

KENTUCKY: Designs for Her Future

KENTUCKY

Designs for Her Future

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UNIVERSITY OF KENTUCKY PRESS

Lexington, Kentucky

1945

*This book is published under a grant from the trust fund
established by Margaret Voorbies Haggin in memory of
her husband, James Ben Ali Haggin*

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Kentuckians have a great heritage

W. Brooks Hamilton



Each man views the world in terms of his own experience

W. Brooks Hamilton

FOREWORD

In 1942 Kentucky celebrated its sesquicentennial, and state historians reviewed a colorful, adventurous, and romantic history. Kentuckians were thrilled with pride as they read the stories of the illustrious sons and daughters who had achieved distinction during the century and a half of statehood. A people cannot afford to neglect the past, for it is always a prologue to the future. It was fitting and proper on this significant birthday of the Commonwealth to look at Kentucky in retrospect.

But we are at the end of an epoch. It is essential that we look into the future and attempt to grasp the answers to the problems of tomorrow. Kentucky's true greatness lies ahead. We have vast undeveloped natural resources on which to build the land of tomorrow. We cannot attain the progress we desire unless we have vision to plan, courage to execute, perseverance to achieve the goals we set ourselves. The pattern of our past has been an agrarian economy; if our standards of living and culture are to be raised we shall have to plan for agrarian-industrial development. The character of Kentucky's tercentenary celebration will depend on how well the present generation plans to utilize our reservoir of untouched resources—both human and material.

Confident of the value of a blueprint for Kentucky's tomorrow, we invited a small group of our faculty, representing the fields of agriculture, chemistry, education, economics, geology, history, and sociology to meet for the purpose of discussing Kentucky in prospect. The early conferences of this group were held before post-war planning became so popular in the state and nation. As a result of our deliberations a series of thirty radio addresses over WHAS was given on the possibilities of Kentucky's future. This study of Kentucky by these technically trained research leaders accumulated much valuable information about the state. It was decided that a wider distribution of this information was desirable. We requested Dr. Howard W. Beers, Professor of Rural

Sociology, to assume the editorship of a volume that might have value in charting a course for Kentucky in the world of tomorrow. He invited a number of colleagues in the University to join him in the preparation of *Kentucky: Designs for Her Future*. This book should prove to be of interest to every citizen who has an interest in the future of the Commonwealth.

H. L. DONOVAN,
President, University of Kentucky

Lexington, Kentucky
July 31, 1944

ACKNOWLEDGMENTS

Many people helped the authors by contributing information or by reading portions of the manuscript and making important suggestions. A list of them includes: M. B. Holifield, Assistant to the Attorney General of Kentucky, Louisville; J. E. Marks, attorney at law, Lexington; Washington Reed, of the Kentucky Utilities Company and the Committee for Economic Development; several persons in the State Department of Health (Commissioner J. F. Blackerby, Dr. Carl M. Gambill, and Dr. Russell E. Teague), the State Department of Education (Superintendent John Fred Williams), and the State Department of Welfare (Commissioner John Quertermous, Dr. A. M. Lyon, Helen Beauchamp, John Jarvis, Dr. Walter Watson, and Elizabeth Fike); John J. Cronin and Robert I. Kutak of the University of Louisville; Charles F. Isackes, Executive Secretary of the Lexington and Fayette County Community Chest; W. P. King and John Brooker of the Kentucky Education Association; W. A. Duerr, U. S. Forest Service.

Within the University family, the authors' helpers include: A. J. Brown, Thomas P. Cooper, C. S. Crouse, E. N. Fergus, W. P. Garrigus, R. O. Gustafson, E. J. Kinney, Laura Martin, L. E. Meece, S. A. Mory, W. D. Nicholls, Merton Oyler, H. Bruce Price, Margaret Ratliff, J. E. Reeves, Lolo Robinson, J. B. Shannon, J. Allan Smith, Elmer Sulzer, W. S. Taylor, L. A. Vennes, G. H. Wiggin, and Robin Williams. There has been a lively interchange among the authors as each one read and made suggestions on the chapters written by his colleagues.

The following representatives of Kentucky newspapers examined an early outline of the book and made important suggestions: Tom Wallace of the *Louisville Times*, Mark Ethridge and Russell Briney, of the *Courier-Journal*, Fred Wachs, T. W. Rainey, and A. B. Guthrie, of the *Lexington Herald-Leader*.

Two of the charts were prepared for the printer by Mardelle Lehnig. All the others were drawn by J. S. Horine. Secretarial

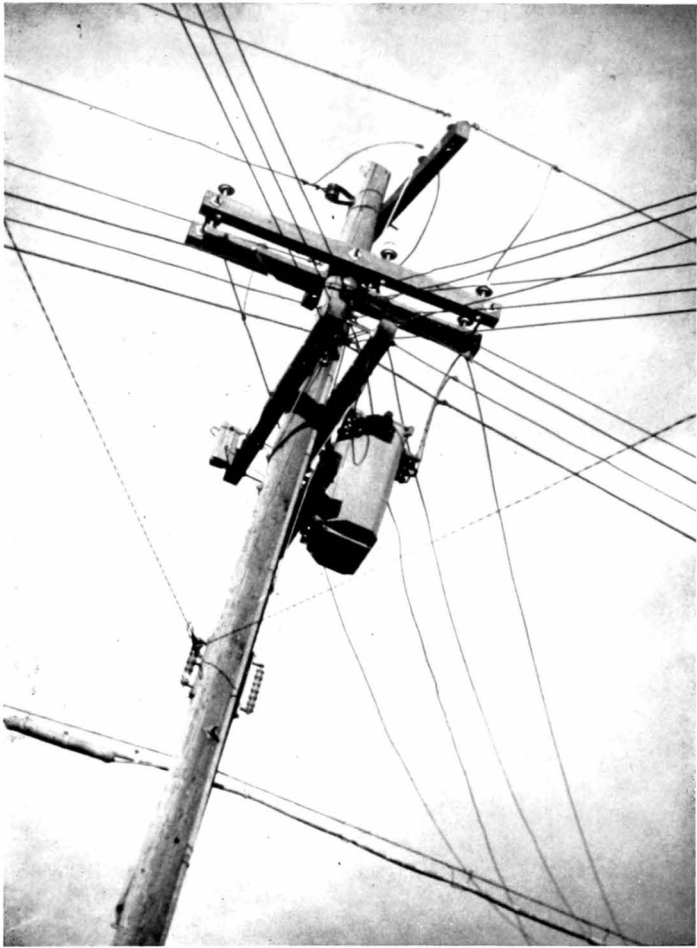
responsibility fell mainly to Ethel Louise Welch and Ethel Marie Byron. Catherine Heflin helped to prepare the index. The photographs, each acknowledged by a credit line, were selected and arranged by W. Brooks Hamilton to be more suggestive of goals than of present average conditions.

Members of the Haggin Fund Publications Committee (Frank L. McVey, W. D. Funkhouser, Edward Wiest, and E. F. Farquhar) made several helpful suggestions quite apart from their official task of deciding upon the book's suitability for publication. President Herman L. Donovan suggested the idea which has taken form in the book, and he has read each chapter as it was prepared. His encouragement throughout the undertaking is appreciated by the authors and the editor.

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KENTUCKY : Designs for Her Future



Farms with electricity increased nearly 300 per cent W. Brooks Hamilton



Public health programs have been extended

W. Brooks Hamilton

Chapter I

PEACE IN THE COMMONWEALTH

BY HOWARD W. BEERS

People are sometimes kept by the luster of history from seeing present problems. Kentuckians especially have confidence in tradition and pride in the romance of their past. But wars mark turning points, and as peace comes into view again the fascination of an unknown future grips the people of Kentucky even more strongly than memory thrilled them in the past. The past is beyond control, but a future always awaits to be designed.

A POINT OF VIEW ABOUT PLANNING

Just how far people can go in shaping their own future is a question on which there are differences of opinion. Some people think life is too complicated to plan; others think its very complexity makes planning necessary. Some are afraid of planning, because they think too much central control will be developed in order to enforce plans when they have been made. Others fear that society may fall apart unless plans are made and put into effect.

Fortunately, as in most other problems, there is a middle ground. The ability to look ahead and to guide today's activity by what is wanted or expected tomorrow is one of the main differences between men and other animals. To refuse to plan would be to repudiate a basic human trait. Yet it must be realized that any plan to solve a problem becomes a part of the problem, and unexpected things begin to happen. By neglecting to plan, men may encourage social disorder. By planning, they may influence, if not fully control, the direction of social improvement.

There are at least three different activities in planning. One of them is the process of describing "things-as-they-are"; another is the choice of some goals to plan for; a third is the changing of things-as-they-are toward the chosen objectives. Some people are

impatient and want to skip the first, and perhaps even the second, of these phases of planning. But few citizens have a rounded view of things as they are. The fabled blind man who grasped the elephant's tail reported that the animal was like a rope. Each man views the world in terms of his own experience. Now that so much of the world is so close to each man, the job of rounding a view of things as they are is harder than it was when the edge of the world seemed farther away. Even to understand one's own community or one's own state is more difficult now than it was a few decades ago. All the complication of events as they happen beats in through eye and ear, and who is there to put things together so that there may be an orderly impression?

It Is Everybody's Business.—The most effective planning in the long run is not always the deliberating and scheming of committees and commissions, helpful as they may be. It is the forethinking of all the people in their several walks of life, as each mind views the present and previews the future. Specialists in certain fields of knowledge will not alone control the direction of social change in a democracy. All of the people, including the experts, will take part in making the chief decisions. The knowledge of the specialist, however, will be available to all his fellow-citizens. Because of it, there can be better understanding of things as they are, and there will be better choice of goals.

Ways of getting things improved cannot be worked out in the absence of sound information and clear objectives, and everybody has to help develop them. One striking fact about planning for the postwar period is that, as soon as war broke out, every business organization, every pressure group, every politician, and every citizen was doing it. Its volume and scope continued to increase throughout the war. Yet nobody's blueprint will ever be completely expressed in social organization; no social engineer will pull the throttle by his own muscle. In the real construction of social organization, all the citizens are builders; and in the steering of society, all the citizens ride with the engineer. The important thing is that all minds are active and pointed toward the future.

United States Americans built their armies and their industries for the Second World War with speed and efficiency because they were good planners and organizers, as well as good technicians. The job was tremendous in scope; the speed was terrific, but

there could not have been greater urgency. There were mistakes, gaps, inefficiencies, and wastes; but at no time was there any serious doubt of success. There was confidence in the adequacy of our physical and human resources.

The record of outstanding success in production and organization for war gives confidence that there may be equal success in the conduct of life without war. In Kentucky, as everywhere, the approach of peace brings new occasion for appraising resources and considering their wisest use.

KENTUCKIANS HAVE a RUNNING START

It would do no good to approach a discussion of Kentucky's future in a muckraking spirit. Neither would it be helpful to overlook weaknesses in an effort to insure comfort. After Howard Odum wrote early in the 1930's about the Southern Region, it became almost fashionable for leaders in Kentucky to indulge in self-criticism by citing the large number of fields in which Kentucky fell close to the bottom in a ranking of the states. At times, this was carried to an extreme, just as was the smugness that caused some people to be content with the several glorious features of Kentucky's heritage. The facts are that the Commonwealth did, and still does, rank low among sister states in several fields of social and educational development. But it is also true that she has not been entirely content to remain in lowly positions. Some citizens are restless because progress is too slow. Others are too content with the slow progress already made. Due credit must be given for the desirable things that have happened, but the task of this book is to stimulate understanding of the need for things that have not yet happened, to single out and explain opportunities for development, and to promote greater achievement in the future than has occurred in the past.

Progress on Farms.—In many ways, the rate of improvement in Kentucky compares favorably with rates of progress elsewhere, but not all states started from such an unfavorable position. Some recent figures illustrate how rapidly growth has occurred. For example, there are mechanical developments affecting farms and farm homes. Between 1930 and 1940 in Kentucky, the proportion of farm families with radios increased over 600 per cent. This greatly speeded the urbanization of rural life and attitudes. The

proportion of farms with motor trucks increased 129 per cent; with tractors, 57 per cent. Farms with electricity increased nearly 300 per cent. The average value of farm implements increased 16 per cent; the proportion of farm homes on dirt roads declined 12 per cent. These examples are important, because Kentucky is essentially a rural state.

Progress in Education and Social Welfare.—In education, too, there are many examples of progress within the last few years. The proportion of children aged 16 and 17 attending school in 1940 was six per cent greater than it had been in 1930. The number of one-room schools per one hundred elementary pupils declined 25 per cent between 1930 and 1940. The ratio of high school enrollments to elementary school enrollments increased 150 per cent between 1928 and 1938. The coming of war halted these improvements and seriously threatened many of the gains made in education, but the progressive trend has not been permanently blocked.

There has been progress also in the field more technically considered to be that of social welfare. During the 1930's there came an acceptance of some sense of responsibility for the unfortunate and inadequately supported persons in a community. Old Age Assistance was introduced with a constitutional amendment that got ten votes for every one cast against it. This was the greatest affirmative vote that any constitutional amendment in Kentucky had ever received. The State has gradually begun to develop programs of help for certain special groups of needy people. There is aid for dependent children, for needy blind persons, and there is unemployment insurance. There has been instituted a merit system of which some use has been made. Some of the shortcomings of institutions for criminals and the mentally ill have been recognized and at least partly remedied. Public health programs have been extended into more counties and more fields of service.

SOME BACKGROUND FACTORS

To understand the citizen's responsibility in helping to mold the future, it is necessary to examine some pertinent general propositions. First, there is the fact that Kentuckians cling overlong to an early American pattern of rural living. They are at various stages of change from a way of life that developed in the

rural community to other ways that center in the twentieth century city. In the country neighborhood, people lived together on a local, person-to-person, informal and intimate basis. Life was a face-to-face matter, and the customs of the people, their common beliefs and values, took care of any questions that might come up from day to day.

When the world horizon was no farther away from the average man than the edge of his own community, social experience was limited to life in the family and the neighborhood. Affairs among men were governed by personal loyalty, personal reward, and personal blame. Justice did not require the use of abstract rules or principles; it was simply a matter for informal handling within the local group of neighbors and friends—or enemies.

A Special Problem of Leadership.—These ways were adequate for life in a small group, but society did not stay small. It became complicated, and the job of developing social control over the behavior of individuals led to the rise and strengthening of government. Herein lies the most important difficulty in the handling of personnel problems; it is probably the biggest problem of leadership in Kentucky. In families and neighborhoods, people are chosen or rejected because of personal considerations. These reasons are not suitable in the large society. There, people should be chosen or rejected on the basis of strictly impersonal factors. A large group must have rules and regulations, principles of operation that are impersonal. Efficiency in government requires this, just as does efficiency in industrial organization. Kentucky can undoubtedly improve her merit system by working directly on its rules and regulations and on its specific administration. It is necessary, however, and probably more fundamental, to develop a public belief in the need for specialists, and for technical and professional public servants, employed because of their competence and not because of anyone's personal obligations. In this connection, the idea needs to be accepted more widely that helping people out of trouble can be done best by certain persons who are professionally trained, who desire to help, and who are able to devote full time to the work. The reluctance of politicians and others to accept the need for trained public officials and governmental employees merely reflects the lack of community understanding.

Preview.—First among the resources of Kentucky are its people, nearly three million of them, whose homes and lives are the real strength of the Commonwealth. Then there are its fields, with 13 million acres of cropland and more millions of farm animals; there are the woodlots and forests; the deposits of coal, oil, and ore; the energy of running water; the scenic beauty; the wildlife; the establishments for business and industry; the system of transportation; the organization of government; and finally the institutions for education, religion, health, and the general welfare.

Each chapter that follows is about one of the groups of resources from which Kentucky will design her future. Through each chapter there run two questions: What are the main problems to be solved in order that Kentuckians may use their resources most effectively? Are there ways, commonly recognized by competent people, to attack these problems? All these resources Kentuckians have, and of them they have made some use. They will all, however, yield even more in the future than they have in the past; and from them will come the New Kentucky Home.

This book was written during war. Those who wrote it could not know when the war would end. The peacetime role of Kentucky in the national sisterhood could not be clearly foretold. Some people might have said that it would be neither possible nor wise then to turn minds to the future. In one sense it is true that specific planning for postwar life could not have been more nearly impossible than when the chapters were written. However, it seemed to many people that there could not have been any time of greater urgency for planning. The mobilization of energies and resources for fighting was the product of planning, the deliberate application of intelligence and knowledge. Certainly, the experience of Kentucky in the future must be in large measure the outcome of deliberate effort by the citizenry.

These chapters were written, therefore, not to serve as finished blueprints for action, but as pictures of present resources and of their potential contributions to improved living. Military men distinguish tactics from strategy. It is not possible, in this book, to explain all the tactics in detail, but the major possible strategies for peace in the Commonwealth may be examined. Even though

the war should end in any one of various possible forms of victory, consideration of *things-as-they-are* and *things-as-they-might-be* will help Kentuckians to choose their designs for the future. The next part of this consideration is a review of Kentucky's heritage.

Chapter II

KENTUCKY HERITAGE

BY THOMAS D. CLARK

The white man's story in Kentucky began in the mid-eighteenth century. Dr. Thomas Walker and his party of surveyors from Virginia stood in the saddle of Cumberland Gap one day in April 1750, and gazed over into Kentucky. Theirs was to be an epic visit, and when they passed through the gap they performed one of the most momentous feats in frontier American history. For approximately five generations settlers along the Atlantic seaboard had been pushing westward, but they had not reached the great gap in the Appalachian wall. Adventurers had visited Cumberland Gap before, and on at least two occasions Virginians had crossed the Allegheny Mountains, but their visits amounted to no more in western American history than those of transients. Not so, that of Dr. Walker, he came as an agent in search of land for the Loyal Land Company. This expedition accomplished little for its speculative employers, but for Kentucky it was a significant beginning. It was the initial act in breaking trail through the Appalachian barrier to the West.

THE RIVER GATEWAY

A year after Walker's party had passed through the southern Appalachians at Cumberland Gap, a second speculators' agent Christopher Gist, entered the region on a land-hunting mission for the Ohio Land Company. He came through the river gateway at Fort Duquesne (Pittsburgh) and proceeded southward by way of the Ohio. Thus the second important entryway into Kentucky was opened, and in succeeding decades it fed thousands of immigrants onto the frontier.

These two expeditions were indicative of the times. The Ohio Valley country was already a factor in expansion of American settlements and in the bitter rivalry between England and France.



First among the resources of Kentucky are its people

John H. Bondurant



Fertility in the central region . . . was to make farming a major industry

W. Brooks Hamilton

One year before Walker's arrival in Kentucky, Celeron de Blainville, French agent, had passed through most of the back country burying leaden plates to proclaim French possession of the valley. Since the settlement of Jamestown in 1607, England had claimed the land westward from the Virginia coast. Thus it was that conflicting claims between the two nations resulted in the eight years (1755-1763) of desultory French and Indian War. Officially this struggle was ended by the Treaty of Paris which ceded the Ohio Valley to England.

Thus 1763 became a significant date in western Virginia history. Had George III and his self-seeking colonial advisers possessed a more astute understanding of the backwoods American colonials, frontiersmen would have begun crossing the mountains immediately. If this had occurred at least one phase of Kentucky history would have been different, but the King listened to ill-informed advisers and proclaimed an imaginary boundary line along the watershed of the Appalachians. This proclamation line was meant to circumscribe the eastern colonies, and to prevent expansion beyond the mountains. The Kentucky country was set apart by this act as a reservation for the purposes of enriching Indian and fur traders who enjoyed the King's favor.

SETTLERS CROSS THE MOUNTAINS

Frontiersmen drawn westward by both adventure and available lands neither understood nor respected the King's imaginary line. Five years after the Treaty of Paris there were settlers beyond the proclamation line in eastern Tennessee. Likewise, there were white people in Kentucky. Some came as captives of the Indians, but others came to hunt and explore as they pleased. John Finley was perhaps the most famous of these early adventurers. He and Henry Skaggs came in 1767 to scout the wilderness; two years later he returned with Daniel Boone and a party to hunt in the "prairie country." This latter expedition was important because it introduced Daniel Boone to the Kentucky country. When his hunting companions decided to go home, Daniel Boone remained another year. While wandering through central Kentucky he conceived the idea that soon it would be opened to settlers who were then crowding up to the eastern mountain wall. So firmly fixed was this idea in the woodsman's mind that he tried in vain to bring

his family and a band of neighboring families to Kentucky in 1773, to be the first settlers. An Indian raid near Cumberland Gap thwarted Boone's ambitions, but subsequent raids were not to check the activities of speculators and surveyors who arrived in ever increasing numbers.

HARRODSTOWN, BOONESBOROUGH, AND LOGAN'S FORT

Within four years after the end of Boone's idyllic wandering in Kentucky, surveyors were staking claims at the Falls of the Ohio (Louisville) and on the plateau of central Kentucky. James Harrod, a Pennsylvanian, and forty associates had arrived in Kentucky by way of the Ohio and Kentucky rivers and were building a settlement at Harrodstown. Here was begun in June, 1774, the first permanent white settlement in Kentucky. One major delay at the outset was Dunmore's War which checked the labors of the Harrod party. The next year, however, the activities of settlement were begun in earnest. At the same time Richard Henderson's Transylvania Land Company procured by the Transylvania grant the Sycamore Shoals Treaty with the Cherokee Indians. Before negotiations with the Cherokees were completed, Daniel Boone was sent to Kentucky at the head of a company of axmen to blaze a trail through the wilderness to the south bank of the Kentucky River and to locate a site for a fort. In April, 1775, Boonesborough was founded, and immediately Judge Henderson issued a call for representatives to meet at the fort for the purpose of drafting plans of government for the Transylvania country. The Kentucky wilderness was quickly opened to settlers, and they were soon tramping in over the wilderness trail or drifting southward down the Ohio River. Not all of the settlers had the same reason for moving West. Some wanted land on which to make a new economic start, some wished to escape the annoyance of imperial colonial government, a few sought adventure on the frontier, and others hoped to escape the clutches of insistent creditors.

Harrodstown grew into a key community. Boonesborough's population increased. St. Asaph's, or Logan's Fort, came into existence, and blockhouses or stations were built on the Licking River at Hinkston's and at McClelland's (now Georgetown). Families moved over the trails to make permanent homes in Kentucky. Log cabins sprang up overnight in the open country beyond

the fortress walls. Deadenings and clearings gapped the dense forest, patches of corn were growing where a short time before cane and wild peavine had covered the ground. Cows grazed along the banks of the streams, chickens cackled before their newly made nests, and dogs broke the stillness of wilderness nights with their nervous barking. These homely things symbolized the permanent entrance into the Ohio Valley of English speaking people. These were manifestations of the powerful forward roll of the frontier.

Kentucky was the first major trans-Appalachian step in what was to become a vast American frontier advance. Here was begun a change in American life and culture which was to produce some of the dominant factors in American history for more than a hundred years. Likewise, it was to form a pattern for Kentucky in the decades to come. In moving to Kentucky in this first decade, frontiersmen were forced to contend with three important forces: Jealous Indians, British soldiers, and a raw natural environment. The white man's domestic activities warned the Indian of the certain pre-emption of his excellent hunting ground. He knew that to permit the white man to gain a foothold in the rich grazing lands of Kentucky would be disastrous to his own future. Also, the Kentucky outposts hindered the British along the Great Lakes in a direct attack upon the frontiers of Virginia and the Carolinas. Thus it was that the Indians and British soldiers co-operated in attempting to destroy Kentucky.

KENTUCKY, BACKDOOR OF THE AMERICAN REVOLUTION

With the certain instinct of a natural prophet, the surly young Cherokee chief, Dragging Canoe, warned Judge Richard Henderson at Sycamore Shoals, "You have bought a fair land, but there is a cloud hanging over it; you will find its settlement dark and bloody." This prophecy was speedily to come true. From the very beginning of the white man's history in Kentucky there were Indian raids against his outposts. When the British forces had been organized at Detroit, Vincennes, and Kaskaskia, the intensity of attack increased, and from 1775 to 1782 Kentucky was threatened with extinction. Fainthearted settlers turned back on the wilderness trail to safety beyond the mountains, while more courageous families were crowded into the forts. In the two-year interval,

1778-1779, George Rogers Clark led his little band of buckskin-clad soldiers against the British at Kaskaskia, Cahokia, and Vincennes. He captured the British commander, Governor Henry Hamilton, disorganized his army and relieved the pressure on Kentucky. At the same time Daniel Boone and a handful of hard-pressed companions at Boonesborough fought back repeated attacks by the Indians. In the summer of 1778, they held out against the British and Indians led by Lieutenant DeQuindre and Chief Blackfish in the strong siege of their fort. In straitened circumstances, Boonesborough stood in bold defiance of the clever strategy of these two shrewd men, and Kentucky was saved from defeat. Only once more, in 1782, were the Indians and British to menace seriously the Kentucky settlements.

For seven years Kentucky backwoodsmen contended with well-nigh insuperable odds. But the natural obstacles were still before most of the settlers. The British and Indian war was at an end. The time element involved in the war was of practically little consequence when compared with the significance of the events which transpired. In them lay the beginning of a highly cherished pioneer heritage. Before more than a fractional part of the region was settled, it already had a historical past which was to make of it a solid landmark in the long span of frontier American history.

The Revolutionary War was ended at Yorktown on October 19, 1781, and war-weary people were at last free to improve their personal fortunes as best they could. The Transylvania Company was reduced in 1776 by the Virginia Assembly to a 200 thousand acre grant in the present Henderson County. Kentucky County was created in that year, and Virginia's administration extended to all of the present state of Kentucky, except the Jackson Purchase. Hundreds of Virginia soldiers who looked to the state government for their pay were gratified by receiving warrants for public lands in Kentucky. Quickly the movement westward gained momentum. Already Kentucky County had been divided into three parts: Fayette, Jefferson, and Lincoln, and the area west of the mountains was called Kentucky District.

