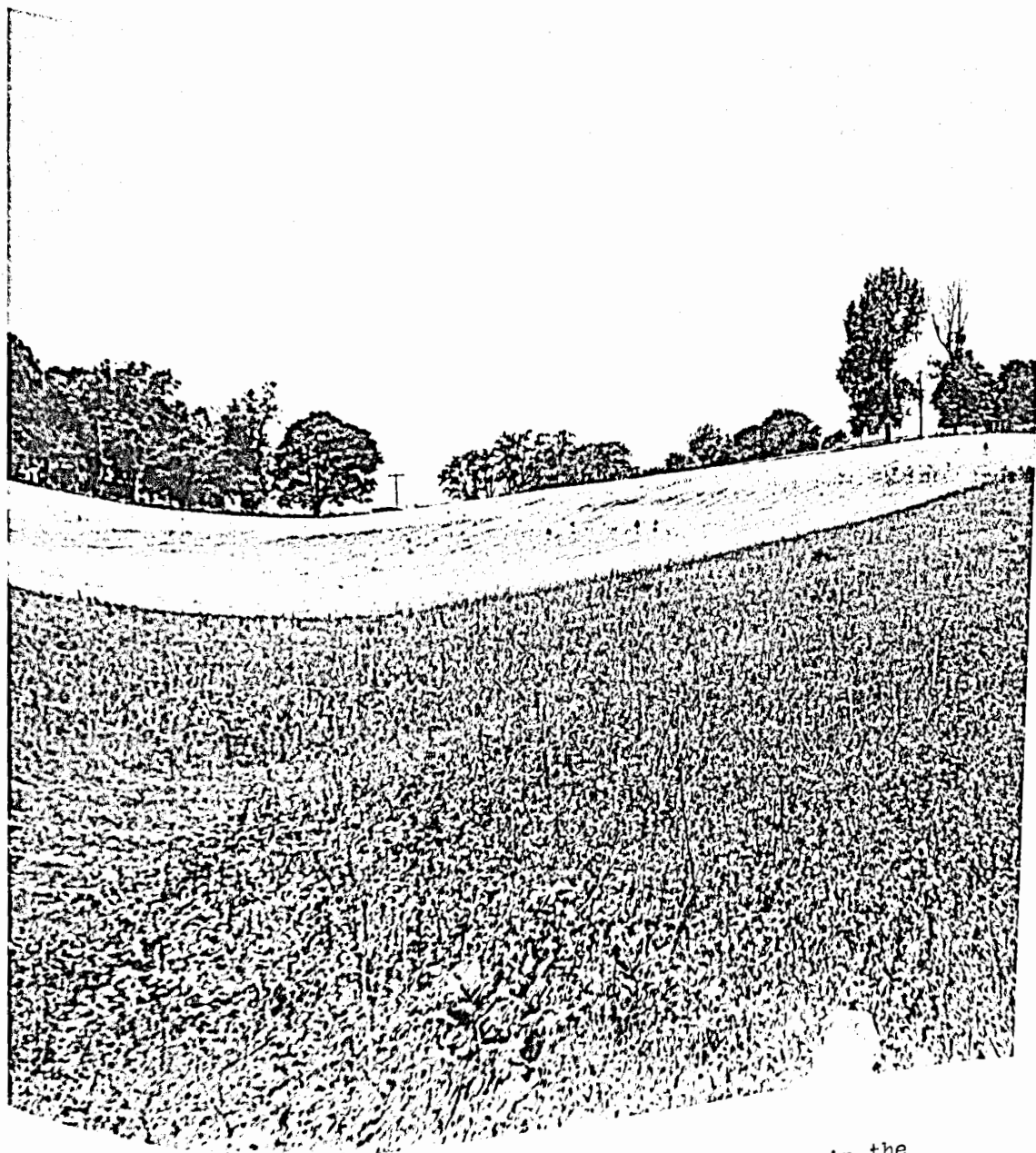


Plate 16. A wheat field located on undulating topography in the central part of the county. A field of hay is located on a terrace in the foreground.

The Kent farmer must utilize a segment of his acreage for the production of winter fodders (See Plate 17) and grain crops in order to function more economically. The trend in the past 30 years has been toward more emphasis on feed grains and hay which have brought about a higher degree of specialization in dairying and livestock production.

Truck-Crops. Truck-crop farming is of secondary importance to the economy of the county probably resulting from: (1) migration of farm labor to urban centers; (2) inadequate and unsatisfactory labor during the harvesting season; (3) seasonal and spasmodic income caused by crop failures and problems of obtaining satisfactory migrant labor; (4) keen competition from other areas particularly the South Atlantic states; and (5) rising cost of labor, fertilizers, seeds, and other factors of production. In 1950 truck crops represented 6.6 percent of the total value of farm products sold. (See Table 10)

Since 1930 truck crops such as tomatoes, sweet corn, peas, and asparagus have been grown chiefly for canning purposes. Today, asparagus and peas are grown primarily for freezing purposes. Acreages devoted to several truck crops are often leased out or contracted to large out-of-state growers and canneries. Growers lease acreages of land from the farmer for a specified number of years and use their own seeds, help, and machinery to maintain the land. On the other hand, acreages contracted by large growers are maintained by the farmer himself with a complete crop going to the cannery. A few small canneries are located in Chestertown, Rock Hall, Kennedyville, and Massey. Large canneries such as Campbell's and Phillips' in New Jersey and Delaware have forced many of the marginal canneries out of business and have made their operation economically unsound. The shut-down of these marginal canneries have resulted in

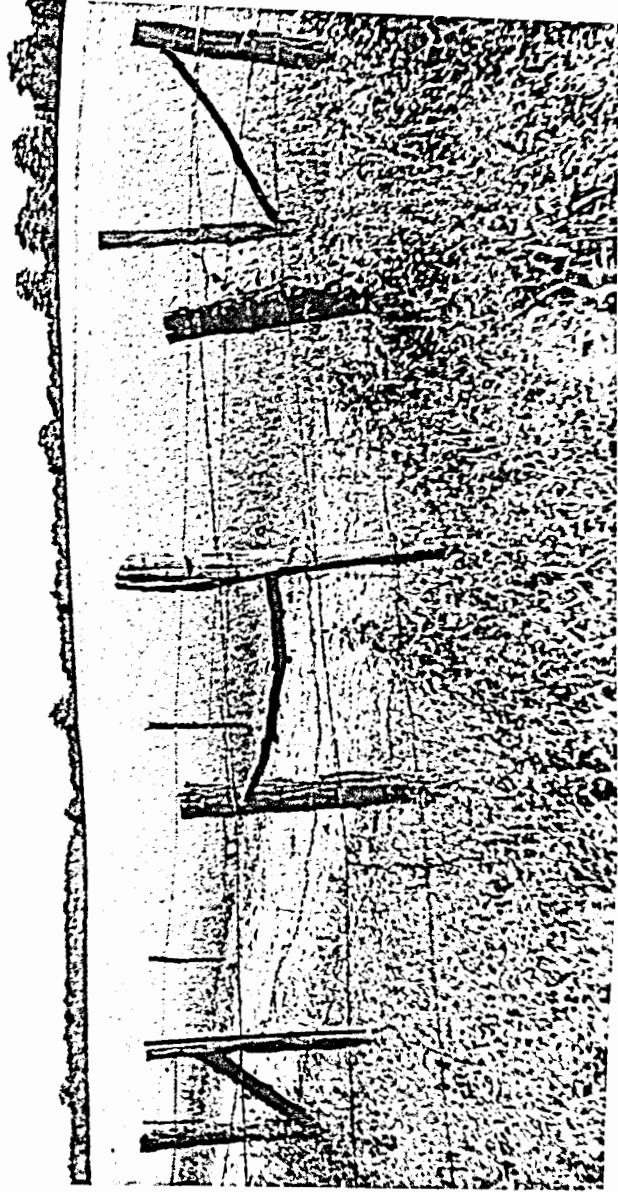


Plate 17. A field of alfalfa to be used as a winter fodder for dairy and livestock herds.

unemployment and a migration of former workers to urban centers. The proximity to nearby canneries and freezing plants in neighboring counties offers the independent farmer a ready outlet for his truck crops. Adequate marketing facilities provide direct truck shipment and excellent contacts with urban markets.