LAND, A FOUNDATION OF WEALTH

This immediate postwar period was one of major importance. These were formative years in which future economic, cultural,

and political patterns were shaped. Unfortunately for future landholders, the Virginia Assembly was unable to foresee the long-range need for orderly land laws, and before this fault could be corrected serious harm was done. Virginia's western district was saddled with the haphazard platting system of "metes and bounds," with all its evils of overlapping and shifting boundaries. It was impossible for a man to be always sure of the location of his line, especially when his neighbors were in the same state of uncertainty. Land laws were passed, and conscientious efforts were made to correct this failure. Even a special land court was organized, but it came too late. It was not until three years after the war, 1784, that Thomas Jefferson proposed the orderly township section plan of survey for public lands in the Northwest Territory. This lack of planning has cost the people of Kentucky millions of dollars and untold human agony. In many instances it has even retarded progress in the state; especially is this true where land lines have been located in the middle of roads, or where they have created such a complicated maze of property rights that highway changes have been exceedingly tedious. Doubtless this confusion of land lines and titles attracted numerous able lawyers to the state—such men as George Nicholas, Caleb Wallace, John Breckinridge, and Henry Clay.

Land was to have a much greater influence upon Kentucky history than that revealed in quarrels over conflicting boundaries. It was to form the basis of the state's economy. Fertility of the central region, and of numerous creek and river bottoms elsewhere in the state, was to make farming a major industry. Unlike the sterile areas of the New England states, the rich lands of Kentucky returned an abundant yield with only a minimum expenditure of effort. From the outset Kentucky became intensely agricultural, and because of this her people developed a distinctive agrarian set of mind which still prevails in the state. Land which from the beginning produced abundant crops of hemp, grain, and tobacco and which grazed livestock in droves, was to lay a foundation for regional wealth.

Slaves were brought in with the first settlers. By 1820, the institution of slavery was of economic importance. Production of hemp, grain, and tobacco supported slavery. Likewise, it accounted for the existence of many imposing farmsteads which have

survived the ravages of time even to the present day. Development of these crops was to be a basic factor inclining Kentucky trading interests southward to the new cotton and cane lands of the lower Mississippi delta. This trade was to influence materially the growth of agriculture and of several Kentucky cities.

Just as land was a basic factor in creating wealth, so it was in determining the nature of the Kentucky population. As the frontier population expanded there was an increasing interest in the mountainous eastern area. Settlers pushed up the Licking, Cumberland, and Kentucky rivers, or they stopped along the trails to select lands and to build their homes. Much theorizing has been done in an effort to explain this aspect of Kentucky settlement. Some students of the subject have advanced the "linch-pin" theory in which a claim is made that a mishap such as a breakdown of a wagon, or an accidental turning off the road caused the less ambitious immigrants to stop in the mountains. Even John Fox, Jr., in his novel, *Little Shepherd of Kingdom Come*, dealt with this idea. Likewise, many other explanations are either inadequate or fallacious. Immigrants stopped in the mountains because they wished to live there, or they followed the trail of good shoulder or bottom land along the banks of the streams which penetrated the mountain region. Some of them entered Kentucky through the obscure openings in the Appalachian wall above Cumberland Gap and remained on the land at the headwaters of the river. More significant, however, than the mere question of how the eastern mountain population came to be is the inescapable fact that the people of this region have been landlocked for most of the state's history. This created a serious social and economic situation which has not always been to the advantage of most of the region's population. Because of this isolation and the inability of the land to yield an adequate return to an increasing horde of mountain farmers, it became necessary for the people to live by the simplest standard, and with each subdivision this standard was forced to suffer further reduction.

Aside from subsistence farming, the most obvious source of wealth in eastern Kentucky was the virgin stand of timber, and its exploitation began after 1850. By the end of the First World War most of the forest was gone. But isolation was still a decisive factor. The phrase "contemporary ancestors" was applied to the

people of this region, meaning that here were to be found many living prototypes of the American frontier.

THE DEVELOPMENT OF GOVERNMENT

ORGANIZING LOCAL UNITS

From 1776 to 1792 Kentucky was in the process of political organization and expansion. It is important to remember that the first Kentucky political subdivisions were of a local nature, and that Kentucky County was basically a backwoods area in which the forms of local Virginia government were transferred west of the mountains. After creation of the three original counties in 1780 the formation of branches of local government was completed. In these years, there was shaped a significant local political pattern which still prevails. Virginia also gave its western district some degree of autonomy when it set up a special land court, a district court of appeals and a county militia system. In this, Kentucky District's relationship to Virginia was like that which Virginia bore to the Confederation of States. Thus Kentucky had a system of local government before it created the larger outline of state government. When a state government was established, the constitution had to be made with this fact in mind. So firmly was this pattern of local government impressed upon the political mind that even today Kentuckians will tolerate ineffective government rather than submit to change.

DEMANDS FOR A STATE GOVERNMENT

Several factors contributed to the people's desire to create an independent state from Kentucky District. Perhaps the most potent of these were the Indian menace and the technical restrictions on the militia which kept it south of the Ohio; distance and difficulty of travel to Richmond; lack of comprehension of frontier problems by the Virginia Assembly; difficulty of transfer of cases to the final court of appeals; and taxation imposed upon the western district. It was actually the Indian menace which set in motion the first of the nine separation conventions which were little more than aimless discussions of frontier grievances. They were forums in which both complaints and ideas of government were publicized. Perhaps there was little doubt in the minds of the first delegates

as to the desirability of a separate state, but they were not ready to make so bold a demand at first. In 1776 the Virginia Constitution had looked forward to the creation of new states out of the state's western domain. Thus, in response to the petitions of the second and third Kentucky conventions, the Assembly granted, January 10, 1786, its permission for the western district to become a separate state, provided it did so prior to September 1, 1787.

The problem of creating a new state, however, was a complex one. Conflicting forces and personal motives prevented a speedy creation of the new Commonwealth. One convention after another failed to achieve satisfactory results, and it was May, 1792, before a constitution was framed. This first document was brief, and was distinguished by its provisions for free white manhood suffrage and by its specific guarantees of civil rights of the people. The body of the constitution was a mixture of sentiments for and fear of popular sovereignty of the people. The legislative plan was a restricted one; the voters were permitted to choose directly members of the lower house, but the Governor and members of the upper house were chosen by an electoral college. The court system was thwarted in the beginning by duplicating and conflicting jurisdiction. Slavery was guaranteed permanence in a special clause, and education was conspicuous by the fact that it was ignored. Doubtless the general attitude of the people toward government and their fear of its powers were reflected in the influence of the English political philosopher, John Locke. Actually the restrictions of the Constitution might have been as much the result of fear of government by certain classes as a genuine desire to impose as little government upon the people as possible. The framers, realizing that there was danger of failure for the first constitution, provided that within five years a vote was to be taken to determine the will of the people toward changing it.

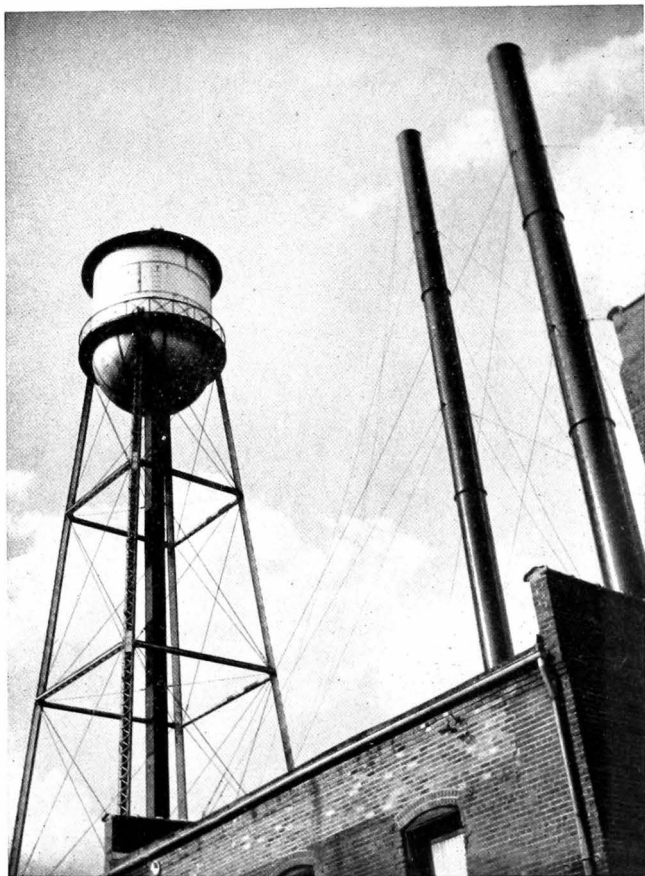
KENTUCKY, FIFTEENTH STATE OF THE UNION

After June 1, 1792, Kentucky was a member of the Union of States. Its militia problem, for instance, was now one which involved federal assistance. Federal taxes quickly stirred up antagonism. The excise duties on distilled liquors almost caused a rebellion. Likewise Kentuckians became acutely aware of the international aspects of national government. Rivalries for control



Settlers pushed up the . . . Cumberland . . . river . . .

W. Brooks Hamilton



W. Brooks Hamilton

Kentucky rapidly developed a manufacturing industry . . .

of the lower Mississippi Valley were important events in Kentucky history. Spanish influence was a factor in the separation convention, and after 1792 the use of the Mississippi River and the right of deposit of goods at New Orleans depended upon trade treaties between the United States and France and Spain.

JEFFERSONIAN POLITICS

Almost immediately after its admission to the Union, Kentucky began to have an important influence in national politics. Early conflict in Washington's cabinet found partisan supporters west of the Appalachian mountains. Jefferson became popular and long before his Republican Party was formed, the Kentucky voters were supporting him as Washington's successor. When Adams was elected, Kentuckians felt that they had been cheated out of their vote and Jefferson became their political lodestar. When the Adams' administration allowed the Alien and Sedition Acts (which proposed to curb the freedom of the American people) to become law, Kentucky leaders were active in opposing them; George Nicholas, John Breckinridge, and the newcomer, Henry Clay, spoke for the Kentuckians. Breckinridge, with help from Jefferson, had drafted a set of resolutions protesting against the violations of personal guarantees as contained in the Bill of Rights.

CHANGING THE CONSTITUTION

This incident in national history was to make Jefferson strong in the West, and in 1800 Kentucky voted overwhelmingly for him. In the years 1797 to 1800 Kentucky was extremely conscious of politics and government. After two expressions at the polls, voters favored the calling of a constitutional convention, and in 1799 a second constitution was drafted. It clarified the court system and provided for the office of lieutenant governor and for the direct election of governor and senators. Ministers of the gospel were barred from membership in the assembly, and slavery was again safeguarded.

Changes made by this second constitution were less significant than the factional strife stirred up by the call for a convention. This strife was of two types. One was intersectional between central and western Kentucky, and the other was between the landed slaveholders and the small farmers. This general pattern in fac-

tional politics has prevailed throughout the state's history. It is necessary to take cognizance of the fact that this second convention was to set an ominous precedent for constitution-making in Kentucky. The attitude of delegates has been not so much one of asking what the functions of constitutional government are and of drafting a document to give the people maximum rights and protection under it, as it has been of trying to head off future action which might injure special interests within the body politic.

Again looking to their place in the nation's history, Kentuckians found that support of Jefferson was not to be without reward. Frontiersmen living along the entire western river system were dependent upon the Ohio and Mississippi rivers for transportation. They looked to the United States government for protection of the right to use freely the western streams, and in 1803 it responded with the purchase of Louisiana. Perhaps few other single incidents were to have such far reaching influences upon Kentucky history. At last the entire western river system was opened to free trade. Also, a vast area of public land beyond the river was to attract a considerable number of Kentuckians westward, and to serve as a safety valve for an expanding population.

ECONOMIC AND INSTITUTIONAL DEVELOPMENT

LOOKING TOWARD ECONOMIC WELL-BEING

During the early decades of the nineteenth century Kentucky's social and economic status underwent a rapid change. Especially was this true of its population. In 1792 there were 73 thousand persons in the state, and in 1800 there were 220 thousand; approximately 20 thousand were moving to Kentucky each year. By 1810 there were 407 thousand. New towns were being organized, but the state was predominantly rural. In 1810 Lexington had a population of 4,326; Louisville 1,357; Frankfort 1,099; and the other towns less than 500 each. Every legislature from 1792 to 1800 created new towns, and by 1800 there were forty-two of them.

By 1810, frontier Kentucky manufacturers were producing approximately 2.5 million dollars worth of goods. But more meaningful for Kentucky as a whole is a statement of its exports for the

year 1817. These were valued at more than 4.7 million dollars, and were distributed as follows: Flour and wheat, one million dollars; pork products 350 and whisky 500 thousand dollars; tobacco nearly two million dollars; textiles 100 thousand dollars; cordage and bagging 500, cattle 200, horses and mules 100, salt peter and gun powder 60, white and red lead 45, and soap and candles 27 thousand dollars.

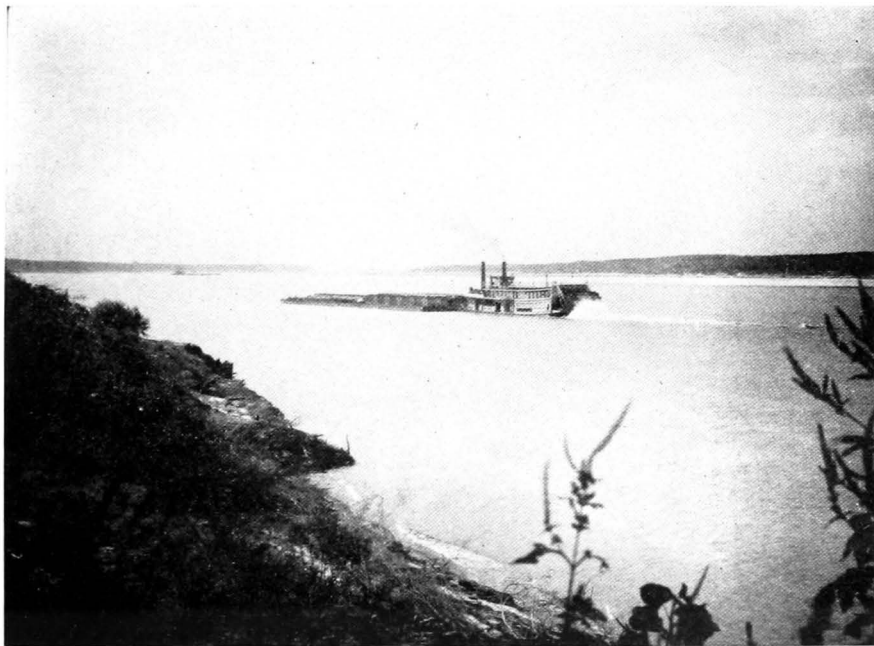
These facts indicate that Kentucky rapidly developed a manufacturing industry of some consequence. In the War of 1812 local manufacturers supplied a large amount of goods used by the army in the Northwest and at New Orleans. Likewise these facts tend to disprove the notion that early Kentuckians were engaged in manufacturing because they were unable to get goods in any considerable quantity from elsewhere. The items listed above were produced for consumption beyond the local market.

INSTITUTIONAL BEGINNINGS

Although economic and political history have an important place in Kentucky's story, perhaps the actual history of the state has been more accurately reflected in the growth of its institutions. Of these, the church was first to show a marked influence. Except for the two "traveling congregations" which arrived in the early 1780's the church came to Kentucky as a missionary institution, and by 1800 most of the denominations had established themselves with organized congregations. The frontier troubles were almost at an end, and the Ohio Valley west stood on the threshold of a new era in its development. Perhaps it was this major fact coupled with the general spiritual relaxation of a people who had been under strain for two decades that caused the amazing religious revivals at Russellville in 1800 and Cane Ridge in 1801. Historically this important incident was to be the beginning of a new phase of religious growth in Kentucky. From it came a clarification of denominational lines and church activities. This distribution of the people amongst the various denominations still prevails in Kentucky, and in more recent years it has resulted in an encouraging degree of religious tolerance in most communities.

THE PRESS

Contemporary with the creation of the state government itself was the founding of the Kentucky press. This institution deserves



Frontiersmen . . . were dependent upon the . . . rivers for transportation . . .

William Logan

It would be difficult to estimate the influence of the press upon public opinion in Kentucky. Papers in the major towns have helped materially to shape the course of state growth. Watterson made the *Courier-Journal* as much an instrument of progress for Louisville and the border country as Henry W. Grady's *Constitution* was for the Lower South. Not alone has the daily paper been a factor in Kentucky history, but likewise the local papers published from county seat towns have reflected a veritable kaleidoscope of change.

KENTUCKY'S EDUCATIONAL HERITAGE

Less consistent in growth, but almost as indicative of the process of social development as the press, were the schools. Educational history in Kentucky during the eighteenth and most of the nineteenth century reflects the general attitude prevailing along the Atlantic seaboard, in the churches, and on the American frontier. Its story is a thing of many parts which do not always fit together with logical coherence. Back of it are all the historical motives for providing education in America. There was the influence of the church, the private academy master seeking genteel employment, the "oldfield" or pauper school supporters, and the proponents of the public school idea. Educational leadership in Kentucky generally came either from the ministry and church groups or from men who were familiar with the system in use in the older states.

Financial support for schools was meager. The leadership of neither of the first two constitutional conventions seems to have recognized the state's responsibility for supporting education. The famous sixteenth-section public land provision of the Northwest Ordinance of 1787 did not apply to Kentucky. Up to 1850 the dominant force in educational legislation was the wish of legislators for a painless method by which schools could be supported. Grants of public lands were made to the counties for support of academies. In 1821 a literary fund was established, and in 1836 the surplus revenue distributed by the federal treasury was given to the support of schools, but neither of these efforts succeeded. It was not until the third constitution was adopted that the school system had a constitutional foundation, and subsequent legislation made the school budget a financial responsibility of the State.

Since 1865 educational attitudes have changed, but progress was slow and painful.

Since the Civil War the idea of public education has been firmly planted in the state. From 1865 to 1908 the struggle to develop an adequate school system was a hard uphill fight. Many of the dominant pioneer and ante-bellum ideas of individual responsibility prevailed. Likewise there was ever the problem of securing trained teachers, and it was not until the creation of Western and Eastern Teachers Colleges that headway was made toward meeting this difficulty. Actually it has been only since 1908 that anything like a clearcut outline of educational needs in the state has been developed.

In higher education the record is one of sporadic development and lack of imaginative and progressive leadership on the one hand, and great personal effort and sacrifice on the other. On the American frontier there was a belief that "book-learning," except in the law, ministry, medicine, and mathematics was an impractical kind of knowledge. Early Kentuckians objected bitterly to being patronized by persons of learning. Politically, educated office-seekers were forced to keep their knowledge and polish in the background. This fact partly explains why it was not until the passage of the Morrill Act that a state college could be organized which would give continuity to the state's educational history. Out of this act came the University of Kentucky, which has gone through several phases of change until it is now definitely at the top of the state's educational ladder. In its history are the three tragic decades, 1870-1900, in which bigotry and the ante-bellum fear of nonsectarian higher education would threaten again to thwart the State in its efforts to maintain an institution of higher learning. As the barriers of state isolation have been torn away, Kentuckians have shown definite capacity to grow away from their narrow, frontier set of mind and to accept a far more liberal program of education. Yet there still seems at times to be lack of a definite appreciation on the part of both the state administration and the legislature of the real possibilities of education. Too often the school system has been victimized by lip service while given too little support to operate effectively.

SLAVERY, A PASSING INSTITUTION

A brief view of slavery completes this discussion of Kentucky's earlier institutional history. The history of Kentucky slavery to a great extent duplicated that of Virginia. Hemp and tobacco were basic crops, and it was hemp that yielded Kentucky the greatest profit. The early economy of the central and western counties was influenced by the slave system. There were so few slaves in most of the eastern counties that pro-slavery support was negligible.

The economic return from slavery in Kentucky perhaps was of little significance when compared with its deterrent political and social effects. Three constitutions were badly warped by the influence of strong pro-slavery delegates who exerted a vast amount of energy in protecting their special interest. Back of the call for the conventions of 1799 and 1849 there was a vigorous resistance to any change which might in any way threaten the security of slavery. In the conventions, friction developed from every issue which had a social implication. As a result of this anxiety, conservative delegates took extreme precautions to make sure that it would be difficult to secure amendment of the document. So thoroughly was this fear of radical change implanted in the minds of the people that this is one reason, even today, for the widespread feeling that to amend the constitution is to injure it.

Kentucky was divided from the beginning between the pro- and anti-slavery forces. First, the ministers of the chief protestant churches were opponents of the institution. Then the abolitionists and emancipationists took up the fight. Finally, the Underground Railroad led to the loss of thousands of dollars in chattel property when it spirited slaves away to freedom beyond the Ohio River, and after 1850, to Canada.

Slavery left its mark upon Kentucky in several ways. It helped to create in some of the central counties a plantation system of agriculture which suffered reverses from the Civil War. Because slavery was never as profitable in Kentucky as it was in the Lower South, surplus slaves were sold to that region, with the result that there is in Kentucky today a relatively small Negro population. Kentucky slaves who were freed by adoption of the Thirteenth Amendment, however, were forced to become active participants in the economic activities of the state. This condition has aggravated the problems of community organization, both urban and

rural, and it has contributed to the problem of low-wage common labor and to the difficulties of tenant farming. Yet for the most part ex-slave and ex-master were reasonably successful in making satisfactory adjustments. Some unhappy political mistakes were made immediately following the Civil War, because of a failure on the part of the white leaders to take into consideration the relative importance of the two races. Fortunately Kentucky suffered neither the shock nor the blighting influence of the radical reconstruction of the Confederate States. Consequently its racial problems today are much simpler and more amenable to adjustment than those of the South generally.

THE CARE OF DEPENDENT CITIZENS

In other aspects of its social and institutional development, Kentucky in the beginning adopted the Virginia plan of shifting as much of its responsibilities to individuals as was possible. The Virginia Statute providing for care of "ideots and lunatics" was adopted in Kentucky; and until the passage of a law creating an insane asylum in 1822, the responsibility for the insane was either one for the local units of government or for individuals. Although the Kentucky Asylum for the insane, the penitentiary, and other eleemosynary institutions had an early beginning they languished because of a lack of both support and farsighted leadership. Budgetary provisions for these social institutions were so meager as to be almost useless.

At the end of the Civil War there was a new interest in broadening the scope of the State's care of its dependent citizens, and almost continuously some type of social legislation was before the General Assembly. During the administration of Governor William J. Fields in the twenties a vigorous campaign was conducted to enlarge and improve Kentucky's general social program, but this met with defeat at the polls.

In looking back historically at Kentucky's activities in solving its social problems, two things stand out: First, the attitude that social responsibilities were local and individual, rather than state, originated with an earlier legal background, and has shaped the State's planning for such responsibilities. Second, the attitude toward care for that part of the state's population which has needed curative or corrective attention has been almost universally of a

deterrent nature. Budgetary provisions made by the State have done little more than encourage a system of bare detention. Too, statutory provisions for the commitment of socially dependent persons have left too little choice to local authorities, and frequently these officials have solved their problems by using the simplest and most direct statutory short-cuts. Kentucky was among the first states to make plans for its dependent citizens, and these early beginnings promised a reasonably happy future. A failure, however, to appreciate that what was done at first was only a beginning brought disappointment in the end.

POLITICAL LEADERSHIP FOR A CENTURY AND HALF

Kentucky from the very beginning of its history has had great political notoriety. At times Kentucky politics has almost overshadowed all other aspects of the state's social development. A list of Kentucky politicians reads like one of significant national figures. George Nicholas, John Breckinridge, Caleb Wallace, John Rowan, Isaac Shelby, Henry Clay, and scores of others were well known beyond the state's boundary. Nicholas, Breckinridge, and Clay were men of great national political stature. From 1800 to 1824 Kentucky's political leadership came from the ranks of the Jeffersonian republicans. The famous fight in 1799 against the Alien and Sedition Acts, which violated the Bill of Rights of the Constitution of the United States, was the beginning of an organized Jeffersonian Party in Kentucky. John Breckinridge, one of the authors of Kentucky's famous resolutions of protest, became Jefferson's attorney general. Later Henry Clay became a major national figure, and until his death in 1852 he occupied a position of both state and national leadership.

In earlier national issues, other Kentuckians were to play important roles. The Purchase of Louisiana was influenced by Kentucky sentiment. Henry Clay, Richard M. Johnson, and Felix Grundy, an expatriated Kentuckian, were members of the famous Warhawk party, and Clay had a hand in the drafting of the Treaty of Ghent, which brought the War of 1812 to an end.

From 1815 to 1830 the Kentucky political scene was turbulent. The period of inflation and growth of business and industry following the war with Britain led Kentucky into an unhappy state of economic over-expansion. Manufacturing plants were going

at full capacity, and Kentucky goods were in great demand. There was insufficient currency to meet the need for money, and in 1818 the legislature created the famous "Forty Thieves" banks. Within a year the national panic threw Kentucky's people and its domestic affairs into chaos. The legislature undertook to destroy the Court of Appeals when that body held that the emergency "relief" legislation was a willful attempt to break contracts. This fight led to ten years of costly squabbling at Frankfort, and it had a demoralizing effect at the time upon public regard for the rights guaranteed by constitutional government. "Relief" legislation was characteristic of the desire so frequently manifest in Kentucky, to secure personal advantage by manipulating the legislative branch of the government. In short, the legislature attempted to thwart the power of the Kentucky Court of Appeals by changing as it pleased the membership of the judicial body. As a result of this extraordinary stand the State found itself with two courts. The old one fought to maintain its integrity as a constitutional body, and the new one attempted to carry out the wishes of the legislature by upholding legislation which was avowedly unconstitutional.

While the old court-new court factions were warring, Henry Clay ran for the presidency and was defeated. As speaker of the lower house of Congress, however, he had an influence powerful enough to decide the issues of dispute between Andrew Jackson and John Quincy Adams in favor of the latter. His support of Adams divided Kentucky for the first time into two permanent political factions. This division, labeled Democrat and Whig, after 1830, formed a pattern of bipartisan politics which still prevails after more than a century.

BEFORE AND AFTER THE CIVIL WAR

ISSUES OF THE CIVIL WAR PERIOD

Kentucky became a sensitive middle ground in national politics. In the decade 1850-1860, the state's political reaction was a reflection of general national unrest. Clay figured prominently in the Compromise of 1850, which momentarily brought peace in the bitter dispute over slavery, and his successor, John Jordan Crittenden, played a leading part in the United States Senate in those trying years leading immediately up to the Civil War. When the

sectional break finally became inevitable, in 1861, Kentucky remained neutral. This is difficult to explain in light of the contemporary circumstances. Its trade was with both the North and the South. A greater part of it went southward, but northern trade was certainly not without importance. Perhaps the real force back of the neutrality stand is to be found in the leadership of such men as Robert J. Breckinridge, George D. Prentice, and John Jordan Crittenden. Even the pro-Southern governor, Beriah Magoffin, and President Abraham Lincoln were favorable to Kentucky's neutral stand.

In the war itself, Kentuckians fought on both sides. Perhaps twice as many native sons fought in the Union Army as in that of the Confederacy, but the stronger sentiment over the years of war and reconstruction was definitely Southern. Two or three major engagements of the war were fought on Kentucky soil, and there were several alarming skirmishes. Fortunately, however, the state escaped the unpleasantness of being a great intersectional battleground.

Although the military events of the Civil War were actually of minor consequence in Kentucky when compared with the rest of the South, they did mark the end of an era. Almost immediately after Appomattox there was an upsurging of social and economic change. Socially, there was considerable activity in the behalf of white supremacy. No plans for a free bi-racial society had been made, and Kentucky found itself in 1865, upon the adoption of the Thirteenth Amendment, with the free Negro a part of its population. Unnecessary antagonism developed because of a failure to plan for the inevitable, and, too, because of a fear of freedom for the Negro. Both impractical and unsuccessful efforts were made to rid the state of most of its Negro population, and to seek in its place white immigrant labor. At the same time there began an intrastate movement of white mountaineers toward the Bluegrass. Land use trended toward that of small farms. Towns grew in size, and there was a period of industrial expansion. At Louisville, merchants expended an enormous amount of energy to re-capture the Southern trade. Newspaper editors campaigned vigorously for this new business. The Louisville and Nashville Railroad expanded its system over the South, and thousands of tons of Kentucky products and merchandise were carried to the

cotton states. After 1868 Marse Henry Watterson, through the editorial page of the *Courier-Journal*, was vociferous in pointing the way for Kentucky trade to the New South.

KENTUCKY, A SOUTHERN STATE

Immediately at the end of the Civil War the State became almost as rabid in its southern leanings as the states of the Confederacy. Throughout the war itself Kentucky remained politically neutral. Its sympathy in the end was with the South, and the State refused to ratify any of the three (Thirteenth, Fourteenth, and Fifteenth) so-called radical amendments. This, plus Kentucky's geographical location, threw the State into the southern grouping, despite the fact that its neighboring State of West Virginia was likewise on the border but retained its association with the group of states North of the Ohio. Kentucky's principal inter-sectional transportation system was a southern one, and its post-war trade was inclined southward. For this reason it was grouped with the other southern states in freight zones, where it has remained in many of the later Interstate Commerce Commission rulings. It was to suffer the same fate of unfair rate discrimination as have the states of the Confederacy. To all of the ridiculous machination of radical reconstruction Kentucky was opposed. For this attitude she was to suffer sectional discrimination, even though she did escape actual exploitation of her people and government by carpetbaggers and scalawags.

AGRICULTURE, A KENTUCKY WAY OF LIFE

A distinct change in agriculture came in the postwar years. Burley tobacco and white tenant labor supplanted hemp and Negro slavery of the ante-bellum period. Returns from farming climbed from 291 million dollars income (from 7.5 million acres) in 1860, to eight hundred million dollars (from 20 million acres) in 1930. Returns from livestock figured prominently in this agricultural income, but the expanding corn-hog belt of the Northwest was to force certain types of this Kentucky industry into a secondary position.

Along with the expansion of agriculture there was an increase in farm tenancy in the state. Two or three facts largely account for this. In the first place an increasing population brought about greater sub-division of land among the small farmholders. Like-

wise the financial uncertainties of the period 1870-1910 caused many farmers to give up land ownership. The growing importance of burley tobacco as a major staple crop since 1868 forced much of the farm population to turn to a one-cash-crop system of cultivation. This change in the farm pattern was reflected in Kentucky politics and economy. From the late seventies through the decade 1900 to 1910 there were agrarian upheavals in the nation. There was general dissatisfaction with the policies of the two major parties, and as a result there were strong third-party movements. The national agricultural crisis was reflected in Kentucky political reaction. Attempts were made to break down the anti-agrarian elements in the Democratic Party and to make of it the farmer's political organization. Culminating in the period of general dissatisfaction with the farmers' plight was the famous Night Riders' War of 1905 to 1910, in which an organized group of farmers tried to raise the price of tobacco and to better market conditions by preventing the production and sale of dark leaf tobacco. This dispute actually turned into a conflict between the organized and unorganized farmers. In 1921 there was a serious deflation of prices, which caused unrest among the tobacco farmers, and resulted again in some night riding and the formation of the protective sales organization known as the Burley Pool.

INDUSTRIAL EXPANSION

Specifically Kentucky's history has been agrarian in its nature, but since 1865 the exploitation of timber, the mining of coal, and the utilization of other mineral resources have changed many aspects of its economy. Both the western and eastern coal fields have contributed materially to the state's wealth. In 1885 coal brought a cash return of one and one-half million dollars, and in 1935 it yielded, with its by-products, 82 million dollars. This increase in income from coal is important, but even more important is the fact that expansion of mining has brought about a comparable increase in railway and improved highway mileage and has tended to cause a change in the composition of the Kentucky labor force, adding industrial workers to agricultural workers. Equally as important is the change in the general direction of Kentucky's heavy trade. It now flows toward the lake shores and the industrial Northwest. Just as the state was once a source of supply

for the slave states of the lower Mississippi Valley it now serves the heavy industries to the North and Northwest.

Kentucky's dependence upon this outside market during the post-Civil War years reverses the position it held prior to 1860. However, it still remains tied up with an economic situation beyond its borders, and over which it exercises no control. The failure of the slavery system had its ill effects upon Kentucky, making it necessary to reconstruct the state's economic system and to find new outlets for goods. This followed also from the state's dependence upon the industrial market beyond her borders, in which her basic raw materials are sold. It has been demonstrably true that when there has been a general national deflation, its adverse effects have been felt quickest at the source of supply of unprocessed materials. When depressions have come, the Kentucky coal miners and Kentucky farmers have been among the first to feel the pinch of hard times. Historically this has had the unfortunate effect of giving Kentucky economically a colonial status in relation to the manufacturing sections of the country.

TARDY REVISION OF THE CONSTITUTION

Railroads held the golden key to economic well-being in the period, 1865-1900, and the systems were expanded rapidly, not alone with main lines through the state, but likewise with local branch lines. Communities often financed the building of these branch lines by special tax levies. By 1880 there was sharp conflict between the farmers and the railroads. Freight and interest rates were high and prices of farm products were in a slump. Because of this state of poor economic balance in the nation as a whole farmers everywhere were in revolt against the railroads and bankers. Kentucky was caught up in this era of agrarian unrest, and some rather positive measures of reform were pushed through the legislature.

It was in the midst of this period of agrarian restlessness that revision of the Constitution became imperative. Unlike the other southern states, Kentucky did not revise its Constitution at the end of the Civil War. Twenty-five years after the adoption of the thirteenth amendment to the Federal Constitution, the Kentucky document still contained a clause protecting slavery. This was reason enough for revision, but it was the demand for corporate

reform by the agricultural elements that influenced public opinion sufficiently to vote to call a convention for the framing of a new document. After a long series of debates, a new constitution was presented to the public in 1891, and in 1892 it became the basic rule of government. This new document is a long, ponderous one, in which its framers sought to provide for the needs of Kentucky for many generations in the future.

THE TWENTIETH CENTURY

Twentieth Century Kentucky has presented several facets to the rest of the country. Most characteristic of these, however, is lack of a consistent pattern in political development. In the campaign of 1899 the State was thrown into general confusion by the vigorous Taylor-Goebel dispute. W. S. Taylor won the election by twenty thousand votes but the Goebel faction protested the validity of the returns and this resulted in the shooting of the Democratic contestant, William Goebel. In a moment of panic the Democratic legislature declared that Goebel had been elected and Taylor was forced to flee the state. This demoralizing affair was to leave its mark upon Kentucky politics in two decades of extremely bitter political partisanship.

Since 1899 there have been eight Democratic governors and four Republicans. The Democrats have always had a majority of the members in the legislature. Occasionally this unbalanced political alignment has resulted in the formation of bi-partisan combines which have enabled an inner group of selected manipulators to conduct the business of the State in accord with their own selfish interests. When such conditions have prevailed there has been a serious lack both of efficient government in Kentucky, and of wholesome rivalry between the two political parties. Missing, too, in many of the campaigns have been honest planning and incisive discussions of major issues. Personal and scurrilous mudslinging have characterized most of the primary and general election campaigns. Often rivals within the same party group have been so harsh and ungoverned in their criticism of opponents that they have alienated hundreds of voters from the party. In nearly every case in which the Republicans have won a state election there has been a bitter fight among the Democrats in their own party. Voters heard the sins of rival candidates aired, but it was

rare for a candidate in either party to present a carefully planned program which could be carried out with any degree of completeness after he got into office. The guiding factor was always a guess at what the most voters would heartily approve at the polls. As examples of the issues in Kentucky politics in the twentieth century, there are the famous tobacco war issue in 1907, the dog tax in 1915, horse racing and prohibition in 1923, prosperity and general Republican reaction in 1927, reaction to both local and national changes in 1931 and 1932, the sales tax in 1933, and subsequently the income tax, and a split in the Democratic Party and general discontent with Democratic control in 1943.

The term demagoguery has never applied specifically to Kentucky politics in the same sense with which it is used in the Lower South, but there have been actually many demagogic activities. Frequently voters have been disappointed in the man whom they have elected. Blindly they have put much faith in campaign promises only to discover in many administrations that they were fooled before the end of the first biennium. Particularly has this been true of the office of governor. Yet Kentucky's governors have not always been to blame for their misdeeds and mistakes. In making the race for office they have often had to commit themselves so far and on so many vital issues that they were unable to conduct the affairs of their office with a free and intelligent hand. Too, a large number of legislators in Kentucky during the period of a half-century have not been of the highest caliber among men in the state. Often they have been elected to office without having either a clearcut knowledge of their personal responsibilities or of their obligations to representative government. This has led to petty personal bickering and political wrangling which have resulted all too often in the passage of ill-conceived laws by gag or ripper methods.

Two major professional surveys (1923 and 1935) of the Kentucky government, and an omnibus reorganization bill passed in 1936, indicate a hopeful willingness to advance the cause of governmental reform. The reorganization legislation had all of the earmarks of a thoroughgoing and conscientious step toward giving Kentucky an effective state government. Perhaps the years 1936-1938 in state government can be compared with those memorable years of reform, 1913 to 1916, in the national government.

KENTUCKY'S EYES TO THE FUTURE

Kentucky is nearing the middle of the twentieth century with approximately 200 years of history behind it. The state has a great heritage which has been always exciting if not always happy. Consideration of the future must be from the vantage point of this historical perspective. It is vital to remember, however, that this heritage is at once an asset and a liability. It is an asset in that it gives stability to the people. A hundred and seventy years of social organization have brought maturity and great pride to Kentuckians. This heritage can be a great constructive resource if the state's history and historic shrines are properly channelized. But a background such as Kentucky's can be a definite and dangerous liability. In an aging society there is grave danger of apathy and a figurative walking backwards to look at the footprints of ancestors. There is a tendency for people in a society as rich in history as Kentucky to become tradition-bound and rigidly stratified. They tend to lose sight of social values, and the resulting conservatism proves a deterrent to the capacity of the body politic to meet the challenge of changing times and conditions. For the designing of Kentucky's future, the strengths, but not the weaknesses, of a glorious tradition are available as a sturdy foundation for progress.

Chapter III

THE ENERGY OF THREE MILLION PEOPLE

BY HOWARD W. BEERS

The greatest resource in Kentucky is the energy of nearly three million people (2.8 million in 1940). It is never fully used. In fact, it probably has been less completely used or more misused than any other resource. If this had not been true, the incomes of Kentuckians would be larger, their health would be better, their education would be higher, and more of them would have been satisfied to live in their home state. In designing her future, Kentucky has no greater opportunity than that of improving the use of her human resources—through more productive effort on farms, in mines, factories, and businesses, and through better organization for education, government, health, and social welfare. The best uses of human energy require the wisest uses of the physical and institutional resources, about which the other chapters in this book are written.

The population of Kentucky in 1940 was almost as large as that of Ireland—with a President; or of Norway—with a King. It had more people than did any one of a dozen or more small but usually separate and independent countries elsewhere in the world. The human resources of Kentucky, then, are larger than those of some nations. They are a great reserve of energy for making the goods and giving the services that would raise the level of living in the Commonwealth.

THE GENERAL PICTURE

Seven out of ten people in Kentucky in 1940 were rural, and four or five of them lived on farms. The other three out of the ten lived in urban communities, incorporated places of not less than 2,500 population. The city people were divided among 51 urban places in 46 counties, but more than one-third (319 thousand) of them were in Louisville. There were 74 counties with-

out any urban people at all. The population of Kentucky is thus mainly rural. It is also nearly all white and native born. It has increased rapidly, and the ability to keep growing has not been lost. Its energy could be better used if the people had located themselves more evenly in relation to physical and institutional resources, such as good cropland, mineral deposits, factories, shops, schools, churches, and hospitals. The population of Kentucky ordinarily takes a larger part than that of the average state in the moving around, the shifting of residence, that is always going on among people in the nation. In terms of what they can afford, Kentucky homes have given at great cost but generously of their youth to the nation's factories and armies. The people in the Commonwealth include large numbers of children and young people, and the average person living in Kentucky is younger than the average resident of the nation. The proportion of old people in the population, however, has been increasing. Kentucky residents are engaged in many occupations, with farming at the head of the list. All these characteristics of Kentucky's people point up the great importance of the family as her basic social institution and the home as the main conservator of her chief resource.

RAPID GROWTH

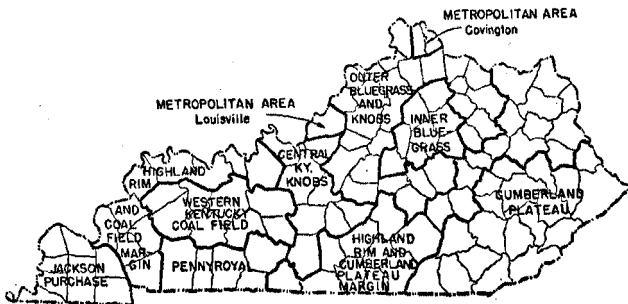
The story of Kentucky's population covers 170 years. It began in 1774 with the settlement of Harrodsburg, just before the nation was born in battle. As in other frontier areas, pioneers came rapidly, and when the first federal census was taken 16 years later there were nearly 74 thousand people in the state. This number was increased more than eight-fold in another thirty years (584 thousand in 1820), and from then until the end of the century the average growth was 18.3 per cent every ten years.

Between the time of the Civil War and 1940 the supply of human resources, as counted every ten years by a new census, grew steadily. There were and are, however, wide differences among the social subregions, each consisting of a group of counties and each differing from the other subregions.

Growth in the Twentieth Century.—Population grew in each of these ten subregions until about 1900. With the turn of the century, rapid increase continued in three, and moderate gain in three

more subregions, but the other four declined until 1930. The average trend for the state was one of regular growth.

The decade from 1920 to 1930 was a period of industrial development in the United States, and during that time the number of subregions losing population increased to six. In fact, one-fourth of all the counties in the state lost population during the first 30 years of the century. There has been such a variety of population trends that each community in Kentucky must examine the record of its own experience as part of the background for any local planning. To illustrate the point, Pendleton and Harlan counties are good examples. Pendleton is an Outer Bluegrass county in which population declined steadily after 1880, while Harlan is a Cumberland Plateau coal-producing county which trebled its population in one ten-year period (1910 to 1920) and doubled it again in the next. Such outstanding changes as these help to explain any present and future problems of social and economic adjustment in the areas where the changes occurred.



SUBREGIONS OF KENTUCKY

The Completion of Settlement.—By 1930 the Outer Bluegrass subregion had reverted to its population of about 1875; the Pennyroyal, to that of 1885; the Western Coal Field Margin, to that of 1889; the Central Knobs, to that of 1895; the Western Coal Field and the Purchase areas, to that of 1910. Industrial prosperity in the 1920's, however, was followed by hard times in the early 1930's. Retarded rural-urban migration, together with some backflow from



... the home ... the main conserver ...

W. Brooks Hamilton



The population of Kentucky is . . . mainly rural . . .

Bruce Poundstone

towns and cities, resulted in an upturn between 1930 and 1940 in each of these six areas. In fact, during those ten years, eight of the ten subregions in the state were growing and the other two were gaining slightly.

By 1940 the six subregions just listed had not varied much above or below a level that they held for periods ranging from about 30 years in the Western Coal Field and the Purchase areas to about 60 years in the Outer Bluegrass. Apparently, these areas were completely settled and could neither gain nor lose large numbers of people without changing the customary levels of living or the established methods of exploiting resources. With the limited development of manufacturing, the usual types of agriculture, and the general ways of life in Kentucky in 1940, the state had approached maturity in its ability to absorb additional numbers of people. Important changes in resources, in ways of using them, or in standards of living would undoubtedly change these relatively stable numbers, breaking the deadlock in favor of either growth or decline.

Population of the Inner Bluegrass subregion, except for Fayette County, also had become nearly stable. The people in the Cumberland Plateau and the Highland Rim and Cumberland Plateau Margin, however, numbered more than the resources, as they were then being used, were able to support abundantly. Levels of living there would have been higher if population had stopped increasing, or had frozen at the number reported in 1920 or some earlier year.

The Rise of Cities.—The number of people in Kentucky cities grew from:

121 thousand in 1860 to
849 thousand in 1940,

a seven-fold expansion, while the population of the state increased one and one-half times during those 80 years. The urban rate of growth was faster than the rural rate in every decade from 1790 to 1930, then dropped behind during the 1930's when movement from rural to urban communities was slowed by the depression.

Urban population as a proportion of the state total was only:

10 per cent in 1860, but
30 per cent in 1940,

when Kentucky was three times as urban as 80 years before. Of the 13 cities with population of 10 thousand or more in 1940, Ashland had grown most rapidly since 1900, increasing more than four-fold in forty years. Newport was 8 per cent larger in 1940 than in 1900. Any marked acceleration in urban growth after 1940 waited for industrial development in the cities of Kentucky.

THE NUMBER OF NEGROES

For nearly a century the proportion of Negroes among Kentucky's people decreased at each successive census:

20 per cent in 1860,
8 per cent in 1940.

Recently, at least, the rural decline was greater than the urban. In the rural farm population, Negroes constituted:

Nearly 6 per cent in 1920,
a little more than 3 per cent in 1940.

In the number of Negroes as well as in their proportion of the total there has been a decline, from:

221 thousand in 1850, to
214 thousand in 1940.

The Southern Negro has been a rural dweller, but in Kentucky in 1940, 55 per cent were urban, and only 19 per cent lived on farms. The number of Negro farmers declined more than one-half in 20 years, from:

12,628 in 1920, to
5,547 in 1940.

Tenancy, never a racial matter in Kentucky, was becoming even less so after 1940. Share cropping was declining in importance, and wage labor was replacing cropper labor on many commercial farms. This shift was indicated by the fact that in the 1930's the number of non-white farm operators declined more rapidly than the number of non-white persons living on farms. The 1940 non-white farm population was 87 per cent of the 1930 figure, but non-white farm operators were 61 per cent of the 1930 number.

POPULATION DENSITY

The very unequal rates of growth in the different subregions resulted in an uneven distribution of people on the land. In all of Kentucky there were 71 people per square mile in 1940, but inter-county differences ranged from 1,027 in Jefferson to only 27 in Menifee. The areas most thickly settled with rural farm people were in the Cumberland Plateau and its margin, often called the mountain counties. The areas least densely settled with farm population were those having large farms combining grain and livestock production and those having infertile or wooded land and wasteland.

The number of acres of cropland per person, however, is a better measure of farm population density. This ranged from two acres in Harlan to 25 acres in Union County. In general, the smallest per capita acreages were in areas of low agricultural productivity, and during the 1930's farm population increased fastest where it was already more thickly settled—according to this (acres of cropland-per person) measure of density. With respect to the simple fact of farm population density alone, the Cumberland Plateau and the Inner Bluegrass subregions are as different as the Corn Belt and the Cotton South. There is not a Kentucky population: there are *several* distinct populations within the state. The importance of various areas in terms of the number of farm people involved is by no means the same as their importance in terms of farm production.

The irregular distribution of farm people shows that the adjustment of population to land resources is not automatic like the adjustment of water to its level. The facts that children make up a large proportion of the population, and that strong family ties bind people together in the areas having the smallest per capita land base tend to keep the outward flow of population from becoming larger. Thus, except in war or economic depression, the areas which might appear to be most overcrowded, hence in need of even more out-migration than they usually experience, are those from which population movement in many respects is the least likely to occur on a grand scale.

HIGH BIRTH RATES

During the earliest part of Kentucky's development, population growth was largely through the arrival of people from other states. Later it was the result of high rates of natural increase—the occurrence of more births than deaths. A figure known as the fertility ratio is one of the most useful measures of this natural increase. The fertility ratio is the number of children under five years old for every thousand women of child-bearing age. For Kentucky in 1940, population would have been kept at approximately the same size, neither increasing nor decreasing, with about 360 children under five for every thousand women between 15 and 44 years old. Actual fertility ratios (standardized) were:

The whole state	474
Cumberland Plateau subregion	681
Louisville Metropolitan subregion	288

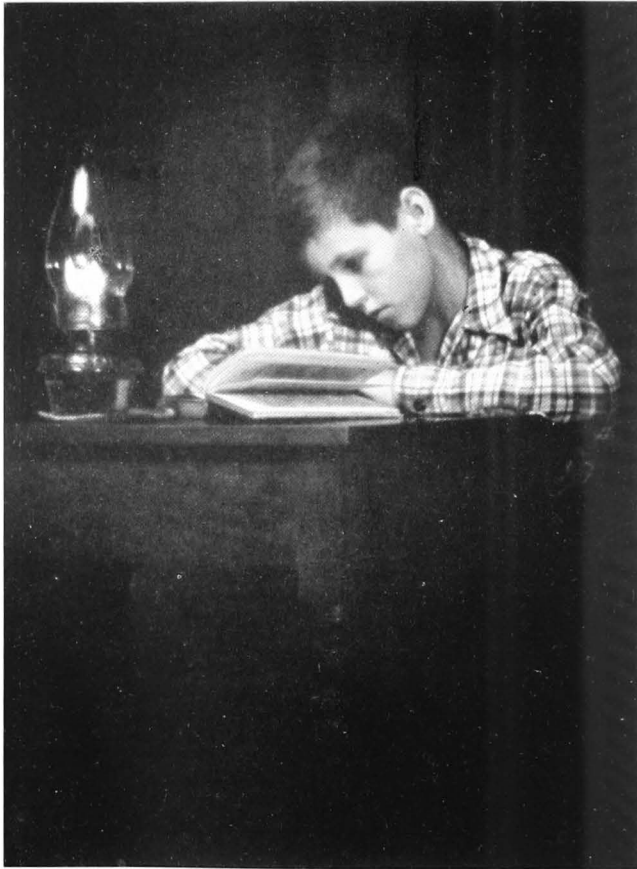
The ratio for the state is much more than enough to keep the population stable. This promises further continuous and rapid growth in the number of people in Kentucky. Of course, there are inequalities among the subregions in their growth by natural increase. Aside from the Metropolitan subregions, those areas with the lowest fertility ratios are the Purchase, Inner Bluegrass, and Pennyroyal groups of counties.

Viewing the rapid growth of population in Kentucky, some people are disturbed by fears that too many individuals with low intelligence or other handicaps are being born; others say that poverty and ill health cannot be overcome because there are too many people trying to make a living with inadequate resources. These fears lead some people to propose that parents should have fewer children, or that the public should give support to various other plans designed to improve the quality of the population. While debates on these issues proceed, however, the people of Kentucky have various immediate opportunities for improved living through more productive application of their energy to physical resources, and through better organization of their institutions for business, education, government, health, and welfare.