Climatically, the county is well-suited for the production of truck crops. Ample and well-distributed rainfall throughout the season, an average frost-free season of 200 days, and the tempering effect of the Chesapeake Bay and the Sassafras and Chester rivers hasten the maturity of early truck crops; thus the Kent farmer can meet early market and consumer demands in nearby urban centers. An example of the farmer meeting early urban market demands was cited by Dr. Walter F. Jeffers, Plant Pathologist, University of Maryland:

Last year, a farmer in the county sold his complete crop of cucumbers in the Philadelphia market for \$15 per bushel. The following week, the price of cucumbers dropped to \$3 per bushel resulting from the influx of cucumbers from other areas which flooded the market.

From Table 13 it is discerned that potatoes have decreased steadily in acreage and have lost their importance as a truck crop owing to (1) poor methods of harvesting and handling; (2) better quality produced elsewhere; (3) low sale value because of poor appearance; (4) poor quality (picked too soon in order to meet market demands); and (5) high cost of farm labor. Potatoes are grown on many small plots of land throughout the county mainly as a subsistence crop.

During 1930 and 1940 the acreage in tomatoes (See Plate 18) declined 48.1 percent due to a drop in market prices. Expanding market and canning demands for sweet corn brought about an increase in acreage.

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TABLE 13  
SPECIFIED TRUCK CROPS BY ACREAGE  
1920-1950\*

Crop	Acreage				
	1920	1930	1940	1945	1950
Irish Potatoes	486	286	195	145	93
Tomatoes	NR	4,391	2,277	2,262	1,027
Asparagus	NR	712	515	NR	386
Sweet Corn	NR	195	742	1,333	2,177
Green Peas	NR	13	32	167	140
Green Beans	NR	8	6	45	190
Lima Beans	NR	NR	NR	NR	339

(NR - Not Reported)

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950

In 1945 the sudden increase of 90 percent in sweet corn acreage resulted from demands for canned corn by the Armed Forces. By 1950 sweet corn led all other truck crops in acreage in the county. Land formerly in tomatoes was converted to lima beans, asparagus, and green peas resulting from the high market demand for these crops.

Within the past two years asparagus has assumed considerable importance in the county with increased acreages grown on a strictly commercial scale by "outsiders". This has been purely an economic venture resulting from high demands and high prices for asparagus. Some of the advantages for growing asparagus in the county are: (1) a high consumer and market demand; (2) optimum soil and climatic conditions; (3) lower farm wages than in other asparagus-growing regions; and (4) a high return price per acre because it is a more permanent type of vegetable than other



Plate 18. A field of tomatoes with wooded area on low-lying topography in the background.

truck crops (after 3 years a crop can be cut for the first time, then annually for the next 10 years). Asparagus is easy to freeze and lends itself well to frozen food processes. In the past year the California Packing Company has been buying all available land which is ideally suited to specialized asparagus production. The high cost of transporting asparagus from California to the eastern market and the establishment of processing centers in the East have instigated this economic change. Large numbers of people from New Jersey have moved in and established asparagus farms on former dairy land in the eastern part of the county. The location of these farms lie between Millington and Sassafras on Route 213, and on Route 299 between Massey and Galena. (See Fig. 2) Mr. McVean states:

Just recently four large farms have been bought and planted in asparagus -- California Packing Co. - 300 acres; J. Cochran - 265 acres; Gimberling Brothers - 150 acres; and Safe Deposit and Trust Company Farm, Inc. - 150 acres. At the present time there is a total of approximately 900 acres of asparagus growing in the county.

In prospect, it seems plausible that the Washington, D. C. market for truck crops may now be within reach of the Kent County farmer. In the past, poor ferry connections and long waiting periods for the ferry caused the Washington market to be by-passed. With the completion of the Bay Bridge, the time factor enters into the picture as it takes only a few minutes for the truck to cross the Bay bringing the Washington market into focus.

#### Size of Farms

Data in Table 14 show there has been a steady increase in the average size of farms and a decline in the total number of farm units in the county. This condition has resulted from (1) consolidation of smaller

TABLE 14

NUMBER AND AVERAGE SIZE OF FARMS,  
1920-1950\*

Number and average size of farms	1920	1930	1940	1945	1950
Number of Farms	1,032	971	852	724	696
Average Size of Farms (Acres)	160	164	191	213	225

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950

farms into large estates; (2) increased farm mechanization; and (3) a migration of farm operators to jobs in urban centers. The tractor and pneumatic tire also have been instrumental in increasing farm size making it possible for more acreage to be farmed by one man.

Table 15 shows that in 1950 the largest number of farm units occur between 100 and 499 acres representing 70 percent of the total number of farms and 72 percent of the acreage. The smallest number of farm units range from 500 to 1,000 acres and over, representing 7 percent of the number of farms and 24 percent of the acreage.

Land use on farm units of 260 acres and over is chiefly devoted to dairying or livestock with small acreages of mixed grain farming. A farm under 200 acres will not support high mechanization which is necessary (See Plate 19) to provide the farmer with a satisfactory income to meet rising costs and consumer demands. In order to operate large farm units economically, competent management; large outlays of capital; conservation measures such as terracing, (See Plate 20), strip-cropping, and contour

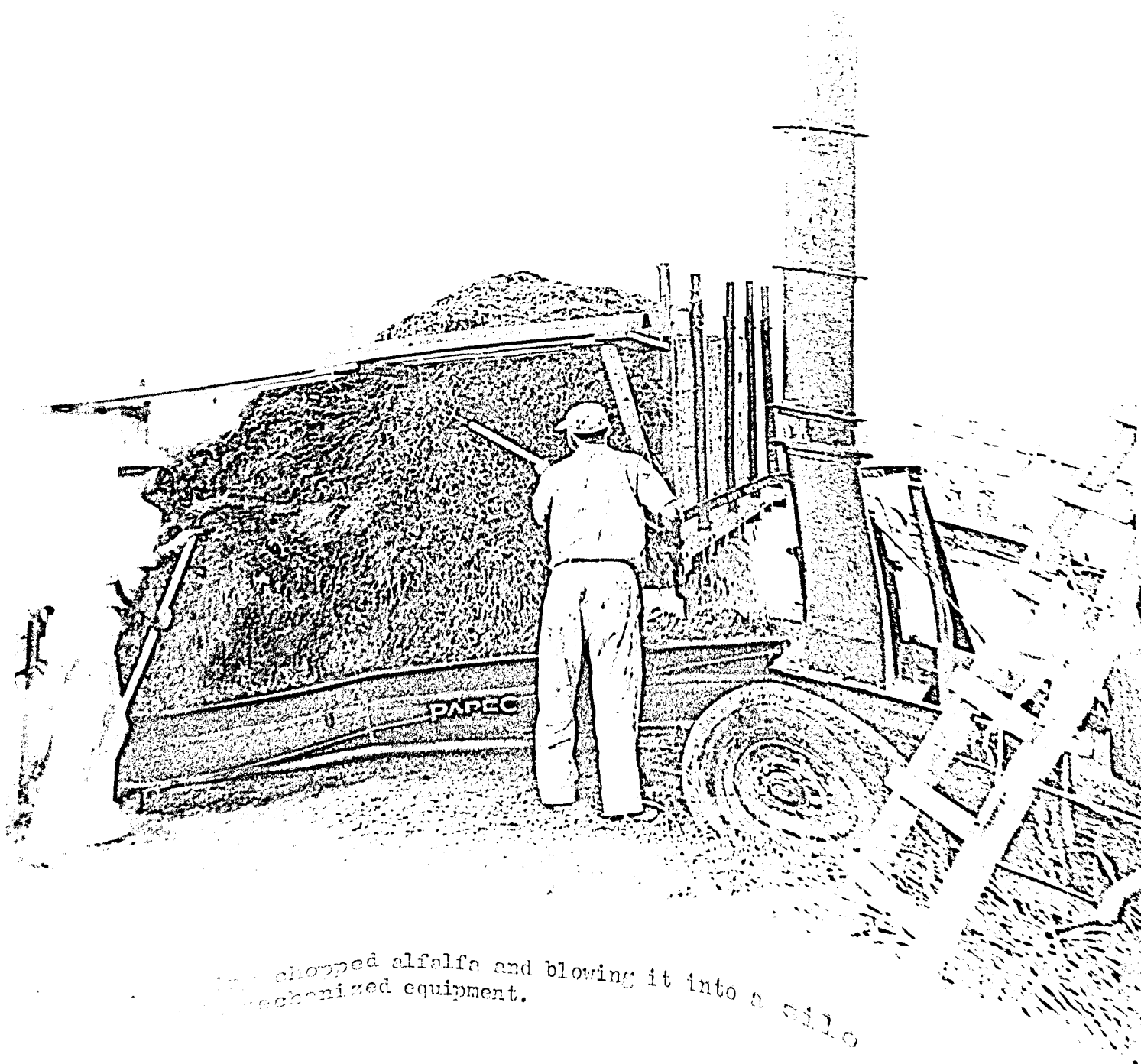


TABLE 15

SIZE OF FARMS BY NUMBER  
AND PERCENT OF ALL FARMS  
1920-1950\*

Size, number, and percent of all farms	1920	1930	1940	1945	1950
Under 10 acres	117	108	78	37	29
Percent of all farms	11.3	11.1	9.2	5.1	4.2
10-49 acres	156	143	112	82	82
Percent of all farms	15.1	14.7	13.1	11.3	11.8
50-99 acres	86	80	71	58	54
Percent of all farms	8.3	8.2	8.3	8.0	7.7
100-174 acres	203	188	176	166	145
Percent of all farms	19.7	19.5	20.7	22.9	20.8
175-259 acres	255	254	202	177	167
Percent of all farms	24.7	26.2	23.7	24.5	24.0
260-499 acres	202	181	183	161	170
Percent of all farms	19.6	18.6	21.5	22.2	24.4
500-999 acres	13	16	23	36	43
Percent of all farms	1.3	1.6	2.7	5.0	6.2
1,000 acres and over	-	1	7	7	6
Percent of all farms	-	0.1	0.8	1.0	0.9

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950



... chopped alfalfa and blowing it into a silo  
... mechanized equipment.



Plate 20. A field of stacked wheat where terracing operations have been put into practice to conserve the soil.

plowing (See Plate 21); closer land use adjustments by fitting the crops to the soil, slope, and existing drainage conditions; and extensive use of lime, manure, and artificial fertilizers are needed.

From 1920 to 1930 there was a decline of 61 farm units owing to some farm consolidation and a drop in prices for agricultural products. During 1930 and 1940 the total number of farm units declined 119 owing mainly to the withdrawal of waterfront property from agricultural land use by consolidation of farms into large estates. Between 1940 and 1945 there was a decrease of 128 farm units in the county resulting from the consolidation of farms from under 10 acres to 499 acres into larger estates. A significant increase of 13 farm units in the 500 acres and over group was noted.

By 1950 there were 696 farm units in the county with 49 farms ranging from 500 to 1,000 acres and over. The chief agricultural pursuits on these large estates are specialized livestock and some dairying which have resulted in a greater permanency in agriculture.

#### Status of Land Ownership by Residence

Figure 9 shows that owners reside on 80 percent of the farms in the county while 20 percent are controlled by absentee owners.

Owner Residing on Farm. This group of farm owners includes the "dirt-farmer" (See Plate 22) who was born and reared in the county, and the professional or business man who has bought or inherited a farm for prestige, social purposes, investment against inflation, and restoration of a Colonial home with livestock or dairying as the main agricultural enterprise. Tenants or managers operate the professional men's estates which are well-equipped with modern buildings and farm machinery representing large outlays of capital.

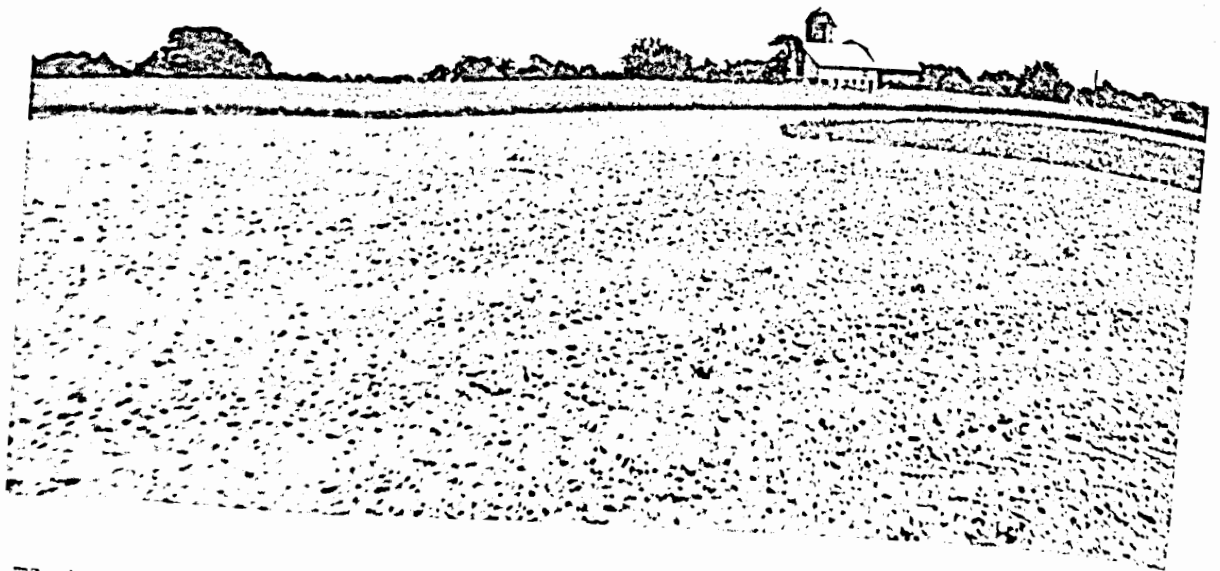


Plate 21. Plowing on the contour as an erosion control measure.