... each man's first concern is for his own neighborhood and family

W. Brooks Hamilton



W. Brooks Hamilton

*Eighty-five per cent of the dwelling units of rural farm people had
no electric lighting*

EFFECTS OF WAR

The war introduced a noticeable change in the record of population growth in Kentucky. It resulted in a general decline of civilian population in all but three of the 120 counties between April, 1940, and November, 1943. The average loss for the state was 10 per cent. One-half of the counties lost between 10 and 20 per cent of their people: every county in the Cumberland Plateau declined, losing previous gains of 10 to 30 years. Eleven Outer Bluegrass counties, nine of them between Covington and Lexington, were reduced to smaller populations than had been shown by any census figure since 1880.

Population in most of the other Bluegrass counties (mentioned above as having been fairly stable for several decades) fell back to numbers reached from 30 to 70 years before. The population of every county in the Cumberland Plateau Margin, the Western Kentucky Coal Field, and the Purchase subregions declined. With but few exceptions, the most people had left the counties that had the least commercial agriculture. The wartime withdrawal of so many people from most communities in Kentucky and the uncertainty about their return are especially important factors in any discussion of improvement in economic life and social organization after the war.

MOVEMENT FROM THE STATE

The population of Kentucky would have increased even faster if it had not been kept down by out-migration. (In population movement between nations, out-migration is called emigration). By 1943, probably one million persons of Kentucky birth were somewhere outside of their native state. This is a large number in comparison with the resident population, which was more than 2.8 million in 1940, but less than 2.6 million in 1943. Since all but nearly 300 thousand residents of the state are native Kentuckians, the number of out-migrants was equal to 27 per cent of all Kentucky-born people, enough to fill three cities the size of Louisville. The net out-migration of people was 671 thousand by 1930 and 654 thousand by 1940. Kentucky had sent out more than three natives for every person who had moved in from other states. Most of them went to northern cities. There were more than

half a million in the four states: Ohio, Indiana, Illinois, and Michigan, and less than 15 per cent of them lived on farms. Twelve out of every 100 residents of Cincinnati in 1930 were born in Kentucky. The general directions of out-movement were the same after 1940 as they had been during the great rural exodus between 1920 and 1930.

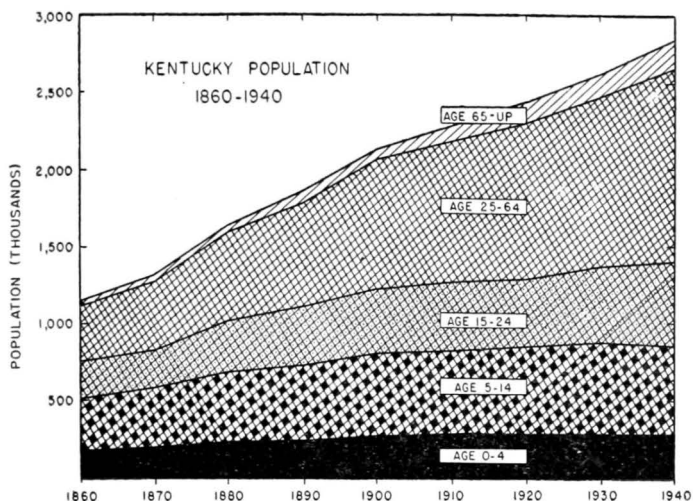
The heaviest movement was from farms, even between 1930 and 1940, the decade in which industrial depression was so important. By 1940, there was a *net* out-movement (the amount by which departures exceeded arrivals) of eight per cent from the farm population 10 or more years old in 1930. This was not entirely a loss of people from the state: net migration of the rural farm population includes exchange with the rural non-farm and urban population within the state, as well as with out-of-state population. In the subregions, net out-migration of farm people aged 10 or over ranged from 12 per cent in the counties around the edge of the Western Coal Field to 1.5 per cent in the Cumberland Plateau or "mountain" area. The heaviest losses were of youth.

AGE IN 1930 (RURAL-FARM POPULATION)	NET OUT-MIGRATION AS A PER CENT OF THE 1930 NUMBER
Total 10 or over	8
10-14	28
15-19	32
20-24	15

The people who leave a state are reared in its homes and communities. They are taught in its schools, safeguarded by its local and state governments, guided in its churches. The migrants from Kentucky, while learning and growing, were consumers but not producers of income from Kentucky's resources. They became producers in other parts of the nation.

The average cost of rearing a child to the age of 15 in a home where the annual income is \$2,500, has been reckoned at more than six thousand dollars.¹ It would be less in homes with smaller incomes; but even so, the farm homes and rural communities of Kentucky have reared migrants at great cost. It is not an exaggeration to say that youth is Kentucky's major export product.

¹ Metropolitan Life Insurance Company, *Statistical Bulletin*, Vol. 24, No. 11, Nov. 1943, p. 5. Other estimates are even higher.



CHANGING AGE DISTRIBUTION IN KENTUCKY

However, many Kentuckians learned during the depression that keeping everybody at home would have its disadvantages unless there were productive work for all to do. The regular movement of youth from the farm to the city is a normal occurrence in the United States. It is a useful means of distributing people according to opportunities for working and earning, although it may occur too slowly or too fast at some times. One conclusion is that many of the human resources *in* Kentucky are not *for* Kentucky. Later, they are to be the resources of other states in the nation.

AGE COMPOSITION

The movement of so many people from the state, along with the growth of resident population, draws attention to the large number of children and youth in Kentucky. Of course, normal population has more persons of any given age—say 25—than at any older age—say 28 or 32—because death thins the ranks as time passes. But in Kentucky, as shown above, the number of children and youth is more than enough to keep up the totals in older age-groups. The typical resident of Kentucky is young: if the popula-

tion in 1940 had been placed in line from youngest to oldest, the person at the middle would have been only about four months more than 25 years old. Actually, of each 10 people in the state, four were under 20; of these, about three were under 15, two were under ten, and one was under five years old.

The age-composition of the population is always shifting, however, and in Kentucky it has changed according to a regular trend since 1860, and doubtless before then. The total population was growing, so the number of people of each age increased with each passing decade. But the proportion of the total which was made up of children under 15 kept falling off slowly. The proportion aged 15 to 24 did not change much, but that which included everybody between the ages of 25 to 64 kept rising. The proportion of elderly people, aged 65 or more, increased steadily, and more than any other age-group.

It was on farms that the numbers of children, youth, and aged people were large in relation to the rest of the population. The number of children under 15 for every thousand adults (aged 25 to 64) was more than twice as high on farms as in the cities of 50 thousand or more. The corresponding number of youth (15 to 24) was 60 per cent greater on farms than in these large cities. Then, too, the proportion of aged persons was greatest in the farm population. To say it in another way, the farm population had one dependent (a child or aged person, not ordinarily a productive worker) for only 1.2 adults 24 to 64 years old, but cities of 50 thousand or more had one dependent for each 1.7 adults.

These facts about age lead to three conclusions. First, because of the abundance of children and youth, especially in rural communities, the schools and other agencies in Kentucky have a much larger task than in most other states. Secondly, the increasing number of aged people has resulted in the need for arrangements insuring their comfort and happiness. Finally, the cost of supporting children and elderly persons falls to fewer adults per dependent in Kentucky than in many other places.

WHAT THE WORKERS DO

The labor force in Kentucky—that is the number of people 14 years old or over who were working or seeking work—was nearly

one million in 1940. Including children under 14, it was 35 per cent of the total population. Leaving out the children, it was 80 per cent of all boys and men, and 18 per cent of all girls and women. The percentage is lower for women than for men because wives whose work was homemaking were not counted in the labor force. This accounts also for the fact that four times as many city women (30 per cent) as farm women (seven per cent) were working or seeking work.

The Labor of Children and Youth.—There was an abundance of very young workers. The proportion has always been large, but it has declined some.

YEAR	PER CENT OF BOYS 14-17 IN THE LABOR FORCE	
	STATE	LOUISVILLE
1920	43	47
1930	33	29
1940	33	17

Maybe it is because there are so many children in proportion to adults that some people seem to be in favor of child labor in various forms, and that school attendance is weakly supported. It will be necessary for Kentuckians to guard against being careless about children just because there are so many of them. The decline of child labor has been more rapid in Louisville than in the state. The last census was taken at a time when many rural schools had closed for the spring, and many youth who were considered in the labor force should have been left out because they were really school children on vacation.

AGE	PER CENT OF BOYS WORKING OR SEEKING WORK: 1940
14-15	23
16-17	45
18-19	71

As the school systems in Kentucky continue to improve, youth will go to school longer, finish more grades, and be ready for work at a later age. This will reduce the number of very young workers in Kentucky's labor force.

The Important Industries.—Farming and related work claimed more than one-third of all employed people (43 per cent of the

males) in Kentucky, about twice the national figure. There were three times as many workers in agriculture or forestry as there were in manufacturing or in wholesale and retail trade. There were about five times as many workers in agriculture as in transportation and other utilities, or personal service work, or mining. There were about 55 thousand coal miners, nearly three thousand workers in the crude petroleum and natural gas industries, and a few more than three thousand workers in other mines and quarries. The percentage of the labor force employed in mines was more than three times the national average. In all other industrial groups the state percentage was below the national figure. The deficit was greatest in manufacturing, for which Kentucky had only one-half her pro rata share in terms of the national average. This distribution of workers among the industries tells a story about how human energies are used in Kentucky.

INDUSTRY	PER CENT OF WORKERS	
	KENTUCKY	UNITED STATES
Total	100.0	100.0
Agriculture, forestry, fisheries	36.5	18.8
Wholesale and retail trade	12.5	16.7
Manufacturing	11.9	23.4
Personal service	7.6	8.9
Mining	7.1	2.0
Transportation and related utilities	6.3	6.9
Professional and related services	5.5	7.3
All other	12.6	16.0

Agriculture has been the chief means of making a living, and all other occupational groups have been outnumbered by the farmers. At other places in this book it will be clear that many of the workers ordinarily in agriculture could be spared for employment in other industries if they were needed.

KENTUCKY HOMES

Global war caused people to talk of the world community, but each man's first concern is for his own neighborhood and family. The human resources of the Commonwealth are stored and used in her hundreds of local communities, thousands of neighborhoods,

and tens of thousands of families. The average rural county in Kentucky has a dozen communities; the average rural community has half a dozen neighborhoods; the average neighborhood has several dozen families.

The family is more firmly placed at the foundation of society in Kentucky than it is in more urbanized places. Marriage is early, childless homes are few, family loyalty is deep, and pride is strong. The keen interest of parents in their children, and the affection of all people for their kinfolk give great strength to the local roots of the state. Children may migrate, but, like branches on a main stem, they merely extend from the family; they do not leave it. This is a national resource, too, for when the migrant is buffeted by unemployment in the city, there is the main stem-family to which he may return for protection, so that he does not always become a burden in the community to which he had gone for work. This is why many people have called areas like rural Kentucky the national "shock-absorbers" in time of crisis.

There is at least one disadvantage in this family strength, however. When people live only among kinfolk and neighbors, they learn to judge everybody in personal terms. The question is not, "What are you?" but, "Who are you?" A man is placed, not according to his own individual characteristics, but by what is known of his family. People deal with each other in personal and intimate ways, on the basis of reward for friendly acts and punishment for unfriendly ones. This may work well in a family, or even to some extent in a neighborhood or small community. But such a practice breaks down in larger groups, where leadership is not a personal matter and depends upon impersonal qualifications. A large business or a unit of government is inefficient and wasteful if its officers lack ability, no matter how nice they are or how reputable their families. A large group must have rules and regulations to go by, not just personal obligations. It must have leaders who are trained and impartial, not just friends or kinfolk. Too many leaders of merit leave Kentucky because the value placed on able leadership is not high enough. Merit as such is not granted enough importance. The great strength of family life has this one unfortunate result; it permits people to try running businesses and governments, like families, on a basis of personal give-and-take, reward and

punishment. Leadership is a resource Kentucky must learn to use more effectively.

Homes are a resource, too. Within them are molded the characters of Kentuckians. Houses must be made dry, warm, comfortable, and attractive, but more than one-fourth (29.4 per cent) of them in Kentucky in 1940 were reported to need major repairs. Nearly one-fifth (18.2 per cent) were overcrowded in the sense that they housed more than 1.5 persons per room. Eighty-five per cent of the dwelling units of rural farm people had no electric lighting, and 96 per cent had no running water in the house. The unmet needs of three-quarters of a million homes (729 thousand dwelling units in 1940) should be viewed as three-quarters of a million incentives to action.

THE IMPORTANCE OF THE LOCAL COMMUNITY

The community is a resource that has been permitted to fall into disuse. When roads were built, communities that had been formerly separated from each other were tied into a great network, and each one by itself seemed to have less importance. Now, communities leave things to counties, counties leave them to states, states leave them to nations—and nations leave them to a League of Nations. True, the problems of unemployment and dependency in a great depression are beyond the scope of any community, but each man lives mainly in one community—at least one at a time, and progress must occur there, too. Not all problems are national in extent. When the community is operating effectively, it is the sun, rain, and soil of democracy—and there is no other place for democracy to grow. Nor will it be enough for the community to meet increasing state and national power by merely voicing irritation around the stove in its country store. In hundreds of Kentucky communities, there must be constructive action to improve the use of local resources by local effort and local leadership. The people and their leaders within the community must organize to study and plan for applying their own energy to their own problems.

RELIGIOUS RESOURCES

The long-run strength of a society depends partly upon the strength of its religion. In this, Kentucky's resources are great,



W. Brooks Hamilton

The . . . strength of a society depends . . . upon . . . its religion . . .



W. Brooks Hamilton

... in much of the state tobacco production is the leading enterprise.

but still not completely developed. There are more than five thousand churches in the Commonwealth. Over four-fifths of them are rural, having an average membership of 114 persons, or between 20 and 30 families. The city churches are more than three times that size (395 members).

Kentucky's 900 thousand church members, according to the 1936 Census of Religions Bodies, were divided among the following major religious bodies, in thousands: Baptists, 332; Roman Catholics, 192; Methodists, 141; Disciples of Christ, 92; Presbyterians, 43; Churches of Christ, 20; members of Jewish Congregations, 16; Evangelical and Reformed Churches, 13; Protestant Episcopal, 13. In 1936 Kentucky ranked fifteenth among the states in total population but twenty-second in church membership.

Although Kentucky's total population is 70 per cent rural, the church population is only 52 per cent rural. There are about 74 male members for every 100 females, and about 12 per cent of the total membership is under 13 years of age. More than four thousand churches report Sunday Schools, with over 47 thousand officers and teachers and approximately 390 thousand pupils. Between 1926 and 1936 the number of churches in Kentucky decreased almost 27 per cent and the number of church members declined about 13 per cent. Later figures are not known, but Kentuckians must not fail to see in these figures both a need and an opportunity.

From the standpoint of financial investment, persons involved, trained leadership available, and traditions of service, the churches of Kentucky have an important role to play in designing the future of the state. Although some leaders consider such matters outside the scope of the church, many churches are already deeply interested in many problems affecting the use of human resources.

ENERGY IN RESERVE

Ready for application to their other resources stands this energy of nearly three million people, one-third of them in the labor force. Lifting their incomes, increasing their knowledge, improving their health and welfare: these are the general concerns of each chapter to follow. The first resource is the land, which supports the crops, the livestock and the forests and which employs one-third of all Kentucky's workers. Its use in agriculture and forestry is the subject of the next chapter.

Chapter IV

AGRICULTURE AND FORESTRY

BY DANA G. CARD

In the days before the white man came, Kentucky was known by the Indians as the "Dark and Bloody Ground." So large was its store of fruits, nuts, wild turkey, buffalo, deer, and other game, that many tribes of Indians fought cruel wars to gain possession of the hunting ground. The fact that there were no permanent Indian towns in Kentucky when it was settled by the white man is evidence of the bitterness of the struggle. Later, white men and Indians, and the French and English, fought for this and other territory west of the Allegheny Mountains. The natural wealth of Kentucky, therefore, was recognized by all of these groups.

Some of the native fertility which made Kentucky lands desirable for the Indians and the early settlers, still remains a possession of present residents. Much has been used or lost, however, and the rest needs careful husbanding if Kentucky's future children are to share in their rightful heritage.

AGRICULTURE

"The first and most precious of all arts."

THOMAS JEFFERSON, 1800

Of the nearly three million people living in Kentucky in 1940, nearly 1.3 million lived on farms and three-quarters of a million more lived in small towns and villages. More than one-third of Kentucky's employed persons were engaged in farming. Many others were in trades or industries closely related to farming. Only seven states in the Union had a larger proportion of people living on farms. The interest of the state in the welfare of its agriculture, therefore, is beyond question.

Small Farms and Low Income Per Capita.—The well-being of farm people depends upon the productive capacity of agriculture

in relation to the number of people who look to it for support. Some of the richest agricultural land in the world is in Kentucky but also some of the poorest, when measured by its present capacity to produce a good living for those who till it. In parts of the state, population is too dense for adequate support from the available farm resources. The pressure of population upon the land results in migration from these areas and over-cropping of the cultivated land. Under such conditions farms are small and incomes are low. Means must be found to increase per capita income on these farms if Kentucky rural people are to have a higher standard of living.

In 1939, a year of slightly less than average tobacco prices, the value of products sold, traded, or used in the households of Kentucky farms was equal, per acre of all farm land, to that of the United States as a whole. In the Bluegrass area of Central Kentucky the value of products per acre was nearly twice the national average. When compared on the basis of value per person engaged in agriculture, in contrast to value per acre of land, Kentucky as a whole ranked forty-first among the states. Means are at hand, however, for increasing per capita income so that Kentucky farm people may have modern household conveniences, good roads, good schools, improved farm machinery, and the other things which go for general community betterment.

Types of Farming Differ Widely.—Geographically, Kentucky lies midway between the cotton-growing South and the grain and dairy farming of the North, and between the dominantly agricultural Midwest and the more highly industrial East. Kentucky has characteristics which resemble all of these areas. Parts of her agriculture are like that of the Corn Belt, parts are like the Cotton Belt, parts are predominantly dairy farming and in much of the state tobacco production is the leading enterprise. The eastern third of the state is characterized by the self-sufficing agriculture of the Appalachian Highlands. The agriculture of the state varies considerably, therefore, and plans for agricultural betterment must allow for these differences.

A RICH HERITAGE WAS LOST

Originally, much of Kentucky farm land was productive, even though it varied in its reserve of fertility. Most of the soils erode easily, however; so the topography, climate, farming practices, and

the nature of the soil all have accelerated erosion and leaching, which deplete soil resources.

States to the north of Kentucky also have rough topography, but their soils do not wash so quickly. Their clear streams and rivers, in contrast with the normally muddy streams of Kentucky, are proof of the difference. The contrast is due to differences in both soil and climate. Kentucky has from five to 10 inches more rainfall per year, and particularly more rainfall in winter. Central Kentucky, for example, normally has twice as much precipitation in December, January, and February as northern Ohio and eastern Wisconsin. Undoubtedly also the ground in northern states is frozen hard enough to resist erosion during most of the winter months. The number of days per year with one inch or more of snow cover averages about 30 in Kentucky but from 80 to 100 or more in northern Ohio and southern Wisconsin. With weather too cold for normal plant growth but too warm for the ground to stay frozen, much soil fertility is lost through leaching. Plant nutrients are dissolved and drained away before growing plants can take them up. Thus, the comparatively open Kentucky winters, plus relatively heavy rainfall during the winter months, are natural conditions which have sapped the soil wealth of the state. This is a condition which Kentucky farmers need to make special effort to combat.

Heavy downpours in summer also take a heavy toll of soil resources each year, especially on steep land. The propensity to erode is even worse in states farther south where annual rainfall is larger than in Kentucky and there is little or no snow cover in winter. About 84 per cent of Kentucky's tillable land slopes three per cent or more. This means that water running on the surface will fall about one foot for every 33 feet of horizontal flow. Serious erosion is likely to occur on such slopes unless cropping and engineering practices are used to prevent it. It is estimated that 30 per cent of Kentucky's tillable farm land slopes as much as 12 per cent or more.

One other feature of Kentucky agriculture is conducive to soil erosion. When land is bountiful and rich, man can satisfy his needs with less labor than when land is poor. In fact two men may live on the fruits of the labor of only one of them. So it was, and



C. N. Kavanaugh

When land is covered with . . . the close-growing crops . . . erosion is well controlled.



Courtesy Soil Conservation Service

... losses can be reduced by contour tillage ...

to some extent is, in Kentucky. The rich soils permitted landowners to farm by the use of their managerial ability, first with slave labor and later with cropper or tenant labor, but with less personal physical exertion than in areas of less bountiful resources. As a natural consequence of the usual landlord-tenant relationship the tenant became interested in getting the most for his labor, regardless of its effect upon the land. The landlord, too, received a good return on his investment and not being so closely associated with the soil, in many cases at least, was not aware of the depletion which was taking place.

The effects of many unsatisfactory farming practices now are well known and are being corrected but much of the heritage has been lost and must be rebuilt. Fortunately, Kentucky agriculture has some unique characteristics which make this possible.

REMAINING ASSETS

Climate.—Some of the permanent assets of Kentucky agriculture are the same factors which have been discussed as liabilities. Long growing seasons with only moderately high temperatures, open winters with limited snow cover, and plentiful as well as uniformly distributed rainfall, all combine to make the climate of Kentucky one of its chief agricultural assets. Harmful with careless farming practices, the climate is of inestimable value when used to advantage through good farm management.

When land is covered with vegetation, especially the close-growing crops like wheat, rye, and grass, erosion is well controlled. Good soil management, therefore, calls for keeping a major portion of the land in these crops, especially grass and clover, and only a minor portion in cultivated crops such as corn and tobacco. Most crops will not grow in bitter winter weather, but in Kentucky wheat, rye, winter oats, vetch, and bluegrass stay green much of the time. Farther north these crops do not get such a good start in the fall, and the winters are too severe for the plants to grow or for livestock to graze them. Farther south the summers are too hot for the pasture and hay crops which prefer cool weather. Livestock parasites also are more prevalent farther south. Thus, Kentucky is just far enough north to have good pastures and healthy livestock, when they are given proper care, and far enough south to have long growing seasons and sufficiently mild winters with

enough rainfall for cover crop and pasture growth. This location, resulting in Kentucky's climate, is one of its chief agricultural resources. Coupled with climate, is the fact that Kentucky soils respond promptly to good treatment.

Needs of the Soil Can Be Met.—Results of experimentation and practical farm experience show clearly that unproductive soils can be made productive at comparatively small cost by use of lime and phosphate and the proper use of legumes and manure.

The fundamental needs of most Kentucky farm land are humus for tilth, lime to correct acidity, and the important plant nutrients of nitrogen, phosphorus, and potash. The feeding of crops to animals on the same farm, and the careful saving of manure, returns to the land a large part of the minerals removed by the growing of crops. It is estimated that animals excrete about three-fourths of the nitrogen and phosphorus, nine-tenths of the potash, and one-fourth of the organic matter which is in the feed they consume, so conservation of manure is extremely important. Nutrients not so conserved must be replaced by other means.

Humus is the organic matter which nature adds to the soil in a number of ways. In forest areas decaying leaves and fallen trees are the chief sources. In cultivated land humus must come from animal or vegetable matter such as the roots and stubble of harvested crops, the straw and stalks of grain applied either directly or after being used as bedding for livestock, and manure as a by-product of livestock enterprises. The careful conservation of crop residues is an important need in Kentucky agriculture. Severe deficiencies in organic matter may be relieved by the growing of sweet clover, cowpeas, or other crops to be turned under. The long growing season in Kentucky adds to the feasibility of this method.

It may seem strange that a state which is world renowned for limestone caverns should have farm lands deficient in lime or calcium, yet such is the case. For maximum productivity most Kentucky land needs the addition of calcium and other minerals. Fortunately the quarrying and crushing of limestone for agricultural use are not too costly and there are few areas in the state where limestone is not readily available.

Nitrogen, phosphorus, and potassium also are more easily obtained in Kentucky than in many other sections of the country.

Nitrogen is generally available from both the artificial fixation of atmospheric nitrogen and from natural fixation through the growth of legumes. The former method developed rapidly during World War II as a part of the production of munitions. This source promises to make nitrogenous fertilizer cheaper and to provide it in quantities for extensive use. Much of its potential manufacture lies in the hydro-electric plants of Tennessee, within easy shipping distance of Kentucky farms. The other important means of adding nitrogen to the soil is through the use of legumes. These plants, by bacterial action, take nitrogen from the air and store it in their stems and roots. It then becomes available to other crops, either directly or as manure from animals to which legumes are fed. To obtain adequate growth of legumes on much of the land in Kentucky, lime and phosphate must be applied.

Phosphorus is insufficient in most soils outside of the Bluegrass area and even in some places in the Bluegrass. In fact, the chief superiority of Bluegrass soils is in their content of calcium and phosphorus. Where lacking, these elements may be supplied by liming materials and phosphatic fertilizers. At present the chief sources of phosphatic fertilizers are in Tennessee and Florida which are easily accessible to Kentucky farmers.

In general, Kentucky soils have a high content of potash but deficiencies need to be avoided through the saving of manure and crop residues for return to the land. When potash must be purchased, Kentucky is as favorably situated with reference to areas of production as most other sections of the United States.

Mechanical Means of Erosion Control.—Several mechanical means of preventing further soil losses are available to Kentucky farmers. Heaviest losses from both leaching and erosion occur when land is in tilled crops such as corn and tobacco. These losses can be reduced by contour tillage, that is, planting rows around the hill so they run approximately on the level. Strip farming can be followed to avoid long slopes of cultivated land. Frequently, also, terraces need to be built to hold and carry surface water away slowly so it will not cause erosion. Fields particularly subject to erosion can be used in long rotations with several years in hay and pasture between cultivated crops. Land which is more level, on the other hand, can be cultivated frequently.

Few farms and fields have been laid out to take advantage of these conservation measures. Rearrangement of fields and the building of new fences, of terraces, and of sod waterways frequently are necessary but they result in better crop yields and the conservation of soil fertility.