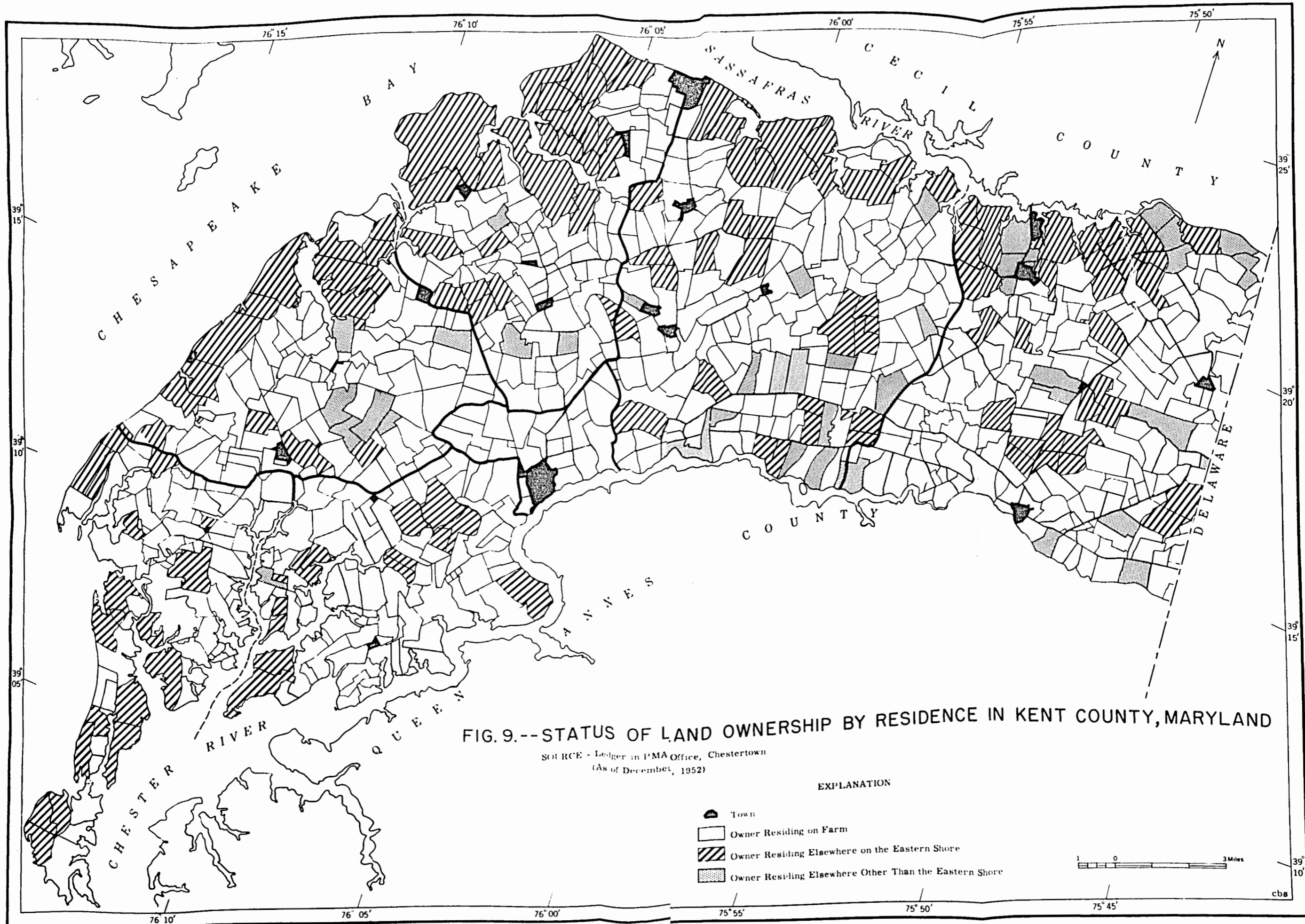




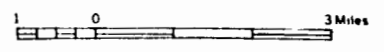


FIG. 9.--STATUS OF LAND OWNERSHIP BY RESIDENCE IN KENT COUNTY, MARYLAND

SOURCE - Ledger in PMA Office, Chestertown  
(As of December, 1952)

EXPLANATION

-  Town
-  Owner Residing on Farm
-  Owner Residing Elsewhere on the Eastern Shore
-  Owner Residing Elsewhere Other Than the Eastern Shore



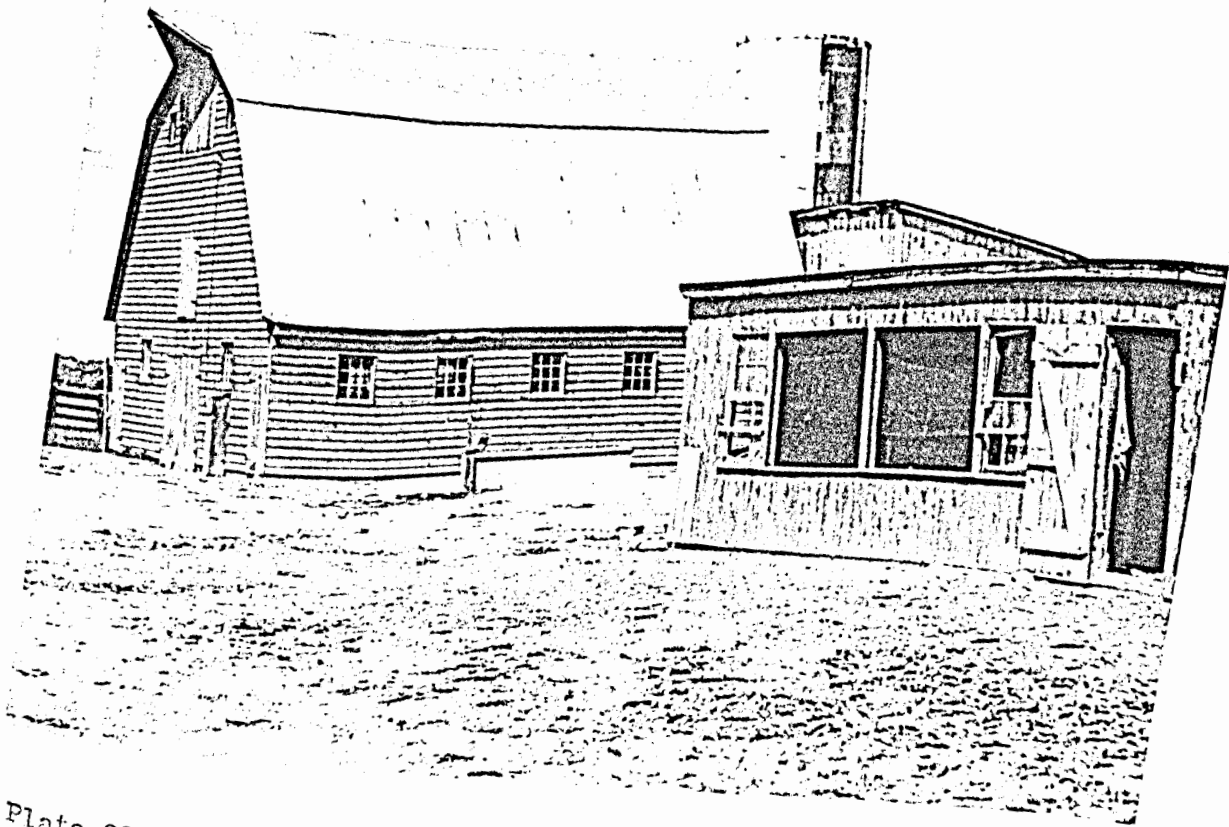


Plate 22. A typical Kent County dirt farmer's barn and chicken shed.