The opportunity to maintain and build up the productivity of Kentucky farm land is almost unlimited. Improvements are possible throughout the state but the means of improvement apply in varying degree to different sections.

CROPS ON KENTUCKY FARMS

About half of the cash income received by Kentucky farmers comes from the sale of crops and half from the sale of livestock and livestock products. Much feed is home-grown, so the sale of livestock also is an important way of marketing crops. In 1942, for example, nearly half of the 13 million tillable acres in Kentucky was devoted to pasture and about 38 per cent to corn, other feed grains, and hay. Less than 10 per cent of the tillable land was used to grow those crops which account for about half of the farmers' total cash income.

Tobacco.—The important position that tobacco holds in Kentucky agriculture is due, in part, to its high labor requirement and high income per acre. A favorable climate and the ability to withstand temporary adverse weather conditions also are fundamental considerations. Tobacco requires only a small cultivated acreage per farm, leaving other land to be used for hay and pasture. If erosion and the leaching of soil fertility are to be controlled, the area of plowed and cultivated land must be kept at a minimum. Then, too, a heavy bluegrass sod, when plowed under, provides ideal soil conditions for the growth of burley tobacco. Were it not for tobacco, farming in Kentucky would be vastly different.

Burley is by far the most important type of tobacco grown in Kentucky, accounting for nearly 85 per cent of the state's total production of tobacco in 1943. The proportion was less than 50 per cent in 1919. This change results from both increased burley production and decreased production of other types. Twenty years ago about 215 million pounds of burley were produced in Kentucky each year; in 1943 there were nearly 270 million pounds. Production of the fire-cured tobaccos, however, declined from over

116 million pounds per year in the early 1920's to only 28 million pounds in 1943. Dark air-cured types declined during the same period from nearly 80 million to about 25 million pounds. Loss of market outlets for dark tobacco has been the most severe economic change ever to face Kentucky agriculture. Farmers of Western Kentucky are not yet completely adjusted to this loss.

Production of dark tobacco in other countries has increased and world-wide shifts in demand have been toward lighter, milder types. A large share of Kentucky dark tobacco goes to foreign outlets, but just before the outbreak of World War II, exports were about half as large as they had been fifteen years earlier. Domestic use of fire-cured tobacco remained relatively constant during that period, but that of dark air-cured tobacco declined about one-third. It seems unlikely that foreign markets will be regained permanently, and if the trend in demand toward lighter, milder smoking tobacco continues, Western Kentucky farmers will need to keep up their search for more profitable farm enterprises.

Producers of burley tobacco have been more favored than growers of dark tobacco. By growing plants closer together and by developing new strains of burley, they have changed the character of their tobacco so it can be used largely for cigarettes and pipe smoking rather than for scrap chewing and plug, as before. This has encouraged growers to shift from dark tobacco to burley; but in the fire-cured tobacco districts particularly, the possibility of shifting from one type to the other is limited. Some parts of the state which formerly produced dark air-cured tobacco, however, have shifted completely to burley.

The dependence of Kentucky agriculture upon burley tobacco requires that wisdom and forethought be used in preserving and further developing the enterprise. The future of burley tobacco now seems secure, but over long periods of time no product is indispensable. The customs and whims of consumer preference are powers in the marketplace. For forty years the price of burley tobacco has risen in relation to prices of other farm products. This cannot go on indefinitely. It does not seem likely that any substitute will take the place of burley tobacco in the taste of consumers, but neither is it probable that the favored position of burley can continue unless production and consumption are kept in balance at

prices which will not encourage undue competition from other producing areas and other products.

Corn.—In acreage, corn is the most important crop harvested on Kentucky farms. It occupies five to ten times the area used by tobacco and one-fourth more than that of hay. Land in pasture, of course, greatly exceeds the acreage of corn. Cash income directly from corn is little more than one-twentieth of that from tobacco because most corn is fed to livestock on Kentucky farms. The total farm value of corn, however, equals or exceeds that of tobacco.

More corn is needed to maintain Kentucky's livestock enterprises than can be grown safely within the state. Forward-looking plans for agriculture, therefore, call for the largest possible acreage of corn, consistent with erosion control and the maintenance of soil fertility, and for the largest yields economically possible on that acreage. The growing of this cultivated crop contributes much to the loss of soil fertility through erosion. It is on Kentucky's large corn acreage that the greatest care is needed to plow and cultivate with the contour, terrace where necessary, and particularly to sow winter cover crops in time for them to become well established before cold weather. Greater use of terraces and contour cultivation and the growing of hybrid corn are possible means of increasing corn production in Kentucky.

Hay and Pasture.—Probably no area of similar size is so widely known for its good pastures as the Bluegrass area of Kentucky. The mineral content of the soil is favorable to grass, and the type of farming carried on has used and preserved the pastures. The race horse industry, centered in the Bluegrass, has done much to publicize the area. In other sections of the state, however, good pastures are the exception rather than the rule. With nearly half of all tillable land in pasture there is an important challenge for Kentucky farmers to increase their income from this source. Perhaps in no field of agricultural production is there greater opportunity.

Through winter pasture, too, Kentucky farmers can expand or improve livestock production. Small grains and legumes planted early in the fall on land where corn, tobacco, soybeans, or vegetables are grown, furnish succulent feed in late fall and early spring, as

well as protection for the soil in winter. Balbo rye, a crop introduced from Italy, is proving especially valuable for this purpose. In many instances small-grain pastures in winter have proved even more productive per acre than grass pastures during the normal growing season.

Korean lespedeza is the leading hay crop in Kentucky, and provides about one-third of all hay harvested. Twenty-five years ago it was hardly known here, but its production has tripled since 1931. Although a boon to Kentucky farmers, lespedeza has increased the loss of soil fertility through leaching. It dies quickly with frost and leaves the ground comparatively unprotected in winter. Many farmers, therefore, find it necessary to seed cover crops after lespedeza as well as after corn and tobacco. This increases the possible small-grain winter pasture acreage by another half million acres.

In some parts of Kentucky alfalfa has become an important hay crop. It can be grown more widely if soils are given suitable treatment. The large tonnage of hay it produces makes a heavy drain upon soil nutrients that is not immediately apparent. Where alfalfa can be grown successfully, however, the production of hay per acre in Kentucky can be increased substantially.

Small Grains.—Wheat is the leading small grain grown in Kentucky, followed in importance by barley, oats, and rye. On some farms wheat is grown for sale, but it probably never will be an important source of cash income in this state. The production of small grains is in part a matter of crop rotation because they form an intermediate crop between corn or tobacco and the hay crops which follow.

Barley is suitable to some of the richer land in the state and is a valuable feed to supplement the supply of corn. The production of barley is somewhat uncertain, however, and its extensive growth will depend upon renewed soil fertility. Even though oats are grown fairly generally over the state, they are essentially a cool-climate crop and do not yield particularly well in Kentucky.

Rye now appears to hold the spotlight in small grain production for this state. Its chief use probably will continue to be that of winter cover-crop pasture, but the production of both grain and seed holds possibilities. The Balbo variety is well adapted to Kentucky conditions because of its ability to grow in winter.

Fruits and Vegetables.—A few areas of commercial production of vegetables are located near the larger cities of Louisville and Cincinnati. Apples and peaches are produced near Henderson, Paducah, and Louisville. The growing of strawberries is centered largely in the Purchase area near Paducah and in the Bowling Green-Franklin area in southern Kentucky. Smaller areas of strawberry production have developed elsewhere. The commercial growing of early Irish potatoes has long been an important enterprise near Louisville, and more recently production in southeastern Kentucky has been expanding.

Central Kentucky is not particularly well adapted to vegetable or fruit production, but there probably could be more of these crops in Eastern Kentucky and along the Ohio River. Strawberries, perhaps, are the most promising fruit crop for further development in this state. Western Kentucky is well adapted to their production and they are intensive in their labor requirements, thus forming a substitute for tobacco in this respect. There are important competing sections in Arkansas and Missouri, but with the development of quick freezing and other methods of preserving strawberries, the danger of market gluts and disastrously low prices is reduced considerably.

Seed Crops.—The science of plant breeding has done much to develop high-yielding and disease-resistant strains of various field crops. This offers opportunities for individual farmers to specialize in the production and sale of seeds. The change in character of burley tobacco led a number of growers to sell seed of improved strains. The growing of hybrid corn seed is a process which requires specialization. It is not practicable for farmers to grow their own hybrid seed. Clovers adapted to Kentucky yield better than other clovers, so the growing of adapted clover seed could be expanded.

Kentucky bluegrass is used in many sections of the country for lawns and pastures. Formerly the seed was grown chiefly in this state but gradually production moved to other states until now Minnesota leads in the production of Kentucky bluegrass seed. Kentucky, which once produced more than three-fourths of the seed for the grass that bears its name, now does not produce much over one-eighth of the total commercial crop. Orchard grass has

grown in popularity in recent years and its use may expand. Kentucky is one of the four states that lead in producing orchard grass seed. Opportunities in this line are limited but they well may be retained for Kentuckians who already are established in seed production.

More winter cover crops are greatly needed in Kentucky. If all the land which needs winter cover crops were seeded to Balbo rye, the production of this seed alone would be a large enterprise. Crops entirely new to the state may be developed from time to time. Seed production in the early stages of development often is highly profitable and may add much to farm income.

KENTUCKY AS A LIVESTOCK STATE

The growing of legumes, followed by grass and other crops, leads naturally to the raising of sheep, beef cattle, and dairy cattle, those classes of livestock which use hay and pasture to advantage. Soil improvement and crop production are basic to the raising of livestock, but the care and management of livestock also are essential for the economic maintenance of soil fertility and crop production.

The opportunity for profit from livestock lies in economic and efficient feeding, breeding, and care of animals. Losses from disease, malnutrition, and inadequate care often are large. The greatest need in Kentucky is for increased production per head, per unit of feed, and per hour of labor devoted to livestock, rather than the expansion of livestock numbers. Better feeding, better housing, and better breeding along with sanitation and other steps to control animal diseases, all are means of increasing the production of livestock and their products.

Designs for a successful agriculture must consider not only wise use of the land but also of the labor of people who live thereon. It was pointed out in a previous chapter that Kentucky's rural areas are thickly populated and that most of her people depend upon agriculture for a living. The amount of productive work available per acre, therefore, is an important factor in human welfare. The grazing of livestock requires relatively little labor per acre. Tobacco, on the other hand, requires large amounts of labor per acre. Kentucky land needs livestock, and Kentucky people need more productive work per acre than most classes of

livestock provide. With tobacco as an important crop on relatively few acres, Kentucky farmers are able to devote a large part of their land to extensive livestock and crop production and still furnish profitable employment to a large farm population.

Sheep and Lambs.—In Central Kentucky sheep and lambs fit admirably into the type of farming which includes burley tobacco and long crop rotations with land in pasture for several years. While both lambs and wool are sources of income, approximately 80 per cent of the income from sheep in Kentucky comes from the sale of lambs. Kentucky spring lambs are generally recognized on the market as being of high quality and they frequently sell at a premium. This is a reputation which Kentucky sheepmen should strive to maintain. Wool from Kentucky sheep is relatively clean and of low oil content, a fact that is reflected in market prices.

The state is admirably suited to the production of spring lambs, because its climate permits early lambing without excessive loss and because succulent pasture can be provided in late winter and early spring by the growing of small-grain pastures. Moreover, tobacco barns in the burley district usually are free of tobacco at lambing time, when sheep most need shelter. Under good management, the heaviest demand of sheep upon pasture coincides with the spring and fall growth of bluegrass. For these reasons, sheep have been the most consistently profitable livestock enterprise on farms, at least in Central Kentucky, for the past thirty years. They appear likely to continue to be an important class of livestock in the state.

One of the chief handicaps to successful spring lamb production in Kentucky has been the serious loss from internal parasites. Good flock management, including the use of phenothiazine, can eliminate most of such losses, but they are a constant threat. Kentucky farmers have found that it is both easier to control parasites and more economical, to buy strong crossbred western ewes than to raise their own replacements. These ewes are mated with purebred rams to produce a blocky, quick-maturing lamb. The raising of ewes in the West is only an indirect responsibility of Kentucky growers, but the purebred rams can be raised by those Kentucky farmers who wish to specialize in that line rather than in the production of market lambs. A reasonable control of dogs always is essential to successful sheep production.

Beef Cattle.—Kentucky long has been a factor in beef production in the United States. Early settlers drove cattle overland to the eastern markets soon after agricultural production became established in the area. One of the first railroad shipments of livestock on record was made when fat steers were shipped from Lexington, Kentucky, to New York City, in 1852. Henry Clay, too, was one of the first Americans to attempt to improve beef production by importing purebred Herefords, in 1817, for use on his estate near Lexington.

Receipts from the sale of cattle and calves now make up about 12 per cent of the cash income received by Kentucky farmers. Cattle are more evenly distributed throughout the state than are sheep and lambs, but they vary in type. There are a few areas, particularly near distilleries and in the surplus grain producing areas, where cattle are fed without much grazing. In the rougher areas, particularly in Eastern Kentucky, cattle are sold as feeders rather than for slaughter; but Kentucky's cattle industry is and should be mainly one which produces grass-fed cattle and fat calves for market, and purebred cattle for breeding herds.

Kentucky is less favored in the production of beef than in lambs, because grass-fed cattle do not command as high prices as those fed on grain. The difference in price is due, in part, to discrimination by packers against yellow fat in beef, which may result from grass feeding. Experiments show that grain-fed and grass-fed beef, of comparable finish, are equally tender and palatable, and that grass feeding may even double the vitamin A content. A more favored position for the beef cattle industry in the state may need to await a general understanding of these findings.

Much fame has come from the speed of Kentucky-bred horses on the race track. While breeding is fundamental, no small part of the success results from the nutritious grass and forage grown on the rich phosphatic soils of the Bluegrass region. The mineral content of the soil that is responsible for the winning of horse races, could also be responsible for the winning of prizes in the show ring by other classes of livestock and for high prices in the market place. The raising and racing of horses has been financed largely by people of means who were not dependent upon economic returns from the enterprise. Some of the richest land in the state has been purchased for horse farms. If similiar sup-

port is given to the breeding of cattle, sheep, and dairy cows, Kentucky may prove to be the seed-bed for prize winning livestock of all classes.

Dairying.—Commercial production of dairy products in Kentucky is a more recent development than that of beef or sheep, yet the number of dairy cows has increased rather steadily for more than fifty years. Prospects for future development are bright, if farmers follow soil-conserving practices and make maximum use of their opportunities in pasture improvement. Among the requirements for successful dairying are, refrigeration for cooling milk, an ample supply of water, sufficient labor, available feed grains, and adequate pasture. Some areas in Kentucky lack one or more of these requirements. With cheap electric power becoming widely available in rural areas, however, refrigeration can be obtained. Electricity also furnishes a means of pumping water if a source of supply can be located. Much has been learned about the construction and maintenance of ponds as sources of water, and deep wells may become more numerous with the availability of electric power.

The longer growing season and mild winters in Kentucky offer some advantages to dairymen in their competition with producers in northern states. The usual lack of adequate pasture growth in late summer and early fall, on the other hand, is one of the handicaps to Kentucky dairymen. A pasture crop for late summer growth is needed even though lespedeza and alfalfa are reasonably satisfactory in that respect.

Except for poultry raising, dairying is the most intensive livestock enterprise available to Kentucky farmers. Although most of the farm laborers in the state are not experienced dairy workers, many of them could learn the necessary skills. A reasonably large acreage is needed in each farm unit to provide sufficient pasture and forage for a herd of cows. In some parts of the state the small size of farms handicaps dairy development, and a gradual combination of farms into larger units probably must accompany increases in dairying. This is a slow process.

Poultry.—Nearly every Kentucky farm does and should have poultry, but relatively few farmers have large commercial flocks. Commercial egg production on a large scale requires special markets for the eggs produced, ample supplies of feed grain in the

area, or abundant labor in proportion to the land available for farming. Few Kentucky farmers have either good markets or abundant feed supplies, but most of them, in normal times, have adequate labor. Despite these conditions which are not entirely favorable for egg production in the state, from six to ten per cent of Kentucky's cash farm income comes from the sale of poultry and eggs. This amount could be increased by better feeding and care of the birds, better care of the eggs, and by improved marketing practices.

The growing of turkeys has become an important enterprise, and in 1943 the value of turkeys produced in the state totaled over one million dollars. Possibilities for further development are limited, but the increased popularity of turkey meat and the scientific knowledge which can be applied to control turkey diseases are favorable factors.

Hogs.—In the middle of the nineteenth century, Cincinnati was the leading pork-packing center in the United States, and Kentucky was an important hog producing state. Competition in pork production developed in the Corn Belt, however, and Kentucky agriculture found itself better adapted to the production of other farm products. Hog raising still is important in some of the river bottoms, and in the heavier corn producing areas where swine producers can compete successfully with farmers in the Corn Belt. Feeder pigs, and light hogs sold for the production of cholera serum, make up a large part of the hog sales from some other areas. These practices doubtless will continue, but on the whole other classes of livestock appear to offer better opportunities for most Kentucky farmers than do market hogs. The production of pork for home use, of course, should be a vital part of individual farm plans.

OTHER CHARACTERISTICS OF KENTUCKY AGRICULTURE

Tenancy Predominates.—About one-third of Kentucky's farms, as recorded by the United States Census, are operated by tenants. Many of the tenants are essentially hired laborers whose wages are determined by the value of the crop they produce. This method of employment makes the tenant-employee carry part of the risk of financial returns from the crop and at the same time gives him an incentive to produce as good a crop as possible. It provides for a division of effort between labor on the one hand, and

capital and management, on the other. There is nothing that is necessarily detrimental to agriculture in this system; but as it has operated, some of its effects have been undesirable.

Most landlord-tenant agreements are made for the period of one year so the question of renewal arises annually. If agreements are not renewed, tenants must make arrangements with other landlords. It is estimated that about one tenant out of three moves each year. Contract arrangements tend to be so fixed that a tenant who wishes to get ahead usually must move to a farm with better land or better housing facilities, or to a landlord who offers a better trade. Frequent moves are expensive and are not conducive to the development of satisfactory home life or to active participation in educational, religious, and other community organizations. Tenant families, therefore, may not become a real part of the community in which they live.

If a tenant prospers and gets a little money ahead there is not much opportunity for him to invest small amounts in the farming business. He has little incentive to buy stock and tools unless the landlord will give him a better trade on that account. He cannot afford to invest in better housing which he may have to move away and leave. Savings, therefore, must go into the bank and await sufficient accumulation to permit the buying of a farm or the making of some other income-producing investment.

The effect of tenancy upon soil fertility was pointed out earlier in this chapter. Similar results occur with respect to dwellings, farm buildings, tools, and equipment. A worker who has no feeling of permanency in his job will make no special effort to avoid wear and tear on property which is his to use for only a year. It is not surprising, therefore, that many tenants develop the philosophy of getting what they can "while the getting is good." It is true also that many tenants lack ambition, thrift, and even honesty to such an extent that satisfactory working relations with them are difficult to maintain.

Tenure problems are fundamental and are not easily solved. There is room for improvement, however, in conditions which exist in Kentucky today. The Kentucky State Tenancy Commission, in 1942, made specific recommendation for improvement. Among other things, it recommended the clarification of laws relating to landlord-tenant relations, the drafting of a model contract to be

incorporated in law, more general use of long-term rental agreements, programs for improving the housing conditions and health of farm people, and the expansion of educational programs designed to bring about improvement in all aspects of the tenure system. The improvement of landlord-tenant relationships would do much to increase agricultural income, to raise the standard of living of farm families, and to conserve land resources in Kentucky.

Better Marketing and Distribution Are Needed.—Much of the agricultural production in Kentucky is for home use or for local markets. Tobacco and livestock make up a large share of sales from farms, and reasonably adequate markets for these products have been developed. Organized systems are needed for the assembling, grading, transporting, and selling of small quantities of products such as eggs, dairy products, fruits, and vegetables. Improved local highways, more available market news and grading services, and the development of local freezing and dehydrating plants would aid in better marketing. The organization of farmer co-operative associations for the purchase of various farm supplies and the sale of several kinds of farm products also may be feasible. The satisfactory sale of products which are not major items of farm production, however, is a goal that is difficult to achieve.

Research and Education a Continuous Need.—Knowledge has led to good soil management practices, improved varieties of crops, better animal feeding and breeding, control of plant and animal diseases, farm organization for the profitable combination of farm enterprises, improved methods for marketing farm products, and to machines which make farm operation more efficient and productive. Such knowledge is the product of research and education. Improvement is continuous, but only because of the search for better ways of doing things.

A new and better strain of tobacco can increase farm income by many times the cost of the research through which it was developed. Knowledge obtained through research can save farmers thousands of dollars annually in the buying of farm supplies and in the selling of farm products. The large rural population in Kentucky means that farm labor normally is relatively abundant. Ways of making such labor more productive and efficient are worthy objectives of research.

The results of research usually do not come suddenly and may not be outstanding. They develop gradually and are cumulative. For the continued improvement of Kentucky agriculture, therefore, it is essential that an adequate program of agricultural research and education be maintained for the study of problems most vital to the agriculture of the state.

FORESTRY

"He that planteth a tree is the servant of God,
He provideth a kindness for many generations,
And faces that he hath not seen shall bless him."

HENRY VAN DYKE

In pioneer days most of Kentucky was covered with forests which furnished the early settlers with food, fuel, and shelter. Before farm crops could be grown, trees had to be cut and the land cleared. One of the most arduous tasks for the pioneer was that of getting rid of the trees, many of which were piled and burned. As the years passed, however, timber products became of commercial value and were harvested for sale as well as to clear the land for cultivation. Today the wooded area of the state is about one-third as large as when Daniel Boone first found his way through Cumberland Gap, but it is one of Kentucky's important natural resources.

FOREST VALUES

The most tangible of forest values is that derived from the sale and home use of timber products such as lumber, poles, and firewood. Forests have important unseen values, too. They help to maintain underground water supplies, to conserve the soil, and to control floods by slowing down the runoff of rains. Then, too, wooded areas and streams provide for recreation through camping, hunting, fishing, and scenic beauty. The use or sale of forest products results in private income, but the other forest values accrue to society in greater proportion than to the individual landowner.

Of the roughly nine million acres of wooded land in Kentucky, probably more than 90 per cent is in private ownership, the rest being owned by national or state governments. More than half of the privately owned woodland is in farms and the remaining portion is owned by corporations or other private owners. Cor-



W. Brooks Hamilton

... the heaviest demand of sheep upon pasture coincides with the spring and fall growth of bluegrass.



Kentucky long has been a factor in beef production

W. Brooks Hamilton

porate ownership is particularly important in Eastern Kentucky where companies are interested in coal, which underlies the surface, as well as in the standing timber. Nearly half of Kentucky's forest area is in 33 counties at the extreme eastern end of the state, where 60 per cent of the land is primarily woodland.

Timber Products.—Products sold from Kentucky woodlands include lumber, pulpwood, railroad ties, mine timbers, and telephone poles. Veneer for baskets, boxes, and furniture; staves for both tight and slack cooperage; and tobacco sticks, are among the uses to which Kentucky timber is put. In addition to cash income from the sale of products, farm woodlands also furnish fence posts, firewood, and lumber for use on the farm. The value of all of these products to Kentucky probably is over 15 million dollars per year, but could be much greater if the woods were managed properly.

The length of time required for a tree to grow to its stage of greatest value discourages individuals from giving their woodlands special care with the hope of gaining financial returns within their lifetime. Private ownership, therefore, has given emphasis to immediate returns rather than to the longer term values. More frequent harvesting of only the mature trees, on the other hand, permits individuals to receive current income from growing timber and at the same time encourages more rapid growth of standing trees. When handled in this way, timber may be viewed as a crop and thus receive greater attention from the landowner. This long-range view of forest management is applied more easily to land under public ownership.

Conservation of Soil and Water.—Just as grass and other close-growing crops prevent soil erosion, so does adequate forest cover. In Eastern Kentucky the clearing of land frequently is carried so far that hillsides which should be left in trees are cleared for the growing of crops. Topsoil and even subsoil soon wash away from these fields, and land of little value is left. The soil, stones, and litter carried down the steep slopes sometimes cover up parts of the rich bottomlands below, making them unproductive also. Such litter may stop up natural drains and cause the flooding of lowlands and the destruction of crops. Good bottomland is at a great premium in Eastern Kentucky, and any impairment of its productivity is a serious loss.

The danger of flood damage farther downstream on the Kentucky, Cumberland, and Ohio rivers would be reduced if there were more trees on the hills from which the water flows. Rain falling on bare land runs off quickly. On the other hand, rain falling on wooded areas runs off much more slowly or is caught by leaves, moss, and undergrowth until it gradually penetrates the ground, is stored there, and finds its way to the streams and rivers in a more orderly fashion. "In the woods it rains twice," are the words of an old German proverb. Louisville and Paducah, as well as other cities along the Ohio River, have spent large sums of money in building flood walls to keep the river from their doors. Forests on the hillsides upstream would help reduce the need of such flood walls.

The movement of water under the surface of the earth is not so easily seen and understood as that on the surface but it is of great economic importance. Engineers have learned a good deal about the "water table" or the level at which water may be found. They know that in some areas the water table has fallen progressively lower until there is grave danger of water shortage. Industrial areas frequently make heavy drains on the underground supply of water by the use of deep wells. Louisville, even though located on the bank of the Ohio River, is finding its water table receding farther into the earth. The full effect that forests have upon the underground water supply is not known, but is being studied. It is certain, however, that they have the definite effect of conserving this natural resource in areas near the forests.