Owner Residing Elsewhere on the Eastern Shore. 7 percent of the farms in the county are controlled by a small segment of farm owners whose farm units are concentrated in the eastern half of the county particularly near the State and county boundary lines. These owners are mainly from Cecil and Queen Annes counties, or Delaware and have owned these farm units for a number of years acquiring them when farm prices were at a minimum during the depression years. Tenants usually operate these farms.

Owner Residing Elsewhere Other Than the Eastern Shore. The largest farm units in the county are owned by this group of farm owners and are located mainly on waterfront property and represent 13 percent of the farms in the county. Some of the larger farms are incorporated, owned by corporations or several individuals, and originally consisted of several small farm units. These absentee owners, "city farmers", are big business men from large urban centers in the East and North Central states who have bought and consolidated several small farms into large estates with capital accumulated from enterprises other than farming. Such estates are operated chiefly by managers with several tenants living on the farms.

Within the past two years increasing absentee ownership has been taking place resulting from: (1) the establishment of large-scale farms specializing in beef cattle and some dairying; (2) an investment against inflation; (3) the attraction and charm of the countryside and waterfront; and (4) restoration of Colonial homesteads. (See Plate 7) This restoration has been accomplished with pride and has preserved a touch of uniqueness to the county. Large capital investments have been made in conservation practices (See Plate 23), maintenance of a satisfactory fertilization program, and Colonial restoration.





Plate 23. Construction of a run-off pond by an absentee owner.  
When completed, this will be the largest pond in the county.

## Types of Farm Tenure

The study of farm tenure in the county is of utmost importance in comprehending land use changes and their resulting economic effects.

Entailed farms from Colonial times have been carried down to the present generation. This land tenure system designates a certain individual to inherit the lifetime use of the farm with the idea of retaining land ownership in the family over a long span of years. Destructive land use has been brought about when the lifetime user of the given farm was not farm-minded, had no pride of ownership, or no incentive in maintaining the farm. Such farms are usually neglected, lack any consideration given to proper land use, and are generally exploited for economic gains only. These are generally tenant farms with the owner living elsewhere. The declining number of old farmsteads is attributed to the dissolving of family ties and the migration of farmfolk to urban centers. In most cases these farm units have been sold for lucrative prices to "outsiders". Some of the older farmers have inherited land they now own which has been in the same family since the time of the original purchase.

Table 16 shows that there has been a steady decline in the total number of farm operators in the county over the past 30 years caused mainly by a 60 percent drop in tenant-operators. The number of full owners has decreased 10 percent but the acreage they operate increased 40 percent resulting from farm consolidations. The acreage operated by managers reached its peak in 1945 as a result of full owners and part owners being inducted into the Armed Forces and managers being hired to operate their farms.

At the present time, full owners represent the predominant type

TABLE 16

FARM TENURE BY TYPE OF OPERATOR,  
AND ACREAGE OPERATED,  
1920-1950\*

Number of Operators, Acreage Operated	Type of Operator			
	Full Owners	Part Owners	Managers	Tenants
1920:				
Number of Operators	451	8	32	549
Percent of Total Operators	43.3	0.8	3.1	52.8
Acreage Operated	48,384	1,079	6,764	110,652
Percent of Total Acreage Operated	29.0	0.6	4.1	66.3
1930:				
Number of Operators	437	34	45	455
Percent of Total Operators	45.0	3.5	4.6	46.9
Acreage Operated	49,264	3,079	10,481	96,636
Percent of Total Acreage Operated	30.9	1.9	6.6	60.6
1940:				
Number of Operators	406	14	24	408
Percent of Total Operators	47.7	1.6	2.8	47.9
Acreage Operated	54,932	3,646	15,021	89,290
Percent of Total Acreage Operated	33.7	2.2	9.2	54.9
1945:				
Number of Operators	372	17	44	291
Percent of Total Operators	51.4	2.3	6.1	40.2
Acreage Operated	56,779	6,491	22,279	68,557
Percent of Total Acreage Operated	36.8	4.2	14.5	44.5
1950:				
Number of Operators	414	39	16	227
Percent of Total Operators	59.5	5.6	2.3	32.6
Acreage Operated	76,842	10,288	12,086	57,503
Percent of Total Acreage Operated	49.0	6.6	7.7	36.7

\*Source: U. S. Bureau of the Census, United States Census of Agriculture for the years 1920 through 1950

of farm tenure in the county leading in both number and acreage operated.

(See Fig. 10)

Over this 30-year period, a decline in the number of tenant farmers and an increase in land acreage farmed by full owners have resulted from:

- (1) farm consolidations;
- (2) migration of farm labor to urban centers;
- (3) the impact of farm mechanization and urban jobs that have lured the youth off the farm; and
- (4) increased specialization in dairying and livestock which has brought about a need for a larger farm unit.

Farm Tenancy. Tenancy in Kent County is classified as follows:

- (1) cash tenants pay a cash rental for the use of land;
- (2) share-cash tenants pay a part of their rental in cash;
- (3) share tenants pay a share of either crops or livestock or both; and
- (4) croppers -- share tenants to whom their landlord furnishes all their work-animals or tractor power in lieu of work-animals. In 1950 there were 182 share tenants, representing 80 percent of the total number of tenants, operating 47,427 acres. Of these share-tenants, there were 176 share-crop tenants operating 45,990 acres, and only 6 livestock-share tenants operating 1,437 acres.

The present tenancy system was established under the grain-farming period (1720-1870) and has not been modified to meet changes in land use such as the present trend toward increased dairying and livestock. The tenants, principally share-crop, usually furnish all the livestock, machinery, labor, and half the seeds and fertilizers. The usual tenancy lease provides for the tenant to receive one-half of the sales of all crops and all the returns from the sale of dairy or livestock products. The landlord, besides furnishing one-half of the seeds and fertilizers, furnishes all the lime, maintains the buildings, fences, and receives one-half of the sales of the crops. These present tenancy leases are destructive to the best interest