Recreation.—Recreational values of wooded areas never have been appreciated fully in Kentucky. The predominantly rural character of the state probably accounts for this, yet the frequency with which Kentucky people will drive long distances for camping, fishing, swimming, hunting, and for picnics, attests to their desire for recreation in natural surroundings. The value to society of adequate wooded recreational areas was forcefully expressed by William Wordsworth when he wrote,

"One impulse from a vernal wood
May teach you more of man,
Of moral evil and of good,
Than all the sages can."

Recreational use of woodland can be coupled with the production of timber products for sale by the development of municipal, state, or national forests, or by private landowners. Suitable locations within driving distances of the larger towns and cities have proved popular even when a fee is charged for their use. In Europe community owned forests are common but in this country not many have been developed.

More out-of-state tourists might also be attracted to Kentucky if adequate facilities were provided for them. The coming of tourists would make opportunity for Kentuckians to increase their incomes by rendering such services as the guiding of hunting parties, the serving of meals, and the renting of boats or cottages. Roadside parks, which are almost non-existent in Kentucky, could constitute state, county, or local enterprises that would be greatly appreciated by tourists and visitors.

DEPLETION OF FOREST RESOURCES

The development of agriculture has reduced Kentucky's forested area by two-thirds, but forest cutting practices have reduced both the quality and quantity of growing timber on the land which remains in woods. In cutting, no thought was given to the need of providing for the re-establishment of the forest. Sound, large trees and those of the more valuable species were cut, leaving defective large trees and those of the less desirable species. Instead of the magnificent stands of yellow poplar, oak, chestnut, ash, black walnut, pine, and hemlock, which made up the original forests, there was left a stand predominantly of less useful species such as beech and elm, with weed species like persimmon and sassafras. The seemingly inexhaustible supply of trees, which greeted the pioneer, aroused no desire in his mind for ways of conserving the forests. The philosophy of clearing away the trees to obtain agricultural land became so entrenched that it still is difficult for people to realize what the exhaustion of our timber supply might mean, and for them to develop means of preventing it.

Lack of protection against fire and the grazing of livestock also have contributed greatly to the depletion of Kentucky forests. Ways must be found of correcting these practices if Kentucky is to benefit as she should from her forest resources.

FORWARD STEPS IN KENTUCKY FORESTRY

The reduction of losses from fire, from grazing, and from wasteful cutting practices are the first steps toward better forestry. Thinning, pruning, and other cultural work in good forest management should follow.

Protection from Fire.—Adequate fire protection perhaps is the greatest forest need in Kentucky. It is estimated that in recent years fire has burned over about one twenty-fifth of Kentucky's woodland each year. Such a rate of loss would far exceed production if fires were evenly distributed over forested areas. Some areas burn more frequently than others because of particular fire hazards, but all are subject to loss from this arch enemy of growing timber.

Fire protection in Kentucky is complicated by the large proportion of woodland in private ownership. It is a problem of vital importance, however, to both private landholders and to the citizens of the State in general. Perhaps full appreciation of the problem would result in some form of co-operative fire protection and insurance of forest lands. On the other hand, perhaps the State should assume fire protection for all forest land and provide reimbursement for losses, such as is done in some cases for sheep killed by dogs. A special tax on forest land might support such a program. This would be the equivalent of state insurance. One of Kentucky's present laws is designed to encourage the co-operation of private owners with the State in forest fire control. Public or co-operative action is necessary if fire protection is to be effective, because the average forest owner, like the owner of a dwelling, is neither equipped nor does he know how to combat a fire once it really gets started.

Publicly owned woodland can be protected from fire by care on the part of hunters, campers, and others to see that fires are not started, and by public forest-fire-fighting agencies. In large tracts these involve watchtowers, fire equipment, road maintenance, and other services. With a third of the land in woods, Kentucky has a distinct obligation for fire protection. It is probable that many areas in the state can be protected and developed only through public ownership.

Protection from Livestock.—Greater knowledge of forest values will reduce forest losses from the grazing of livestock. The restocking of forest areas is impossible if animals are allowed to feed upon young trees or if hogs root up the ground where seedlings are starting. Fencing, therefore, is needed. Improved farm pastures would not only furnish better feed for the livestock but would provide for increased returns from the woodlands as well.

Better Forest Management.—The correction of wasteful and exploitive forest management is partly educational and partly economic. This is especially true for land in private hands. Greater immediate returns can be obtained by selling all merchantable timber from a tract at one time without regard to future cutting. The limited business life of an individual encouraged this wasteful practice when new sources of timber were readily available. Now that mature forests are more limited, it is becoming more common to treat timber as a growing crop which can be harvested periodically by selective cutting at not too long intervals. It is essential that private owners develop this point of view and that they follow good management practices as a result. The problem seems much the same whether land is owned by individuals or corporations, because most of the latter also have been interested in immediate returns.

Many landowners probably do not realize the opportunity for cutting and marketing some trees every five or ten years and so having an increased income from their forests. Forest authorities estimate that under good management the present forest area of the state eventually could yield annually as much lumber as was cut at the peak of Kentucky's lumber production of the past. If this is true, educational programs designed to acquaint forest owners with good forest procedure are vital to the state's welfare.

For land under public ownership it is easier to adopt long-range forest management programs that are not aimed at immediate returns. Fire protection can be maintained more economically, too, if the land is held in large blocks. Large areas where little if any land is suitable for crop production, even when cleared, are adapted to the establishment of publicly owned forests and to appropriate systems of fire protection and logging operations. The topography of Eastern Kentucky places a handicap on the development of publicly owned forests. Numerous ridges

with valleys between them result in many small areas of bottom-land which are good for farming. Farms are laid out and homes are built in the comparatively isolated valleys. As population increases under these conditions new farms are carved out on the hillsides and up the branches until much land is brought into cultivation which, from a social point of view, should have stayed in forest. Such communities are not easily replaced by public or large private forests, so community life continues, forests are depleted, and standards of living are low unless other sources of income are developed.

Some of the people now living in mountain communities could be employed in the maintenance and operation of state or national forests. Fire protection as well as logging and milling operations would be needed. Many people, however, would have to leave the territories if large state or national forests were developed.

Local Forest Enterprises.—The development of wood-using industries near forest areas is one possible means of furnishing profitable employment to Kentucky people. Lumber is heavy and expensive to ship, but when it is put into finished form much weight is eliminated. The economic advantage of manufacture near the point of production may be offset by higher freight rates on finished products but the available supply of labor in Kentucky's forested areas suggests that an industrial opportunity exists in local wood-using plants. Handicrafts of various types are practiced by many Kentuckians, but these could be developed further as a way of using Kentucky's forest resources. Local industries also might utilize low-grade trees and other products which now are used for fuel or not at all.

Continued Research.—Research is needed in forest development in order that more may be known about rates of growth, species of trees most productive in Kentucky, economical forest management, and market outlets. Application of the science of plant breeding to timber production has only begun. It is possible, for example, that tree hybrids can be developed which will be of special value for specific uses. New uses of timber in laminated and chemically treated products also are being studied. Their particular application to Kentucky forests needs consideration. The University of Kentucky has investigations under way which will

contribute much needed information on forestry, but further and continued research is essential.

IN CONCLUSION

The principal problem confronting Kentucky agriculture is the low income of people who are engaged in farming. Low income is due, in part, to the pressure of population upon the land resource and the resulting small acreage of crop land per farm and per capita of farm population. In part, also, it is due to the loss of natural soil fertility, through soil erosion and leaching, which prevents maximum production from crops and livestock. Inadequate farm water supplies and the lack of available markets also play their part. Wasteful forest management has depleted the once great timber wealth of the State. It is only through careful husbanding of the remaining resources and adding to them that a prosperous future for agriculture can be assured. This can be done.

The first and most important step is the prevention of further losses of Kentucky soil. Among the practices found most effective are: a maximum acreage in hay and pasture; contour cultivation and terracing of moderately sloping land; long rotations involving a minimum number of years under the plow for steeper lands; strip cropping and sodded waterways for long slopes; diversion ditches where needed; and winter cover crops following all cultivated crops and annual legumes except on land which overflows.

Coupled with this program must go one of proper fertilizing and seeding practices and the growing of livestock. The nature of soils, of climate, and of topography in Kentucky demands a careful balance between kinds and amount of both crop and livestock production, if soil fertility is to be maintained. A grass-livestock-tobacco economy, in which enough feed to nearly furnish livestock needs is produced, is better suited than any other type of farming to permanent use of Kentucky soils.

Sheep, dairy cattle, and beef cattle are best able to make good use of the pasture and forage crops suited to Kentucky conditions. The opportunities for successful commercial production of poultry and hogs are less general throughout the state, but their production for home and local use is essential. The development

of breeding herds or flocks of all classes of livestock holds possibilities for persons equipped by nature and facilities to establish them. The Bluegrass State well may strive for renown as the home of fine Herefords, Angus, Jerseys, and Southdowns, as well as of fine Thoroughbred and Standardbred horses. Considerable risk is involved in such enterprises, however, and persons not financially able to withstand cyclical swings of profit and loss should undertake the purebred business with caution.

Forestry in Kentucky is largely a private enterprise with many public or social implications. It furnishes private owners with a source of fuel and timber products for home use and for sale. It furnishes the public with those same essential products, plus services which may be even more valuable, including water storage and stream flow control, the propagation of wild life, and recreation. Immediate private interest has led to the exploitation of forest resources. Most public interests, on the other hand, are long-range in character and should lead to the preservation, maintenance, and development of forest resources. The co-ordination of these points of view is a vital forestry problem.

With virtually one-third of the state in woods of varying quality and stages of development, careful attention should be given to the timber crop. Increased returns from Kentucky forests are possible from improved forest management on the land now in woods and from the return to forest of cleared farm land which is undesirable for crops. Under wise management these areas eventually could produce as much lumber annually as was cut at the peak of forest exploitation in the state. A crop of such magnitude would be a major asset to Kentucky. In addition, the effect of these forests upon water resources, upon fish and game supplies, and upon recreational opportunities would make Kentucky an even better place in which to live.

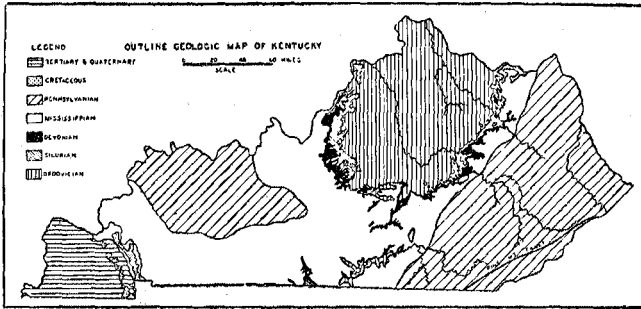
Chapter V

THE WEALTH IN ROCKS AND STREAMS

BY ARTHUR C. MCFARLAN

The geologic stage was set and its mineral deposits were in place long before the curtain of history rose on human life in Kentucky. The native country rock of the state had been formed from sediment laid on ancient sea-floors, coastal plains, flood-plains of streams, and swamps. This had happened during early periods of geologic time, far back even of what is commonly called pre-historic time, but it had made for Kentuckians their limestones, sandstones, and shales. After those long rock-forming periods, there had been folding and faulting of the earth's crust on a grand scale, particularly in the southeastern counties. There followed periods of extensive erosion, and at intervals, regional uplift resulting each time in renewed vigor of erosion. From the different kinds of rock now outcropping in the different parts of the state were carved its distinctive landscapes. Penetration of the earth's crust by molten lava was rare, and the resulting igneous rocks are almost unknown. Mineral deposits which have that kind of origin are consequently few and are represented only in the important fluorspar deposits of Caldwell, Crittenden, and Livingston counties, and the few mineral veins of Central Kentucky. The mineral wealth of the state was unalterably determined in the sedimentary nature of her rock. With the passing of time some of these mineral bodies were enriched, some were unaffected, and in places there were tremendous losses as erosion slowly removed layer after layer, to a depth of hundreds of feet.

Centered in the Bluegrass area is the Cincinnati Arch, a dominant structural feature of Kentucky geology. Here younger rocks have been stripped away by eons of erosion, exposing the oldest of all the strata that outcrop anywhere in the state, the Ordovician limestones. On the flanks of the arch, including the great structural basin of the western counties, the younger layers have been pre-



OUTLINE GEOLOGIC MAP OF KENTUCKY. LANDSCAPE AND THE DISTRIBUTION OF MINERAL RESOURCES ARE BOTH CONTROLLED BY THE VARYING ROCK OUTCROP.



DIAGRAM OF THE GEOLOGIC REGIONS OF KENTUCKY, AND STRUCTURES RESPONSIBLE FOR DISTRIBUTION OF DIFFERENT SYSTEMS OF ROCK IN OUTCROP.

served. These include the coal-bearing strata of both eastern and western Kentucky. It is these major structures, and others, that have resulted in an orderly outcrop pattern and large elements of geological orderliness in the distribution of mineral wealth.

Kentucky is mainly an agricultural state, but has many mineral resources to support industrial development; more than some states, less than others. Coal, petroleum, natural gas, and fluorspar are outstanding. Limestone for many uses is plentiful. Sandstone, sand, and gravel are of some importance. In addition there is a long list of minerals and rocks with more limited value or quantity. Oil shale is a potential resource awaiting the need for development. In the streams and rivers of Kentucky there is yet another natural resource—water power, the energy of falling water. Finally there is great natural beauty, a form of wealth with which Kentucky is richly endowed.

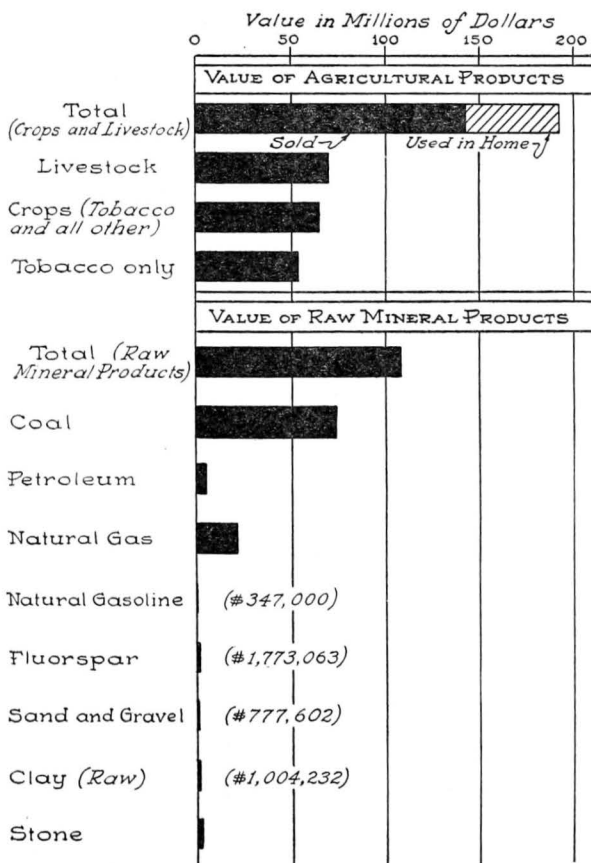
MINERAL RESOURCES

COAL

Coal is the outstanding mineral resource, and as much as 160 million dollars worth of it has been mined in a single year. The largest quantity produced in one year, more than 70 million tons, was mined in 1927 when prices were well below their peak. Quickened activity in the early years of World War II, however, has caused production to approach its earlier peak. Kentucky is in fourth place among the coal states, and is surpassed only by Pennsylvania and West Virginia in the Appalachian field, and Illinois in the Eastern Interior field. Within the state there are two great coal fields; one on the eastern flank of the Cincinnati Arch, and one on the western flank. As elsewhere in the eastern United States, it is where the rocks of the earth's crust were warped downward that coal-bearing strata have been preserved from erosion to constitute the great coal fields of today.

The Eastern Field.—About three-fourths of the coal mined in Kentucky is from the eastern field, which includes 33 counties, but most of it is from Harlan, Pike, Floyd, Perry, Letcher, and Bell counties, listed in order of importance. These are the southeastern counties with their much thicker successions of coal-bearing

CASH VALUE OF AGRICULTURAL AND RAW MINERAL PRODUCTS IN KENTUCKY AND THE VALUE OF AGRICULTURAL PRODUCTS USED IN FARM HOUSEHOLDS — 1939



IMPORTANT SEAMS OF THE EASTERN FIELD

NAMES ¹ OF COAL SEAMS, BY ANNUAL PRODUCTION				
COAL FIELD	COUNTIES	1,000,000 TONS OR MORE	500,000 TO 1,000,000 TONS	500,000 TONS OR LESS
Princess	Carter Boyd			Numbers Three, Seven
Paintsville	Johnson Floyd	Millers Creek		
Kenova- Thacker	Martin Pike (Tug Fork)	Pond Creek = Warfield	Thacker	Alma Winefrede
Elkhorn	Pike (Russell- Fork) Letcher	Elkhorn = Upper Elkhorn Numbers One, Two, Three	Number Four = Bevin	Lower Elkhorn Whitesburg, Number Four Rider Low Splint High Splint Auxier Elswick
Morgan County Cannel	Morgan			Number Two = Van Lear
Hazard	Perry Knott	Numbers Four, Six, Seven		Number Nine
Cincinnati Southern	McCreary			Numbers One, One and one-half, Two, Three = Barren Fork
Jellico	Whitley		Jellico	Blue Gem
Southern Appalachian	Bell Knox		Straight- Creek Mingo	Hignite, Dean Mason, Harlan, Turner
Harlan- Benham	Harlan	Harlan, Kellioka Dean = Wallins Creek, Darby ("D"), High Splint	Number Ten	Low Splint, Number Five, Limestone, Num- ber Seven, Six, "B"

¹ An equality sign indicates alternate names for the same coal seam.

The coals listed in any one block are roughly in order of tonnage mined, not in stratigraphic order.

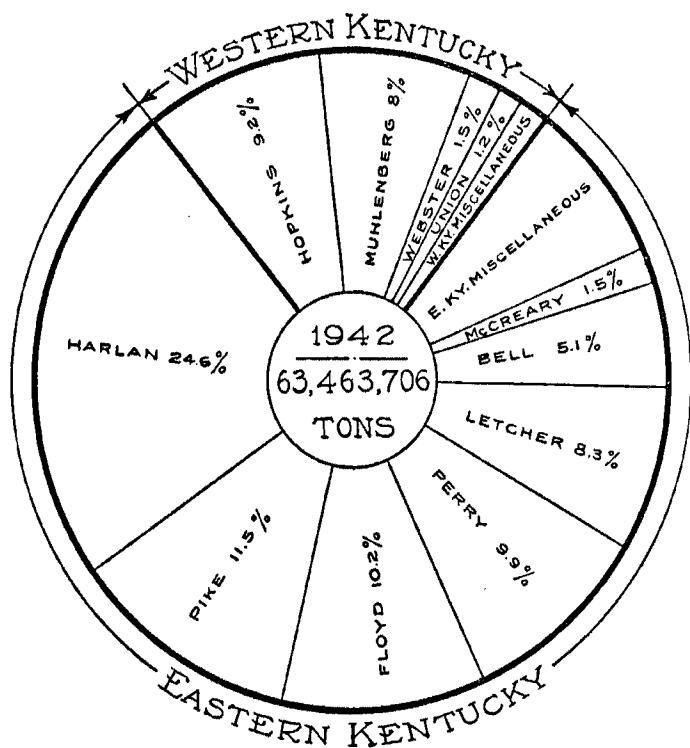
ing strata and greater number of seams. Not only are the seams more numerous, but they are thicker and their coal is generally of better quality than that in the northwestern border counties. Higher heating value in the southeastern counties is a result of greater original depth of burial under younger sedimentary rocks and closer proximity to the region of crustal deformation in the Appalachian mountains. The whole region in its inception, as the coal beds formed from accumulating swamp vegetation, was a vast and slowly-sinking swampy delta plain, not unlike the present-day Mississippi River Delta, fed by a river—or rivers—from the east.

The coals are high-volatile, low in sulphur and ash content, and relatively high in heating value. Their average BTU¹ content in the southeastern counties is from 13 thousand to 14½ thousand, but it decreases to about 12 thousand along the western border of the field. They are used mainly for by-product coke, illuminating gas, and for domestic purposes. Cannel coal is fairly widespread, but its mining is usually a part of some larger bituminous operation. Better known cannel seams are those mined at Cannel City in Morgan County; the Hunnelwell Cannel (Number Four) of Carter and Greenup counties; the Abbott Creek Cannel of Floyd County (Elkhorn Number One); and the Chenoa seam in Bell County.

The eastern field is, in general, rugged country, especially along its western margin (least productive) and the southeastern (most productive) side where relief is at a maximum. Here the flat-lying coal seams outcrop one above the other from valley-bottom to hill-top. In some fields four and five of them are important producers. The usual thickness of the more important seams is from three to five feet.

The Western Field.—Western Kentucky has its more important production along the southern part of the coal basin in Hopkins and Muhlenberg counties. Next in order are the seams in Webster, Union, and Ohio counties, and smaller quantities come from a half-dozen other counties. In contrast to the eastern field, most of the coal comes from one seam, the Number Nine (Springfield of Illinois). Second in importance is the Number Eleven seam

¹ A BTU (British Thermal Unit) is the quantity of heat required to raise the temperature of one pound of water 1° F. at or near its point of maximum density. The heating value of coal is expressed as BTU per pound of coal.



COAL PRODUCTION IN KENTUCKY, BY COUNTIES

(Herrin of Illinois), which is followed by the Bell, Empire = Man-nington, Numbers Six, Seven, Twelve, and Fourteen. Number Nine is known to underlie 25 thousand square miles in Kentucky, Indiana, and Illinois, and is probably the most persistent commercial coal in the eastern United States. It has a usual thickness of four and one-half to five feet. Number Eleven, while thicker, is not so uniformly present. The Dawson Springs = Empire seam is important and it rivals those of the eastern field in quality.

Mining began earlier in this field than in Eastern Kentucky, because the surface is less rugged and because the Ohio River

could be used for transportation long before railroads were built in Eastern Kentucky. A flatter landscape is responsible also for the more generally used shaft and strip mining. The latter, of course, is usable only in a flat area where the coal seam is near the surface and there is comparatively little rock to be removed by steam or electric shovel. Stripping operations commonly ruin the land for farming for many years.

Coals in Western Kentucky have about 12 thousand BTU, and are thus about equal in heating value to those from the western border of the eastern field. They are used commonly for steam power and in homes. The cannel coal in Breckinridge and Hancock counties was at one time used in the distillation of oil.

It has been estimated that there were originally more than 123 billion tons of coal available in Kentucky. About 55 per cent of this reserve lay in the eastern field. Less than one per cent has been mined to date, and a long future is assured for both the eastern and western fields. It is recognized, though, that the better and thicker seams have been and are now being mined. The areas now being worked are, in general, the cream of the crop, though there are a few where development awaits railroad facilities.

IMPORTANT SEAMS OF THE WESTERN FIELD

(Identified by Name or Number)

COUNTY	COAL SEAMS, BY ANNUAL PRODUCTION		
	1,000,000 TONS OR MORE	500,000 TO 1,000,000 TONS	500,000 TONS OR LESS
Hopkins	Nine Eleven	Six	Empire, Fourteen, Twelve
Muhlenberg	Nine		Six, Eleven
Webster	Nine	Eleven	Twelve, Six
Union		Nine	Eleven
Ohio		Nine	Eleven, Fourteen, Four, Seven



From different kinds of rock . . . were carved . . . distinctive landscapes.

W. R. Allen



Courtesy Louisville and Nashville R. R.

... sixty million dollars worth ... has been mined in a single year.

PETROLEUM AND NATURAL GAS

Oil in the earth exists in many so-called pools, distributed widely, but not abundantly, in sedimentary rocks—especially those formed at the bottoms of ancient seas. Accompanied by natural gas and salt water, it occupies small openings in the rock, either pore space or fracture. Sandstone forms the usual underground reservoir, but many limestones serve a similar purpose. Local concentrations, which are the oil and gas pools, are formed by the gathering of the contents from multitudes of pores and fractures in the rock under the influence of earth structure and varying permeability of the rock. These materials are an elusive prize and on the average less than two per cent of the area of regions with thick sections of sedimentary rock have been productive. To find these allocations of natural wealth in the ground has been a difficult, though fascinating, part of geological work.

It has been known for a century and a quarter that Kentucky would be a producer of oil—ever since the drilling of the McCreary County (1819) and the Burksville (1829) wells, both for salt.

Discoveries of oil and gas early in the twentieth century included the Ragland, Menifee gas, Cumberland River, Campton, and the Wayne and Knox County pools. Notable discoveries since 1915 include: the Irvine-Big Sinking field; the producing area of the Paint Creek uplift in Magoffin, Johnson, and Lawrence counties; the Bowling Green field; the Owensboro field; and the shale gas field centering in Floyd County. Discoveries in Henderson, Union, and Webster counties in the last few years are of the first importance in the Owensboro field.

Trends in Production.—The peak of petroleum production in Kentucky was reached in 1919, with more than nine million barrels, then worth more than 32 million dollars. In 1939, however, production had dropped to five and one-half million barrels, and at lower prices, its value to about eight million dollars. Stimulated by war demands, but without the incentive of a better price, there has been an upturn. In 1943 more than seven and three-quarters million barrels were produced, and 1944 production approached the 1919 peak. This increased yield has occurred mainly in Western Kentucky. Kentucky was thirteenth among the 18

oil-producing states in 1940, and fourth among the eastern states. Compared to the large producers of the midcontinent and California, its annual production is small, about one eighty-fifth that of Texas, one fiftieth that of California, and one-thirtieth that of Oklahoma. In quality, however, Kentucky oil is superior. The output of gas has steadily increased to 53 billion feet per year (as of 1939), and 97 or 98 per cent of this comes from Eastern Kentucky.

Discoveries of oil and gas in the early days were largely the result of random drilling. This was followed by a period in which the principal criterion was earth structure as revealed by outcropping rocks. In more recent years, subsurface studies based on well records, drill samples, and geophysical data have assumed a leading role in guiding drilling. Certainly the day of exploring for favorable structure based on surface outcrop is passing, as fewer and only the smaller structures remain undiscovered. But many "buried structures" and "stratigraphic traps" remain to be discovered and explored. These hidden, but favorable, underground conditions whose presence cannot be detected from studying surface rocks have become the great field of present endeavor, but they are difficult and costly to find. The deeper parts of the basins both to the east and the west of the Cincinnati Arch—and particularly the lower rock levels—are far from explored. The history of production in other such basins is favorable, and these areas in Kentucky still hold much promise.

What about the Future?—However, Kentucky's estimated reserve in pools known to exist was 44 million barrels in 1940. This indicates a short life of steadily diminishing production unless supplemented by active exploration and new discoveries. For the past several years drilling has been retarded by low prices for crude oil. Many operators believe—and there is some geological basis for this belief—that more active drilling, encouraged by higher price incentives, would result in the finding of more oil. The life of many leases is being materially lengthened by secondary recovery methods, and this practice is becoming more widely used.

Three-fourths of eastern Kentucky's gas is from the Black shale in Floyd County and vicinity and the balance is from other sands both above and below it there and elsewhere. The output of

gas has increased steadily, and the peak has probably not yet been reached. This fact is important to future industrial development.

The date of failure of the petroleum supply in the United States has been a subject of much speculation and some opinion is definitely pessimistic. When that day does arrive, however, attention will focus on oil shales, lignite, and coal for distillation. There is little lignite in the state, but there is much coal and a practically inexhaustible supply of oil shale. By distillation these shales yield about one half-barrel of oil per ton of rock. The black shale, under the several names of Ohio, New Albany, and Chattanooga, outcrops widely in the Knobs bordering the Bluegrass, in the Cumberland River region of Allen, Monroe, Cumberland, and Clinton counties, and along the front of Pine Mountain in southeastern Kentucky. The quantity is unlimited, both in area of outcrop and in available thickness. As a source rock it is less highly regarded, however, than the even more abundant and richer shales and the lignites of several western states.

ROCK ASPHALT

Kentucky rock asphalt is a coarse-grained sandstone thoroughly impregnated with bitumen, a substance with the appearance and consistency of warm tar. The asphalt is a residue of earlier oil pools, where erosion, knifing deeper and deeper into the earth's crust, has exposed the oil-bearing sand, resulting in the loss of volatile materials. Its original distribution was determined by the same conditions that accounted for the locations of gas and oil.

Asphalt is found in several sandstones in Edmonson, Grayson, Hardin, Breckinridge, Logan, and Warren counties. Edmonson County leads in production and Grayson County is in second place. The same sandstones are among those from which oil is obtained in the Owensboro field. A small eastern Kentucky deposit is known near Soldier in Carter County. The material is quarried and in some of the larger operations it is mined underground.

Rock asphalt is used principally for paving roads and streets. The natural rock shows a bitumen content of three or four to 15 per cent. Standard specifications for commercial rock call for seven per cent. Leaner rock may be used by mixing with the richer, but the mixture is considered inferior to natural rock of the same bitumen content.

Production was important in 1925-30 when it approached the 350 thousand ton per year mark, worth over three million dollars at prices then current. The industry declined during the early years of the depression, and production has been limited since. The decline is also the result of the more extensive use of concrete. These deposits remain among Kentucky's little used resources awaiting increased demand.

VEIN MINERALS

Vein minerals are those occupying fissures in the earth's crust, where they were deposited by underground waters. While some may have been formed by ordinary ground water with its source in local rainfall (meteoric waters), the important mineral veins were formed, apparently, by underground waters originating in and coming up from molten lava deep in the earth. These are referred to as magmatic waters.

Fluorite.—Fluorite is the most important vein material in the state. The principal source for it in the United States is the Kentucky-Illinois district which includes Crittenden, Livingston, and Caldwell counties in Kentucky. This district produces about 90 per cent of that mined in the United States and in recent years about 80 per cent of that used in this country. Its principal use is as a flux, especially in the manufacture of steel. It is the source of hydrofluoric acid and is also used in the manufacture of certain kinds of glass and enamel.

Fluorspar, together with minor amounts of galena (lead ore), sphalerite (zinc ore), and barite, occurs in veins associated with the faults of the intensely broken region of the western Pennyroyal. Other than the search for weathered vein material, the problem of surface exploration is one of identifying and matching strata to determine the fractures (faults) along which blocks of the earth's crust have shifted. These served as the avenues up which the ore-bearing waters ascended.

Other Vein Minerals.—Barite is consumed in the manufacture of lithopone, which is used as a white pigment in paint. It is used also as a filler and weight producer in rubber, linoleum, and cloth.

Fluorspar, barite, galena, sphalerite, and calcite occur in central Kentucky in a few veins of some size that cut across the local

limestones. They have been extensively prospected, and have been commercialized on a small scale. Principal operations for fluorspar have included the Twin Chimney mine in northern Mercer County and the Faircloth mine at Mundy's Landing, on the Kentucky River in southern Woodford County. Main galena and sphalerite operations were at Kissinger in Franklin County, Gratz in Owen County, and near Lockport in Henry County. The Chinn Calcite Mine at Mundy's Landing in northern Mercer County was operated for a few years. Barite is the principal vein mineral of the Bluegrass.

Mining of these minerals in central Kentucky practically ceased at the close of World War I. With increasing demand in the war years following 1941, operations were resumed at the Gratz and Lockport lead and zinc properties. There is reason to believe that these veins and those of western Kentucky are of similar origin.

CLAY

Clays suitable for the manufacture of common brick, cheap tile, portland cement, rock wool, and similar materials, are available in most counties in the state. Most of these are residual clays from the weathering of limestone and shale. There are alluvial, or stream-deposited clays on floodplains and terraces along the larger rivers, and they have been utilized to some extent. In Madison County, the Irvine clays are the basis of a brick, tile, and pottery industry. These are alluvial clays of an earlier Kentucky River floodplain, deposited before the uplift and later carving of the present Kentucky River valley.

Important utilization of Kentucky clays has been made in two regions. In Carter County, near Olive Hill, there is a large fire clay industry utilizing Pottsville clay. The ball clays, and associated sagger and wad clays, of Graves and Ballard counties in the Purchase are an outstanding resource. These are high-grade clays, and it is possible that a much larger industry could be developed in this region. They are used for the manufacture of sanitary wares, floor and wall tile, terra cotta, potters supplies, table ware, porcelain, and abrasives. Cretaceous clays have been worked in Marshall County.

MISCELLANEOUS MINERAL RESOURCES

Building Stone.—Several stones from Kentucky have been much used in the past, but the ever-increasing use of concrete and concrete products has cut into the industry. The best of these is the Bowling Green limestone, which is similar in character to, but not the same stratum as the well-known Bedford limestone of Indiana. The Rowan County freestone (sandstone) has been quarried extensively at Farmers, Freestone, and Bluestone. The Rockcastle freestone, also a lower Mississippian sandstone, has been quarried in the county of that name. The Tyrone and Oregon limestones of the central Bluegrass are good quality stone. The former weathers white, and improves in appearance as it ages.

Limestone.—High-grade limestone rock is abundant in Kentucky and it has many uses. The two great limestone regions of the state are the Bluegrass (Ordovician outcrop) and the Mississippian Plateaus (Middle and Upper Mississippian outcrop). There are also important bodies of limestone of Silurian and Devonian age on the west side of the Cincinnati Arch. Mississippian limestone outcrops again in Pine and Cumberland mountains. Thus, limestone is widely distributed, and is lacking only in the coal fields and in the Purchase area. Its main uses, other than for building purposes, are for roads, railroad ballast, lime, agricultural limestone, portland cement, and rock wool.

Portland cement is manufactured at Kosmosdale, about twenty miles south of Louisville on the Ohio River. Materials used are Mississippian limestone from Brandenburg in Meade County, and alluvial clay from the Ohio River floodplain. Cement materials are abundant throughout much of the state, and the problem of development of the industry is one of market rather than available raw materials.

Rock wool is made from limestone in combination with shale or sandstone, or from slag. Two plants are operating in the state; one at Mullins in Rockcastle County, and the other at Summit in Hardin County. There are abundant raw materials in many parts of the state.

Rock Phosphate.—An important fertilizer, rock phosphate was at one time taken from deposits near Wallace in Woodford County. The deposit is a residual concentration from the weathering of

the highly phosphatic Woodburn limestone and is to be looked for in areas of comparatively level upland where that limestone has yielded a deep residual soil.

Sand and Gravel.—Sand and gravel are abundant along stream courses, particularly downstream from areas of sandstone and conglomerate outcrop. Some soft sandstones are also available and used. Some of these sands and sandstones are high-grade material for molding sand and for the manufacture of glass. This is particularly true of the sand deposit at Tip Top and vicinity, Hardin County, an ancient river-laid deposit now at or near hill top level. Similarly, there is a deposit of molding sand in the vicinity of Devou park, near Covington.

Underground Waters.—Natural brines are well known in salt licks and they are encountered in drilling for oil and gas. In pioneer times, salt licks yielded a commercial product. There was also an early salt industry near Brandenburg in Meade County and Cloverport in Breckinridge County, developed in connection with the search for natural gas. With this exception natural brines have not been commercialized in Kentucky, as in both Ohio and West Virginia. Widespread brines are well known at a number of geological levels in the strata in Kentucky, but, except for scattered analyses, there is little information on them.

Little work has been done on underground water resources to supplement the use of surface streams except at Louisville. Here a supply supplementing that of the Ohio River is in sands and gravels of glacial outwash blanketing the bedrock surface in the lowland areas. Greater thicknesses of these occur along the former, but now buried, channel of the Ohio River passing through downtown Louisville. A source of supply for some distilleries has been deep wells drilled to the Saint Peter sandstone. Some of these artesian wells in the valley bottom have flowed. The water, though, is usually salt-sulfur.

Iron Ore.—In the early days of the state an iron industry was well established, but deposits are comparatively small and scattered. Some of the ore is good, but more of it is low grade. Its mining ceased when operations began in the Lake Superior country and at Birmingham, Alabama. Kentucky is like many other states in having many abandoned small iron operations. The Pres-

ton Ore Banks, east of Slate Creek and southeast of Owingsville, are exhausted. Other producing localities included the Rose Run mines east of Owingsville; the Mississippian-Pennsylvanian contact along its outcrop between the Kentucky and Red River in eastern Kentucky; ores in Boyd, Carter, and Greenup counties forming an extension of the Hanging Rock region of Ohio; and the "Between the Rivers" region in western Kentucky. With few exceptions the ore bodies were not exhausted.

THE MINERAL BASIS OF INDUSTRY

Mineral resources are thus available in adequate quantity and variety to form a basis for much industrialization. The geology of Kentucky in all of its larger features is essentially like that of Illinois, Indiana, and Ohio, and its mineral wealth is thus built on much the same pattern. Some geographic features, as the lake ports and lake commerce are lacking, but other features are much the same. Certainly much industrial enterprise can be built on Kentucky coal, petroleum, natural gas, clay, fluorspar, sand, and limestone resources as well as some of the lesser ones.

THE ENERGY OF FALLING WATER¹

The energy of falling water has long intrigued man's interest. Crude water wheels are known to have existed in ancient times, and, until recent years, our countryside was dotted with picturesque water mills for grinding grain, especially corn. Water power is now used almost exclusively by the turbogenerator, a device that directly couples a generator to a scientifically designed water wheel.

CONDITIONS AFFECTING GENERATION

Physical Factors.—Where conditions are ideal for the use of water the cost of current so generated is very low, perhaps lower than for any other method of production. However, there are very few places where conditions are ideal. The two really essential conditions are a long fall for the water (engineers call the vertical drop the water's "head"), and a constant supply of water. They are seldom available in nature except at waterfalls where the volume is very regular, as at Niagara Falls. Many of the finest sites of this type are inaccessible. It is usually necessary to build

¹ Written by Rodman Sullivan.

a dam to create a reservoir and regulate the flow of water. The formation of such a reservoir may require a large investment. In addition to the cost of constructing the dam, if the area is settled there may be a large outlay for the flooded land and for relocation of the inhabitants. Often the inundated portion is the best land for agricultural purposes in the entire area. The life of all reservoirs is limited to the length of time taken in filling up with silt. Under unfavorable conditions this period may be only a few years. Another natural factor of importance is the nature and solidity of the surrounding rock. Neither reservoir nor dam must leak excessively if the project is to be a success, nor must the dam collapse for want of a firm foundation.

The Question of Cost.—Significant economic factors in the development of water power include the capital cost, the cost of current generation by alternative methods, and the proximity of markets for the power. It must not be overlooked that the most efficient steam plants have unit costs of current generated comparable with those of hydroelectric plants if coal is cheap and abundant fresh water for condensation purposes is available. The high cost of transmission of power has no relation, of course, to the method of generation. Water power sites are often located far away from the best markets, but this competitive disadvantage is offset in some cases by the cost of transporting coal.

Dams are sometimes constructed to provide flood control and navigation as well as power. These other results may be socially desirable, but that does not simplify the problem of allocation of investment costs among the three functions. In fact, without some arbitrariness in the assumptions, the problem is unsolvable. In those cases where power generation bears the burden alone it remains true that development is economical only if the conditions, as indicated above, are nearly ideal, or where they are not the best for generation of electricity by steam.

PRESENT AND POTENTIAL DEVELOPMENTS

Kentucky Dam.—Three major water power sites in the state have already been developed. The Tennessee Valley Authority's Kentucky Dam across the Tennessee River in Marshall and Lyon counties is the largest. It is approximately 1.6 miles long and impounds a lake with a maximum length of 184 miles. The aver-

age head of water at the turbines is 53 feet and the generating units are designed to produce 128 thousand kilowatts initially and 160 thousand kilowatts ultimately. A kilowatt is equal to about one and one-third horsepower or, in household terms, the current required to light twenty fifty-watt light bulbs. For purposes of comparison, the average rate of consumption of current by Paducah for December, 1943, was 3,548 kilowatts and the maximum or peak load was 6,900. If 69 thousand kilowatts could be generated at low water, the plant could furnish ten times Paducah's needs, neglecting transmission losses. So high a minimum is not to be hoped for. This project, consisting as it does of a long dam, a low head of water, and a large reservoir covering thousands of acres of fertile land, will cost about 105 million dollars. It represents the type of development not feasible if power production alone were involved and not coupled, as it is, with flood control and navigation.

Dix Dam.—Dix Dam across the Dix River a short distance above its confluence with the Kentucky at High Bridge is 287 feet high and 1,080 feet long. The water head is 240 feet and the generating capacity 28,500 kilowatts. As is so often the case with high-head developments, inadequate volume of water prevents use of the generators at a high percentage of theoretical capacity. The entire project cost nearly eight million dollars. It is possible, depending upon the point of view, to question the wisdom of the investment. Kentucky Utilities Company, owner of the project, has asked permission to build a steam plant of 25 thousand kilowatt immediate and 100 thousand kilowatt ultimate capacity on the Kentucky River at Tyrone. At Lock 7, near High Bridge, there is a small installation of 2,040 kilowatt capacity also owned by Kentucky Utilities. Operation at a high percentage of full capacity is possible because of the relatively small amount of water used.

Louisville Dam.—The third plant, owned by the Louisville Gas and Electric Company and located just below Louisville, makes use of the drop in the level of the Ohio caused by a series of rapids usually known as the Louisville Falls. The normal head of water is 34 feet; the generating capacity 80,320 kilowatts. The average annual output is 390 million kilowatt hours or about 55 per cent of full capacity. The plant and facilities cost eight million dollars.

Wolf Creek.—Wolf Creek Dam, construction of which was halted because of the war, is located on the Cumberland River in Russell County. It is primarily for flood control with incidental power generation. The present plans call for a dam just over a mile long, 1,836 feet of which will be concrete. The water head will range from 126 to 176 feet. The ultimate generating capacity is expected to be about 250 thousand kilowatts and the average annual output 780 million kilowatt hours, or about 35 per cent of full capacity. The project is located in a rough, sparsely settled section where land values are low. Although much of the best agricultural land in the county will be under water, extensive relocation of population will not be necessary. For hydroelectric power purposes this site is perhaps the best entirely within the state.

Other Possible Sites.—In 1935 the Corps of Engineers of the U. S. Army reported to the State Planning Board its findings relative to a program of flood control and water-power development. The Board concluded from this report that the possibilities of water-power development in Kentucky are small. Relative to Tennessee or some of the western states this is undoubtedly true, but an estimate by S. A. Mory at the College of Engineering, University of Kentucky, of power at the sites selected by the Army Engineers indicates approximately one-half million kilowatts, exclusive of the projects already mentioned. This is no inconsiderable amount, and, supplemented by power from steam plants during periods of low water, would go far toward filling the state's needs in the immediate future. Some of the more important sites and estimated capacities (in thousands of kilowatts) are: Nolin River, near its mouth, 42; South Fork of the Cumberland River at Yamacraw, 54; Lock numbers, 2, 5, 8, and 11 on the Kentucky River, 160 (total); Russell Fork near Elkhorn City, 90. Part of the latter project would be in Virginia.

Estimation of Capacity.—However, it must not be overlooked that there are many variables in engineering estimates. Increasing or decreasing the height of a proposed dam by a few feet may greatly modify any estimate of power output. Continuity of power depends largely on the capacity of a reservoir but a large reservoir may flood too much farm land, inundate towns and villages, cover mineral and forest resources, or force relocation of highways, bridges, pipe lines, railroads, and communication lines. Sentiment

often forces removal at great expense of the dead from old graveyards. Whether society wishes to pay the price for hydroelectric power is a matter of choice between alternatives. The vigorous protest by affected groups in the Licking River Valley against a proposed flood control dam (some power could be generated) is concrete evidence of the existence of divergent points of view.

Nor should it be overlooked that an engineer's estimate of available power means the capacity of the generators that would be installed and not the amount of current available at all times. If minimum output is far below maximum output, or if low water forces complete cessation of operations at times, stand-by steam generating capacity must approach or equal that available from water. Since fixed charges, that is, those which do not vary with output, make up a sizable share of total cost of steam plant operation, it is obvious that the cost of current from stand-by steam plants is relatively high. Naturally, this raises the unit cost of output from a system combining the two sources of power. The presence of two coal fields in the state assures cheap coal, thereby reducing the feasibility of development of power sites that might otherwise be seriously considered.

Furthermore, it should be noted that development of hydroelectric power in Kentucky is handicapped by proximity to T. V. A. power developments. No matter what opinion is held on the question of whether this power production is subsidized by federal funds, the investments have been made and it would be foolish to let the power go to waste. If favorably located Kentucky communities can buy it cheaper than they can generate it, so much the better for them. What does it matter which side of the state line it comes from? The essential thing is sufficient power at reasonable cost.

Advocates of conservation of natural resources point out that the use of water power saves fuel. Though the United States is well supplied with coal, there is no point to wasting it. Since many of the deposits are inaccessible or remotely located, it is only natural that the seams easiest to mine are worked first. Coal mining in Kentucky is no exception to this rule. The coal saved by the use of hydroelectric power will be needed in the future but it is impossible to say when. Whether coal or water is used, Kentucky has the sinews of power if it chooses to use them.

NATURAL BEAUTY AND SCENIC FEATURES

Beauty, too, is a natural resource—one with which Kentucky has been liberally provided, and that does not depend on manufacturing to make it ready for human enjoyment. The state is generous with scenery for the passing visitor or tourist. Not only is the surface beauty of the landscape interesting, but there is also the geological romance of what lies behind it. There is more to Cumberland Gap, Mammoth Cave, and Cumberland Falls than just the beauty of the gap, the cave, or the falls. Behind them are the facts of their individual histories—the reasons for their being—recorded in the rock.

Among the best-known spots in Kentucky is Cumberland Gap, a notch about a thousand feet deep near the southern end of the narrow-crested linear Cumberland Mountain where Kentucky, Tennessee, and Virginia corner. The gap is 1,650 feet above sea level, and thus from four to six hundred feet above the Cumberland River and Powell River drainage, and five hundred feet above the lowlands of the Middlesboro Basin. The crest of the mountain just north of the Pinnacle exceeds 2,700 feet in altitude. Here was the gateway through the Cumberland Mountain barrier for the Wilderness Trail and the Indian Warrior Trail. In written records, it was first mentioned by Dr. Thomas Walker, who passed through it in 1750 and called it Cave Gap. Daniel Boone came through in 1769. It subsequently became the most traveled route into Kentucky by settlers from the east and to the earlier story of geology was added one of human history.

It is a wind gap, a part of the abandoned valley of Yellow Creek which at an earlier time flowed southeastward to join the Powell River cutting its way through the rocks now forming Cumberland Mountain. Diversion of these waters into the Cumberland River (stream piracy) was made possible by the deeper valley which the latter had made in crossing Pine Mountain at Pineville, and by a comparatively recent regional upwarp and tilting to the northwest.

The place is one of rugged mountainous scenery overlooking a broad lowland to the east, with other ridges of the Appalachian mountains beyond in the distance. Behind to the west is the eastern coal field. The gap is a spot which has been visited principally

by those passing through, but with development as a national park it will become an object, and not just an incident, of a trip.

The Breaks of the Sandy is a deep gash made by the Russell Fork of the Big Sandy River as it swings around the north end of Pine Mountain, two thousand feet below its crest. It is a rugged valley typical of Lee sandstone and conglomerate outcrop.

Cumberland Falls, now the central feature of a state park, is located on the Cumberland River about forty miles above Burnside. The drop of seventy feet is formed on the outcrop of the eastward dipping Rockcastle conglomerate. Because this rock is hard, it has held up valley deepening at this point. The original falls was formed by undercutting in the shales below, but as the falls receded upstream along the path of the gorge, the shales have dipped below drainage and the present falls is maintained on the more resistant beds of the conglomerate. The region has the usual rugged beauty characteristic of these rocks.

The Falls of the Ohio is the rapids originally responsible for the location of Louisville. Cargo being moved by flatboat and steamboat in the early period of Kentucky history had to be transferred at this point. These "falls" developed on resistant mid-Devonian limestones. But here, since they dip downstream, there has been no undercutting and they cannot become more than rapids. Nor can there be an upstream recession to form a gorge. At low water the limestone floor of the rapids is exposed to view, and the abundant fossil remains indicate that much of the limestone is an ancient coral reef.

NATURAL BRIDGES

The best known of the Kentucky natural bridges, and for many years the only well known one, is at the state park near Slade in Powell County. This bridge is typical of those found in the rugged mountain country of conglomerate outcrop along the western border of the eastern coal field. There conglomerate rock and sandstone cap the divides in a region thoroughly cut by erosion with a consequent relief of about 600 feet. It is a region of thousands of rock shelters resulting from the different rates of weathering in the sandstone and conglomerate cliffs. Weaker layers and weaker parts of certain layers have yielded more rapidly than others to the processes of weathering, thus hollowing out shelters below hard rock. Continued growth of one or more

of the "rock houses" along a narrow divide resulted in the breakthrough to form a "light house" leaving the span above as a bridge.

The Natural Bridge of Kentucky is located on just such a narrow divide. The opening which it spans is 78 feet in length and 65 feet in height. Another unusually fine bridge, similar in origin, occupies a narrow ridge about five miles by air line north-east of the state park. This is Sky Bridge. With an opening of 90 by 25 feet, it stands in prominence and beauty along the ridge top as seen on either side from the road below. There are several other natural bridges in the vicinity. A larger span of the same type is the McCreary County Bridge, about nine miles west of Cumberland Falls and not far from the main highway.

In addition to the natural bridges of the sandstone and conglomerate country, several limestone spans are known. Two are in the Carter Caves vicinity. One of them bridges a stream flowing from Bat Cave, which again goes underground beneath X Cave before becoming a part of Tygarts Creek drainage. The second, on Smoky Fork, is a result of the underground diversion of a stream behind a waterfall. Both are in the sheet of limestone which contains Mammoth Cave, and it is often referred to as the Mammoth Cave limestone. A third, known as the Creelsboro Bridge, is located along the Cumberland River near the town of Creelsboro. A limestone divide between the waters of Jim's Creek and the Cumberland River has been narrowed by lateral cutting of the two streams, but the original opening was a small channel dissolved by underground waters. This was enlarged by water passing through from either stream in time of flood.

KENTUCKY CAVES

Probably the most widely known features of Kentucky's natural beauty are the caves. Of the two great limestone regions in the state, only that of the Mississippian outcrop has produced great caverns, for Bluegrass caves are comparatively small and few in number. The Mammoth Cave Region, of Edmonson County and vicinity, has been set aside as a national park. The whole area has not yet been incorporated but active development is well under way. It is one of the great cave regions of the world, and includes such well known caves as Mammoth, New Entrance to Mammoth,

Mammoth Onyx, Great Onyx, Floyd Collins, Crystal, Diamond Cavern, and many others. They occur in a region of great and uninterrupted thickness of Mississippian limestones, where down-dip underground drainage has an outlet in the deep Green River Valley and tributaries. This is an area with active circulation of underground waters. The results of their dissolving action and subterranean stream erosion are displayed in miles of underground passageways, made beautiful by the growth of stalactites and stalagmites and other cave deposits in profusion. Among the beautiful features in many of the caves are the gypsum deposits which coat walls and ceiling, taking the delicate forms of feathers and flowers. Few cave regions exhibit this feature.