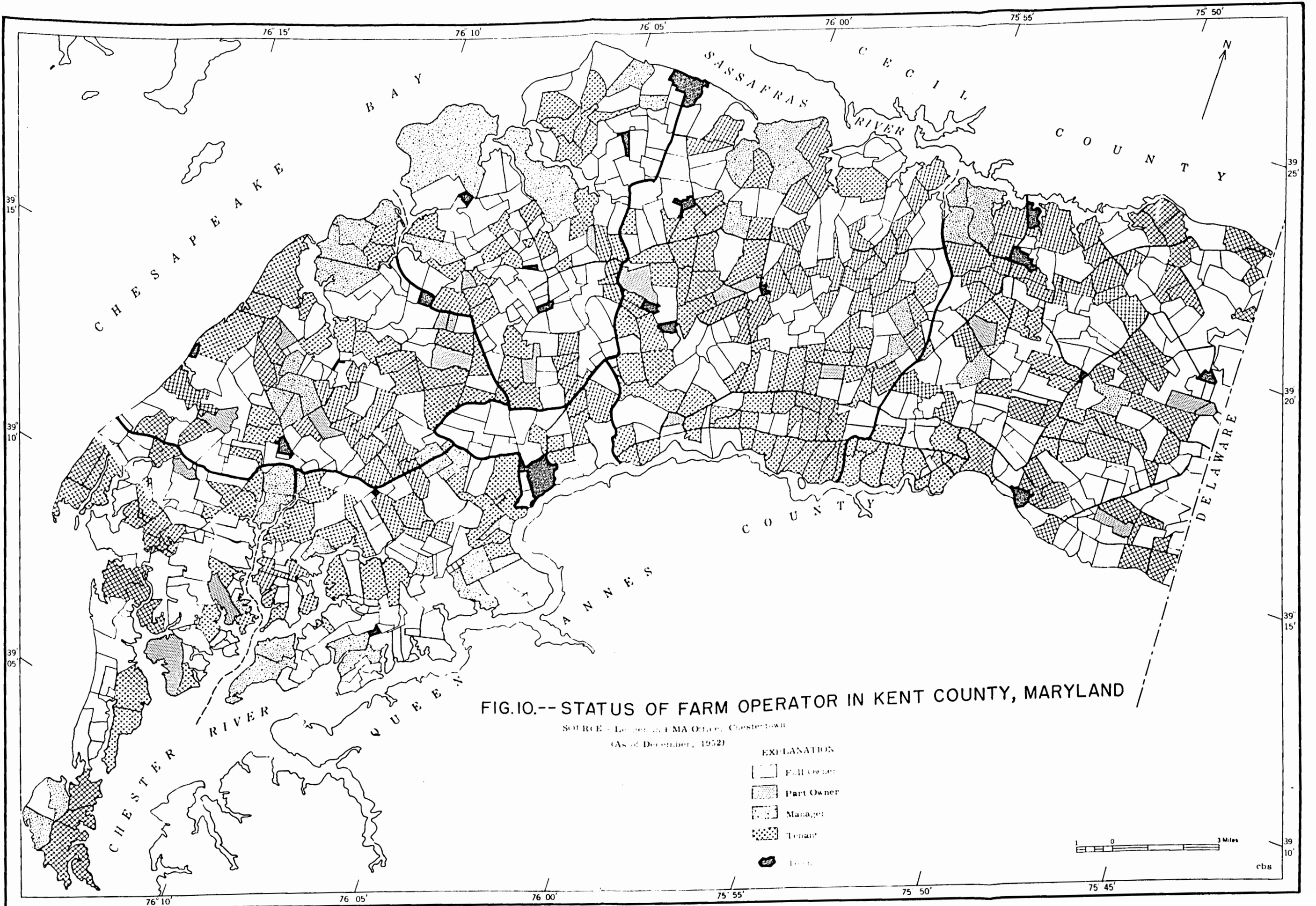


FIG.10.-- STATUS OF FARM OPERATOR IN KENT COUNTY, MARYLAND

SOURCE - Ledger of FMA Orlco, Chestertown  
 (AS of December, 1952)

- EXPLANATION
- Full Owner
  - ▨ Part Owner
  - ▩ Manager
  - ▤ Tenant
  - Forest



cba

in land use brought about by the failure of the tenant to use the land for what it is best suited to produce, and to apply appropriate conservation measures, rotations, and scientific fertilizers. Under this system, large acreages of wheat and corn must be grown to enable the landlord to meet taxes and expenses, thus the land is not utilized as efficiently as it could be under a better tenancy lease system. In the main, the tenant has been interested in the economic aspect of cash results rather than maintaining the upkeep of the farm and the productivity of the soil. In the future, careful attention should be devoted to arranging leases that are more equitable along with making farm ownership more attractive to tenants. This would be a big step toward the modernization of the present leasing system.

#### Example Farms by Type of Farm Operators

The results of field work, personal interviews with farmers, and questionnaires answered by farmers (25 percent returned) have been the criteria on which the following example farms were selected.

Full Owner. Farm No. 1 is an example of this type of ownership. (See Fig. 2) The owner is a typical "dirt-farmer". The house and barn were built about 1800 and have been inherited by the present owner. Dairying and general farming are the main enterprises. This farm is located on level to undulating topography, and manifests successful land use adjustments in respect to the capability of the land with undulating topography being used as permanent pasture.

This farm consists of 1,050 acres of which 525 are in cropland, 75 in permanent pasture, and 450 in rotation pasture. Crop rotations, including hay, wheat, soybeans, and corn, are practiced on a four-year

cycle. Acreages and yields per acre are: corn, 150 - 75 bushels; wheat, 180 - 25 bushels; and clover and hay, 110 -  $1\frac{1}{2}$  to 2 tons.

Applications of manure are applied annually to 100 acres; artificial fertilizers to 450 acres; and a ton of lime per acre is applied every four years. The fertilizer analysis varies with 500 pounds of 5-10-10 applied to corn fields, 300 pounds of 0-14-14 to hay and clover, and 350 pounds of 3-12-6 to wheat.

25 dairy cows and 30 dairy heifers produce 1,000 pounds of milk daily. June is the highest month with 33,000 pounds, and December, the lowest, with 27,000 pounds of whole milk which is sent to the Philadelphia milkshed.

Mechanization on this farm consists of 3 tractors, 2 trucks, and modern dairy equipment.

Hired help includes 2 white men for full-time work, and 4 extra men during the harvesting season.

Part Owner. Farm No. 2 is owned by mother and son with the son in charge of farm operations. (See Fig. 2) The farm house was built in 1772 and has been owned by this family for 68 years. A new barn (See Plate 12), constructed in 1951, replaced an old barn that was at least one hundred years old. Profits from dairying have been plowed back in the form of a new silo, equipment, machinery, and land improvements. Through good farm management, proper land use techniques, and soil conservation practices, this farm has evolved into a more efficient unit. Cropland that was formerly unproductive is now being used for permanent pasture.

The farm is located on fairly level topography and is not beset with erosion problems but drainage problems occur in low-lying areas.

This farm has 225 acres of which 160 are in cropland, 50 in permanent pasture, and 15 in rotation pasture. Crop rotations, including corn, small grains, and hay, are practiced on a three-year cycle. Crop acreages and yields per acre are: corn, 50 - 75 bushels; wheat, 20 - 22 bushels; barley, 24 - 40 bushels; oats, 10 - 50 bushels; tomatoes, 5 - 8½ tons; and hay, 50 - 1½ to 2 tons.

Dairying has been the main enterprise for the past 26 years. 30 milk cows and 15 dairy heifers produce from 800 to 900 pounds of milk daily which is sent to the Philadelphia milkshed.

Farm manure and lime are applied every 3 years and artificial fertilizers every 2 out of 3 years. The fertilizer analysis used on crops is 5-15-5 and a 20 percent 0-12-12 is used on pasture.

Mechanization on this farm consists of 2 tractors, 1 truck, and up-to-date farm and dairy equipment.

A white man is employed full time and negro help is hired by the day during the haying season.

Manager. Farm No. 3 is a typical example of a waterfront estate that is manager-operated and is owned by a "city-farmer" from elsewhere other than the Eastern Shore. (See Fig. 2) This farm consists of three former farm units that were consolidated eight years ago. Livestock and dairying are the main agricultural enterprises. The structures on this farm include a Colonial residence restored in 1938, a modern dairy barn, a stable for riding horses, an airplane hangar, a house for the manager, a guest house, several tenant houses, a yacht house, a water tower, 2 silos, a large wooden barn, and numerous sheds for highly mechanized equipment.



Drainage problems exist on 75 acres and as a result drainage ditches have been installed from time to time to improve drainage and land use in the low-lying areas of the farm.

This farm comprises 1,156 acres of which 576 are in cropland, 240 in permanent pasture, 300 in woodland, and 40 in rotation pasture. Crop rotations, including corn, small grains, and hay, are practiced on a 3-year cycle. Crop acreages and yields per acre are: corn, 140 - 65 bushels; wheat, 80 - 19 bushels; barley, 80 - 50 bushels; oats, 20 - 60 bushels; tomatoes, 6 - 10 tons; and hay, 250 - 1 ton. The 300 acres of woodland provide shaded areas for beef and dairy cattle and also a wildlife habitat that is a valuable adjunct to the farm. A recently constructed run-off pond (See Plate 24) contiguous to a large wooded area serves as a water supply for the cattle and wildlife.

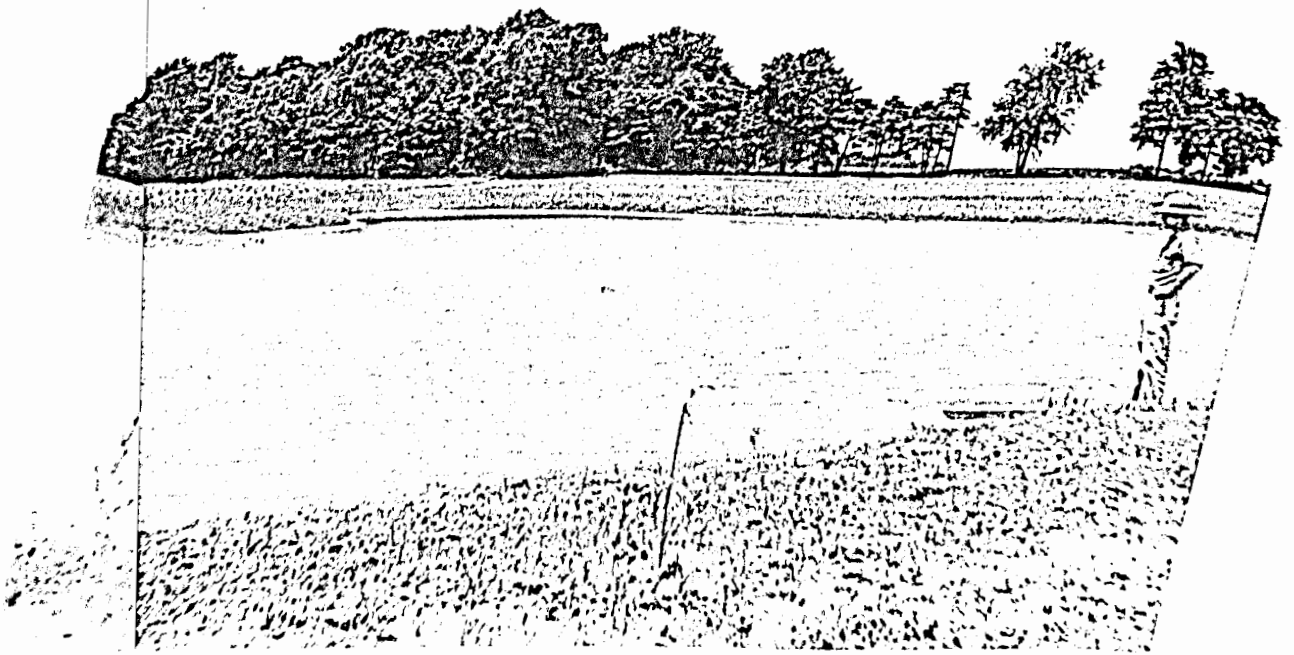
A ton of lime is applied every 5 years, and manure and artificial fertilizers every 3 years. The general fertilizer analysis is 4-16-8 and is distributed in 400- to 500-pound lots.

Livestock includes 119 Black Angus beef cattle, 40 dairy cows, and 28 dairy heifers. Daily production of milk varies between 1,100 and 1,300 pounds with the highest month, October - 30,000 pounds, and the lowest, July, with 27,000 pounds. Milk is sent to the Baltimore milkshed.

Mechanization on this farm includes 4 tractors, 6 trucks, and modern farm and dairy equipment.

Hired help includes one manager, three tenants, and two negro farmhands who are employed the year round.

Tenant. Farm No. 4 is owned by a retired business man who resides in Millington. (See Fig. 2) This farm has been operated by a tenant for the past 6 years. Mixed farming and dairying are the main enterprises.



*A recently constructed 1.2 acre run-off pond that serves as a water supply for cattle and wildlife.*

This farm has 400 acres consisting of 225 in cropland and 175 in rotation pasture. Crop rotations, including corn, small grains, and hay, are practiced on a 3-year cycle. Crop acreages and yields per acre are: corn, 75 - 55 bushels; wheat, 65 - 15 bushels; and hay, 35 - 1 ton.

Manure and fertilizers are applied yearly and lime is distributed in 1,000-pound lots when needed. The general fertilizer analysis is 3-12-6 and 4-16-8.

19 Holstein milking cows and 1 dairy heifer produce between 500 and 600 pounds of whole milk daily. May is the highest month with 18,000 pounds and September the lowest with 10,000 pounds. This milk is contracted to the Breyers Ice Cream Company in Millington that is under the Philadelphia milkshed.

Mechanization consists of 1 tractor, 1 truck, and dairy equipment.

Help is hired only during the harvest season. The greatest land use improvements have been drainage control, crop rotations, and increased use of manure, lime, and artificial fertilizers.

#### County Land Use Planning

The Problems. The establishment and maintenance of a successful county land use program presents the following problems: (1) land use practices; (2) conservation measures; (3) farm labor; (4) farm income; and (5) educational needs.

Land Use Practices.- Optimum productivity and the use of the land may be obtained by utilizing it for purposes to which it is best adapted. This is based on the capabilities of the land, slope, and existing drainage conditions. Soil retention, maintenance of fertility and productivity are fundamental problems in order to maintain optimum land use.

Greater permanency and stability in land use may be attained by utilizing the land for what it is best suited to produce. By decreasing the acreage of cropland that is not suitable for cultivation, and converting it into permanent pasture, a more desirable use of farm labor and crops will result. On poorly-drained and sheet-eroded areas, more food per acre may be obtained from pasture in the form of dairy and livestock products than from harvested crops. Undulating areas should be kept in grass most of the time to retain the topsoil and organic content that will give higher returns from pasture than from crops. Yearly liming, manuring, and fertilizing of pastures are most desirable on heavily-used areas. By applying conservation measures such as terracing, strip-cropping, and contour plowing to undulating areas, improved soil conditions and greater yields on fewer acres may be obtained.

Conservation Measures.- Conservation problems consist mainly of: (1) providing adequate drainage for imperfectly and poorly drained soils; (2) restoring leached soils to a satisfactory degree of productivity; (3) maintaining and improving the productivity of the land by incorporating organic nutrients in the soils; and (4) improved manure, lime, and fertilization programs. Conservation measures are being adapted to control soil erosion on sloping land by soil-protecting crops and decreasing the recession of banks by the planting of multi-rosebushes (See Plate 25) and other suitable plant material. New drainageways are being established and maintained in sod on many farms in the county through the aid of the Soil Conservation Service.

Erosion problems have originated through neglect and lack of proper farm maintenance. Sheet-erosion problems have resulted from the erosive nature of the soil and have contributed to the drainage problems resulting from the silting of drainage ditches. (See Plate 6) Land that cannot be

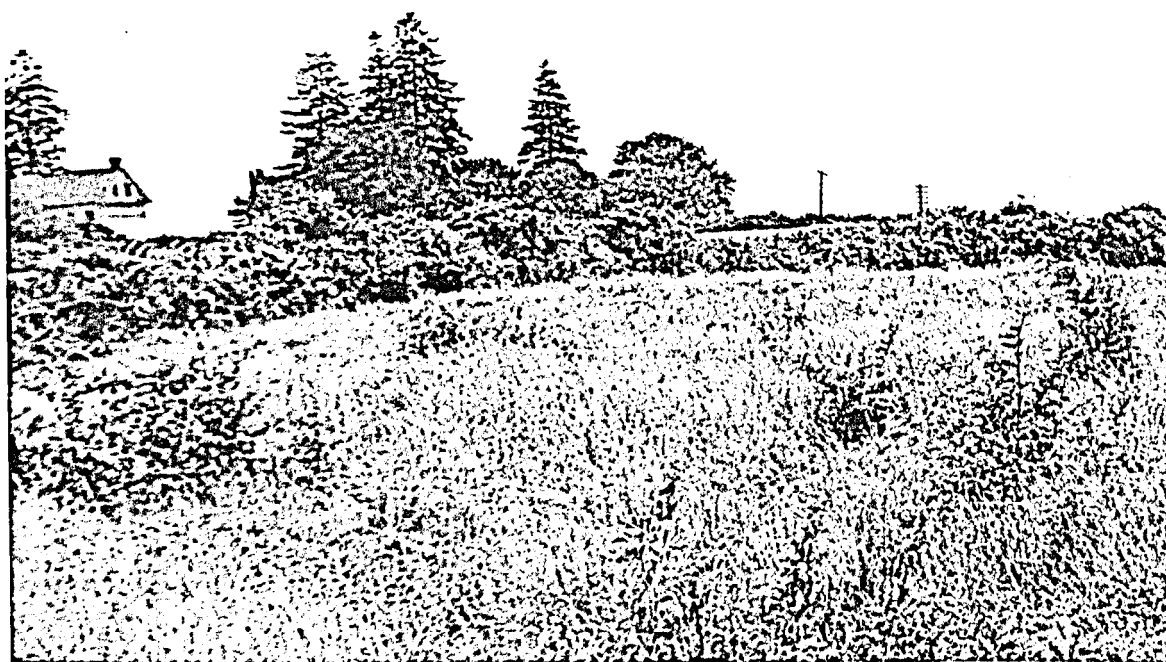


Plate 25. A fence of multi-rosebushes in the background and grasses in the foreground used to decrease the recession of banks and control erosion on steep-sloping land.

drained economically should be converted to woodland. In the past, there has been too little attention paid to drainage and erosion control measures such as sod waterways, diversion ditches, terracing, contour tillage, strip-cropping, and use of cover crops. The maintenance of sod waterways and contour tillage are probably the most needed measures to control drainage problems and soil (sheet) erosion, and where they have been applied, excellent results have been obtained.

Another conservation problem of importance is the preservation and development of wildlife. Wildlife habitats on idle or fallow land areas in the county provide a resource for game, food, and also aid the farmer indirectly in controlling insects that otherwise would be a menace to crop yields.

There is also dire need for a high quality hay and pasture program on undulating and imperfectly drained land to attain a greater permanency of agriculture throughout the county and to provide more inexpensive feed for livestock.

Farm Labor.- The scarcity of responsible farm labor has resulted from their migration to urban centers where higher wages are offered and opportunities are better; increased commuting to marginal jobs in nearby cities; rising demand for labor in fertilizer, canning, and milling industries in the county; and the inability of the farmers to compete with high wages and full-time employment offered by industry and government in nearby urban centers. The migration of farm youth is attributed to: (1) low farm wages; (2) lack of incentive to stay on farms; and (3) better opportunities for advancement in urban centers and elsewhere.

Farm Income.- Insufficient farm income for the "dirt-farmer" has resulted in neglecting the maintenance of soil fertility and productivity,

farm buildings, and equipment. The need for greater farm income and its counterpart, wise use of that income, are the primary requisites of the "dirt-farmer". A large outlay of capital is a primary requisite in establishing an economically sound dairy farm which is due to the high degree of mechanization and in the past has been of an insufficient nature to attain this degree of mechanization in order to be sufficiently remunerative. Within the past 6 years, a number of silos have been constructed, fences maintained, farm buildings repaired and painted, and many modern conveniences added to make the farm more efficient.

Educational Needs.- An improved educational program is needed to inform the farmer and farm youth about land use capabilities, farm techniques, and conservation measures. Also, a program designed to educate the youth in preparation for jobs outside the county is needed. The need for an educational program has resulted from the lack of job opportunities and industry in the county along with the trend toward consolidations of farms and mechanized farm units.

## CONCLUSIONS

Land use in Kent County is manifested in man-land relationships which evolved from the early settlement to the present time. Geographic and socio-economic factors have been pertinent in the adjustment and maladjustment of evolving land use in the county. During the past 300 years, the county has been subjected to long periods of isolation from the remainder of the state and the nation. This isolation has resulted from the remoteness of the county being located off main transportation routes and with the Chesapeake Bay and bordering rivers to the north and south forming communication and transportation barriers. During the early history of the county the Chesapeake Bay, Chester and Sassafras rivers served as important arteries in the transportation of farm produce. Today, the truck has supplanted both the boat and railroad and is now the most widely used mode of transportation. In the past, trade and communication were oriented north to the Wilmington and Philadelphia areas; however, with the completion of the Bay Bridge, it is surmised that increased communication will be directed to the Western Shore.

Since the early settlement of the county the geographical location has had profound influence on the economy, population, and the use of the land. Practically the entire population is directly or indirectly dependent upon the success of farming enterprise, thus the nature of agricultural land use is most significant. Dairying and livestock have proved to be the most successful enterprises resulting from proximity to markets, favorable soils, and optimum climatic conditions. The level to slightly undulating topography along with large farm units are conducive to highly-mechanized



equipment. Favorable soils are well-suited to specialized dairying and livestock operations. Soil limitations are due mainly to drainage conditions, erosion, and soil management. Maintaining soil productivity by heavy applications of artificial fertilizers, lime, and manure is necessary for satisfactory yields. A mild climate influenced by the Chesapeake Bay and Atlantic Ocean permits a long grazing period for dairy cattle and livestock.

The major trend in land use during the past 30 years has been from cash grains to livestock production. The pattern of farming has changed from cash crops to feed grains. Dairying is the leading agricultural enterprise and is the main source of steady and immediate income to the farm operators. In general, acreage in crops has declined but yields per acre have increased. Substantial increases in the production of corn, barley, soybeans, and hay, accompanied by decreases in wheat, rye, oats, and truck crops, have taken place. Livestock -- dairy, beef, and swine -- gained significance resulting in additional acreages of pasture and hay even on marginal and sloping land bringing about a more permanent type of agriculture. Mechanization during this period has resulted in the drastic reduction of horses and mules.

A major trend throughout the county has been an increase in the average size of farm units and a decrease in the number of farms resulting from expanding farm mechanization and the consolidation of farms (mainly tenant-operated) into large estates by outsiders. The trend of decreasing farm tenancy is due to tenants becoming either full owners or part owners or migrating to urban centers. Migrating farm labor has resulted from higher wages and better opportunities offered by nearby urban centers which has brought about a dire need for responsible farm labor throughout

the county. Farm mechanization has alleviated this shortage of labor so that the farmer may accomplish the task of production with a minimum amount of labor; however, to support the operation of mechanized equipment, large acreages are necessary. Increased farm mechanization has also stimulated a farm-to-city movement of the youth in the county. The scarcity of labor, rising labor costs, and increasing costs of production present pressing problems for the present and even more so in the future requiring careful planning and farm management. Soil conservation practices must be continued to insure the agricultural future of the county.

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