The same limestone succession, though thinner, and thus not as favorable for cave forming, outcrops along the western margin of the eastern coal field. Commercialized caves there are the Carter Caves and Cascade Caverns in the Tygart's Creek drainage of Carter County. Commercial development has also been attempted in Wayne and McCreary counties in the Cumberland River drainage.

OTHER SCENIC SPOTS

The scenic feature of the Bluegrass is the Kentucky River Gorge. In a meandering course inherited from an earlier cycle of erosion, the Kentucky River has carved a deep picturesque gorge in the oldest limestone strata outcropping in the state. The gorge of the Dix River, a part of the Kentucky River system, has been utilized for power purposes by the building of a dam three miles above the mouth of the stream. When built, it was the largest rock-filled dam east of the Mississippi River. Lake Herrington behind it is the main fishing ground of central Kentucky. In some of the smaller tributaries of the Kentucky River are the so-called "petrified waterfalls," where deposits of travertine lie across the faces of some of the falls. Best known of these is Elk Lick Falls about ten miles southeast of Lexington.

While only the northern tip of Reelfoot Lake is in Kentucky, the lake is of interest because of its unique and recent origin. It is an earthquake lake, formed in connection with the New Madrid earthquake of 1811. The first of several shocks is reported as having occurred on December eleventh of that year, but it was fol-



Rock asphalt is used principally for paving

L. E. Nollau



... the use of water for power ...

William Logan

lowed by others over a period of a year or more. These shocks were the result of adjustments within the earth's crust, the lake being formed by the resulting change in contour of the surface.

Big Bone Lick, in western Boone County, was an important salt lick used by the Indians and early settlers. Ancient animals attracted to this lick were trapped in the quagmires resulting from glaciation of the region to the north and the ponding of the tributaries coming in from the south. Important collections of these "Big Bones" of the Glacial Period have been made, but few remain in the state. They included the Mammoth, Mastodon, Ground Sloth, and other prehistoric species. A similar find of fossil mammals was made at Lower Blue Lick along the Licking River in Nicholas County, and their remains are well represented in the state museum at that spot.

THE GIFTS OF THE AGES

From the mines and the well come the raw materials of industry: coal in abundance, oil and gas in liberal supply, other minerals in lesser but important quantities. Unharnessed power courses the rivers. Hidden beauty is the raiment of hills and caves. What will Kentuckians now and in the future do with these gifts of the ages? Will they draw from them a greater fullness of living? Will they build into factories and homes and communities this wealth of rock and stream, or will they let it always pass into the hands of others? Here is a challenge to all who will work at designing Kentucky's future.

Chapter VI

WILDLIFE AND OUTDOOR KENTUCKY

By WILLIAM R. ALLEN

About one-half of the 25 million acres in Kentucky are tillable; the other half are available for pastoral, urban, and non-agricultural purposes of all kinds. This chapter will consider some of the possible services which any or all of the inferior lands, together with the many miles of unused streams usually associated with such lands, are capable of performing.

THE LEGACY OF EXPLOITATION

The pioneer generations of Kentuckians looked upon the forests as barriers to agriculture, obstacles to be removed as quickly and easily as possible so that the rich but transitory mantle of soil might be uncovered. To their limited foresight the streams also were something in the way—good only for watering stock and for an occasional mess of fish, which would always be there awaiting the first comer. Attacking scarcely more than one objective at a time and blind to all others, little did they foresee what destruction six or seven generations of exploitation could wreak upon a pleasant land. Americans of today have inherited from them not only the land, leached and gullied, but also that same urge toward destructive exploitation. There are being witnessed the same ruthless processes on farm, in forest, in mine and stream which the white man has set in motion wherever he has colonized all over the world.

Finding the matchless forests and streams of Kentucky and adjoining regions teeming with life, the pioneer thought he had found the Promised Land, as indeed he had. But he little knew how to take care of a promised land. He had worn out various farms in the home country and in the seaboard states. He was halting here on his way to a similar exploitation of the dustbowl states of the prairies.

No region has fewer lakes or a more magnificent system of streams than Kentucky. No region has done less to utilize or maintain its streams as a continuing resource. Indeed there are many who still look upon forest lands as areas awaiting their turn to be cleared, and streams as obstructions to be bridged, or forded, or even removed to new channels.

THE IMPOVERISHMENT OF CITY LIFE

To the extent that Kentucky's population becomes more urban, citizens in a brief generation or two lose contact with the land. The transition is so gradual that the victim is not usually aware of the price he has paid for the advantages of the city. He is something like a cage-bird or aquarium-fish, created to be free, but born captive, at least until the crisis of war makes him a jungle fighter or victory gardener. When the city boy (or girl) is turned loose for a brief excursion in the country, he is out of his element. Often he is so far from making a sympathetic response to his unfamiliar surroundings that he can think of nothing to do but to throw off his inhibitions. He makes noises in imitation of the livestock, hurls rocks at anything moving, and strews the landscape with paper and broken glass. He misses the true import of the camping-trip or picnic. He needs training in directions hitherto unexplored in his daily life.

Meanwhile the tradition which father has passed on to son for a century is that Kentucky is a region of ample opportunity for outdoor living. Each generation goes on believing this, while by imperceptible degrees the gates of the outdoors close tighter. A certain well-known city in the heart of Kentucky is an excellent illustration. This city prides itself upon the shade-trees along residential streets, and upon its historical park system. Actually very little has been done about shade trees and parks for a hundred years. A recent unofficial survey showed that most of the city's trees are poor, dying specimens, subject to everyone's abuse and to nobody's care. Few young trees are growing to take their places. With the tradition of prolific Nature, Kentucky cities rarely take a hand in the matter or subject it to serious study.

Even in Kentucky—once so profuse in wildlife, the favorite land of Indian hunting-parties and of the "long-hunters"—the average city schoolboy knows next to nothing of wild Nature, beyond the

squirrels in the little city park. Worse than that, he has no concept of the heritage which should have been his, or of the steps he might take to repossess that heritage. Except for the unusual Boy Scout, the average town boy cannot identify a dozen kinds of trees or native birds. As for fishes, the number may be halved, and halved again.

THE RURAL SCENE

The countryside might be expected to be perfect for wholesome outdoor life in Kentucky, which started with everything. But often it reminds the observer of parts of Kansas or Nebraska, which had their beginning as the naked prairie. The country boy should know all about the wildlife of his region, but often he is as ignorant as the city cousin, for the usual farm has been nearly stripped of native trees, shrubs, and animal life. The most prosperous Bluegrass farms are the most devoid of natural history interest. Their rolling pastures have the sophisticated prettiness of a country club, but wildlife is nearly absent, except for the aggressive poison ivy along the fences. A search up and down the roadsides of Fayette and adjoining counties reveals few native trees other than hackberry, walnut, wild cherry, or locust, mostly wretched specimens at that, cropped out of all recognition. To this day, in the exuberance of the American civilization, few communities have taken the first step toward solving that perplexing problem—the distribution of pipe lines, water mains, utility and telephone cables, in some other manner than along the lines of roadside plantings. The result is often disastrous both to the plantings and to the installations. If Kentucky will find a way, she may be acclaimed a pioneer state in a new sense.

TIMBERLANDS

The forests still remaining have also been subjected to neglect and abuse, and to the devastation of fire. The nature lover laments the total lack of untouched natural forests as objects for study. The economic aspects of forestry are discussed in another chapter; it is sufficient here to mention the forest as an essential phase of the development of wildlife, and as a perpetual reservoir of native trees, shrubs and herbaceous plants. All this belongs to the aesthetic and intellectual background of the people, a matter which



No region has . . . a more magnificent system of streams.

W. R. Allen



Cumberland Falls . . . on the Cumberland River.

J. W. Davis

is no less practical or important than the growing of timber or building of soil.

INVENTORY OF KENTUCKY'S OUTDOORS TODAY

By good fortune Nature has provided one resource that is not being depleted—the mountains and valleys, canyons and crags. In many areas all they need to enter a new cycle of productivity and scenic beauty is a new mantle of vegetation. The number of acres of land on which new soil is forming and new trees growing is, it may be hoped, at the lowest point. The animal life such lands will support is correspondingly scarce. Kentucky once supported such resources in profusion, and may be able to do so again. If there were statistics on the subject, they would be unimportant, since it is the future that is of greatest concern. In approaching the matter from the quantitative point of view the census should be taken, not of trees, birds, and game, but of the citizens willing to participate in an all-out conservation plan.

THE WATERS OF KENTUCKY

The 40 thousand square miles of the state receive an average annual rainfall of more than three and one-half feet. This amounts to some 90 million acre-feet, equal to a column of water covering an acre to a depth of 17 thousand miles, or a cubic block of water three miles in each dimension, and containing 27 cubic miles. Probably much more of this enormous volume of water than the estimated ten to twenty per cent is runoff, mostly by surface streams, but partly by underground drainage. For in the 400 miles of its length the state slopes down from four thousand to below four hundred feet in elevation, and with such a gradient the runoff is rapid. This fact is evident also in the topography—the deep and rapid erosion of the valleys into bedrock. The primary functions which the streams have set up for themselves from the beginning is the removal of this annual increment of water, and all problems of stream utilization hinge upon this factor.

The problems of the scientific utilization of the land, of the forests, and of minerals have been the subjects of much study and considerable expenditure of money. But only an extremely small investment of time and money has been made in the interest

of Kentucky's aquatic resources. From the point of view of aquatic life her waters are reaching nearer the vanishing point than most citizens would believe. While water has an appeal almost universal, the average Kentuckian is very little water-minded. He is not at home in, on, or about water. He has not been brought up with it and responds but awkwardly to it. True, the first homes were built in the valleys; the first roads followed the creeks from the landings. But later much of the population shifted its homes to the ridges and hilltops, leaving remains of a valley culture behind it. A migratory shanty and houseboat population pre-empted the larger rivers. Today many people think of no better use for a stream than that of a dump for discarded tin cans, old tires, and broken crockery.

No agency of the Commonwealth has ever been set up to act as godfather to the streams—to consider their management as a unified problem, or to develop a set of principles or policies which would harmonize conflicting interests. Each individual, industrial concern, or urban community has proceeded on the assumption that, since the streams seem to belong to all, everyone should be free to use them in any manner whatsoever.

NINE MAJOR USES OF STREAMS

Mankind uses streams in a variety of ways, from the cutting of ice to the running of logs. Much of their ultimate character is a response to man's treatment or mistreatment. Wise development of any resource should take into account all the factors of the situation. But in this case no such approach has been made by State or community. It is doubtful if many citizens could name offhand all the possible stream uses which should claim a just share of their attention. The following nine have been selected as the most important, actually or potentially:

- | | |
|-----------------------|-------------------------|
| 1. Drainage | 5. Navigation |
| 2. Water-supply | 6. Power |
| 3. Sanitation, health | 7. Irrigation |
| 4. Flood-control | 8. Biological resources |
| 9. Recreation | |

WEIGHING THE FACTORS OF STREAM UTILIZATION

One of the obstacles to the full utilization of streams is the lack of an overall approach at the beginning of each and every

project involving water-rights. Some parties to every water-power or water-supply enterprise are habitually overlooked. Engineers in charge have often taken the view that if a citizen "doesn't holler he isn't hurt," or that it is well "to let sleeping dogs lie"—and unless a man's farm is drowned he has no concern with the construction of a dam. No one seems to have the complete answer to the question of law and equity, "Who owns a stream?—the abutting landowner, all landowners, the community, or the State?" If Kentuckians are willing to learn from the experiences of other states, an organized defense should be set up promptly against the arbitrary expropriation of public waters. This defense should not halt progress, but insure that progress and opportunity be justly distributed in the general interest. It is usually the conservation and wildlife factors which are most in jeopardy.

Conflicts among the possible uses of streams are analyzed in the chart accompanying this chapter (page 108). The drawing shows the degree of interference which each water-use imposes on each of the others. In the case of any stream, there is rarely a good balance among the uses to which it is put. If a stream does not or can not, under a system of state survey and control, fairly serve all purposes, may there not be worked out some form of compensation for the unbalance, in the overall, statewide plan? If the Tennessee River is rendered unfit for fisheries or recreation, assign Green River to these purposes; if the lower Cumberland goes into the flood-control program, should the upper Cumberland be allocated for other uses? The most workable compromises should, of course, be sought, but also should be guaranteed.

Drainage.—Due to the precipitous, non-glaciated terrain, with cavernous limestone underlying a great part of the state, over-rather than under-drainage is the problem, except for the flood-plains of the larger streams, and except that Kentucky has been assigned a share in the drainage problem of the lower Mississippi valley as a part of the national flood-control program.

Water-supply.—Conditions best suited to adequate water-supply for towns and cities may also be well suited to the maintenance of birds, fishes, and the great array of aquatic animals and plants, depending on the size of the community and the volume of water stored. On the other hand, in the extreme case of large cities with small water-shed (such as Lexington) the needs of aquatic life do

CHART OF CONFLICTS AMONG THE NINE USES OF STREAMS

Use of Streams	Extent of Conflict								
	Drainage	Water Supply	Sanitation	Flood Control	Navigation	Power	Irrigation	Biological Resources	Recreation
Drainage	Kentucky's Easiest Problem	a		a	a	a	a	d	d
Water Supply	Conflicts vary with community size and stream volume			f		b	b		
Sanitation	Purity of supply competes with disposal of waste			c	c	c			
Flood Control	Choice of flooding upstream valleys or downstream plains. Drawdown rapid and complete.								
Navigation	Requires constant water stages, hence favors wildlife; benefits from forest restoration.							e	e
Power	Requires storage in rainy season and gradual draw-down in dry season.								
Irrigation	Not in immediate prospect in Kentucky, implies scarcity of water for competing uses.								
Biological Resources	Competes to some extent with all stream uses except recreation.								
Recreation	Competes to some extent with all stream uses except biological resources.								

No Conflict.



Downstream Conflict.



Varying Degrees.



Total Conflict seasonally or permanently.



EXPLANATION OF CHART ON OPPOSITE PAGE

a. Whenever waters are impounded, the drainage of lands upstream is sacrificed for better drainage of lands downstream. Fluctuation of the watertable in lands adjoining the inundation is detrimental to plant growth.

b. Potentially a problem as urban population increases along the smaller rivers.

c. Regulation of flow does dilute impurities during the dry season, and does minimize stagnation at that critical period.

d. Holding the waters in the upper rivers sufficiently to dry up the lowland swamps will diminish their value as bird-refuges, nesting-grounds, and hunting areas.

e. Impounding waters for navigation does not produce storage reservoirs well suited to wildlife, due to fluctuating stages, although the navigated streams may benefit; reforestation of headwaters may somewhat equalize the runoff.

f. Water-supply demands summer economy of water; flood-control calls for the maximum release in summer.

come into competition for the limited supply of water, especially in the drier years.

Sanitation.—This is a matter to be viewed from the upstream problem of purity, and downstream pollution. The former is easily reconciled with the requirements of recreation and aquatic life, needing the same degrees of purity. The seriousness of pollution downstream depends on the size of the urban community and the volume of the stream. Sewage is often deadly to living things of all sorts for a variable distance, below which impurities begin to be completely reduced and harmless, through bacterial action. Beyond that seasonally fluctuating point the reduced organic matter is ready to add richness and the healthy, bright green of microscopic plant life to the water. Thus the food available for fishes and other animal life on down the stream is increased.

Domestic and urban waste disposal is both a biological and engineering problem. Not often has a satisfactory solution of it been undertaken by Kentucky cities. They pass it along to communities downstream, where it ceases to be a sewage problem and emerges as a matter of water-supply purification. Industrial waste from mills and chemical works is an engineering concern solely, since Nature has no solution for it. Such wastes are never beneficial, always more or less detrimental, and often very destructive to most forms of life in water.

Flood-control.—The above-mentioned lack of a state-wide system of planning and control found the Commonwealth of Kentucky unable to cope with the economic disturbances and great floods of the 1930's. As did other states, she readily accepted a share in the national flood-control program intended to alleviate in one stroke both the unemployment situation and the peril from floodwaters. That is now largely accomplished. The citizens freely acquiesced in this appropriation of the rivers, for interest in them had been dissipated gradually since the days of the packet-boats.

In the crises of the 1930's the citizenry were happy to find a solution handed to them for the most vexing problems. Why should they have looked more deeply into such matters, when time was so valuable? Consequently neither then nor since has either an official or unofficial board or commission been set up to make or execute a plan, other than the general recommendations of the

State Planning Board. The State does not possess a body of men empowered to negotiate the details of a conservation plan with the federal authorities on the basis of a balanced, all-round utilization of streams.

In other matters of the State's business there is the inevitable cost-accounting system, and it should be appropriate also to evaluate the direct and indirect costs of the flood-control program. The balance-sheet is padded, for some vital matters of cost are being left out. While gaining freedom from inundation of the Ohio and Mississippi flood plains, there must be reckoned the permanent inundation on the other hand of large areas of upriver lands in farm and forest. There is the resettlement of populations of upriver farms and villages as against resettlement of farm and city populations along the levees of the lower river valleys. The total dislocation of population with their customs and associations may be less upriver, yet in the end they may justly claim that the program is their gift to Louisville, Paducah, Cairo, and the lower Mississippi bottom lands. The inhabitants of those rich, alluvial lands owe to the upstate sections a debt of gratitude plus.

It has been argued that those regions are exchanging rivers for new assets in the form of lakes. Unfortunately a forlorn hope to that effect still exists. Actually it takes much more than just so much water to make a lake in the full sense of that term. At the vacation time of the year when the reservoirs should be at their best, the water must be drawn down over the dams, exposing great mud-banks. That procedure also eliminates the spawning- and feeding-grounds of fishes, making their natural propagation nearly impossible. These impounded waters are destined to disappoint the expectations of the people as they have those of other sections of the country for the same reasons. These remarks are meant not as a criticism of the inevitable procedures in a flood-control system, but to point out that there is still lacking a satisfactory provision for the other uses of streams—that this one program, in the absence of an all-purpose stream-utilization policy for Kentucky, may be developed too far for the general good.

When first inaugurated, the program was announced as being an exploitation of the major rivers. Not so much was said of the consequent submergence of the lower and best portions of their

tributaries also. Not only that, but plans are still under way for the occupation of an indefinite number of the secondary rivers.

The time would appear to be at hand, therefore, when, if ever, Kentucky is to plot the future of her great system of streams and their utilization in behalf of the people. There is now no question concerning the larger ones. But does Kentucky want to retain unspoiled examples of the secondary rivers such as the Green or the Licking? Does she want her people of generations unborn to have the use, the enjoyment, and natural productivity of some of the brisk, friendly, companionable, river-like, little rivers of their homeland?

A plan of study, survey, and development for wildlife can now be applied mostly to these secondary rivers, such as the Licking, the upper Cumberland, Green, Barren, Rough, Nolin, and to the still extensive minor creeks and branches in every section of the state, such as the Kinniconnick, Bluebird, Rolling Fork, Troublesome, or Beaver. Other interests have already looked at these minor streams with an appraising eye, and located possible dam-sites or other installations associated with them, but with little thought as to their suitability for state parks, state forests, and wildlife.

Navigation.—This is a function of larger streams which can be carried on with considerable economy of water the year round, and not altogether unfavorably to living things, because the maintenance of constant stages is desirable for both purposes. However, the deepening of streams for this, or any, purpose results in a quite different population of fishes and other organisms from those living there before. This is well illustrated in the case of the Kentucky River, which has been held at stages suitable to navigation for more than half a century.

Power.—As in the case of flood-control (or the removal of flood-waters from one area to another), the use of water for power brings about the maximum fluctuation in depth, and a greater variation in the conditions affecting aquatic life. The consequences and implications for wildlife are the same, whatever the purpose for which a stream is impounded.

Irrigation.—The frequent drouths of the present climatic cycle, water shortages in many sections, the lowered water-table, all



... picturesque water mills for grinding grain.

William Logan



Insects are, therefore, a natural resource

W. Brooks Hamilton

conspire to suggest some future closer system of water-economy. This might even go so far as a limited use of irrigation with dams already erected and water otherwise unused and wasted.

Aquatic Biological Resources and Recreation.—The harvesting of human food from streams and the employment of streams for recreation can well be pursued together. The same conditions should be favorable to both. The competition would occur in the choice of species of fishes to be tolerated or propagated. Both of these interests, however, are in a mutual and extreme opposition to some of the other types of stream utilization, especially to those which demand great seasonal withdrawals of water, with variable depths as a consequence.

A confusing element enters the picture, when it is shown that newly impounded waters always rise quickly to high productivity for a few years at the beginning. This encourages the sportsman or commercial fisherman in the belief that the ideal setup for fish-propagation has been achieved. Kentucky's Herrington Lake is a good example of such a body of water making a reputation for high yield before settling down to its normal rate. During the early years after water is turned in, the lake rapidly takes up much of the growth-substance from the soil and from the decay of plants along the banks, thus stimulating prolific growth of the microscopic aquatic plant and animal life, on which fishes feed and grow, then propagate enormously, after which fishing camps have their period of accelerated growth. Then occurs the exhaustion of the most soluble growth-material and the end of the dream. Thereafter the reservoir is restricted in its food-supply for fishes to the amounts which the sun's energy can synthesize in the upper sunlit strata. The clearer the lake the more deeply the life-giving sunlight will penetrate. Below its effective reach the water is unproductive, and the deeper the reservoir the greater the proportion of unfruitful water. The same area of shallow water should produce about the same total amounts of fish-food, with less dilution.

The possibility of increasing productivity of natural waters, and of reservoirs as well, without undue cost and labor, is still a problem for future study and experimentation, if and when Kentucky decides that problems in aquiculture have their scientific approach as do those of agriculture.

WILDLIFE RESOURCES OF THE LAND

Intimately linked with the conservation of natural waters is the problem of restoring the land to its greatest usefulness—that of giving both *life* and the *fullness of life* to mankind. It is no small undertaking, must command the general respect of the citizens, and enlist the constant labors of many. Fortunately there are many citizens in every community who not only want Kentucky to come back, but who are working to that end. Not a few carry pocketfuls of beechnuts, hickory and walnuts, and acorns on a Sunday-afternoon stroll, to do a little reforestation on an unpretentious scale. Some of the newspapers are doing a good job of keeping conservation before the public. The League of Kentucky Sportsmen, 4-H Clubs, women's organizations, luncheon clubs, and Otter Creek conferences are all lending a hand. Many citizens have participated through the improvement and the control of hunting on their property.

Wildlife resources, however, have dwindled to a trickle, aside from a little rabbit and squirrel hunting. Bird-shoots have been indulged in, sometimes on a large scale, by taking advantage of the fact that neighboring states have so protected birds during propagation that they migrate in large numbers. However, a survey will probably show that the failure of game is more a matter of lack of cover than of over-hunting.

INSECTS AND THE ECONOMY OF NATURE

Some insects are bad citizens from the point of view of mankind. They have earned their reputation, but have gotten the whole insect world into disrepute, unfairly. So much emphasis has been put upon the mischief done by certain species, that most people would offhand pronounce them all the enemies of humanity. New methods of wholesale destruction of pests are promised for the near future, and word of them has been acclaimed as good news in some quarters. But they should be accepted only with much caution and only after the most careful experimentation—if at all! Otherwise there may be much chance of upsetting the balance of Nature in some other direction; for a general poisoning or asphyxiation may destroy some of the thousands of species which are either neutral or beneficial. For example, the bumblebee, while not suitable as a pet, makes pos-

sible the growing of clover; and while the spider aids in the control of insects, it is also kept from overpopulating the earth by the many wasp species. None of these animals is wholly good nor wholly dispensable. It will be of value to ascertain the results of wholesale poisoning and oiling of some of the streams—effects more far-reaching than the mere destruction of the mosquito who is the villain the public health officials are pursuing.

Aquatic insects and their larvae are a major part of the food of many fishes, just as those of the land are the articles of diet of most of the songbirds. Insects are, therefore, natural resources in no small degree. Let alone except at their worst manifestations in field and orchard or garden, they work out a pretty good system of balance. Most insect-control work is actually being done now by natural agencies better and more cheaply than field hands could do it. Man's experiments have never been more than partial successes.

Kentucky is relatively free from major insect attacks. With her diversified cropping and small fields she has rarely suffered such extremes of insect damage as have the one-crop states.

Birds, with ample shelter throughout the farm and nesting-sites well distributed, hold in check all forest- and field-crop pests. Insects in the role of fish- and bird-food are as much a positive contribution to human economy as in the making of honey or silk. Still another regiment of insect benefactors are the host which act as predators and parasites upon many of the harmful kinds. It is only fair then to consider insects in general as among the assets of Nature, and their contribution to the aesthetic appreciation of mankind as clear gain.

SCENERY, HUMAN LIFE, AND WILDLIFE

Wherever the configuration of the land is pleasing to the eye it may be dignified by the name of scenery. Most of the Kentucky countryside has a topography at least gently rolling, and very little of the dead level of prairie lands. It does not often rise to grandeur nor descend to monotony, but scenery of all sorts is present in profusion. It intrigues the adventurer on tortuous highways with the constant change—some new and pleasant prospect from every hilltop. The visitor's objectives are usually the major attractions, such as those described in the previous chapter, but on his way,

he finds himself frequently face to face with a superb and unexpected view—the gorge of the North Fork of Red River, the mountain and valley country between Irvine and Beattyville, the breathless reaches into which he plunges from Hall's Gap, or the palisades of the Kentucky River.

None of the scenery, either the highlighted spots or the lesser areas throughout every county of the state, would appeal to the eye if it were only the naked rock. It is the mantle of vegetation, grasses, herbaceous plants, shrubs, and forest trees, which completes the picture. Unfortunately many thousands of acres of hillside, now mostly stripped and gullied, show their gaping wounds as well to the passer-by. These hundreds of thousands of acres of hill and valley will still grow the right plants. Vegetation will give back soil for rubble, wildlife for barrenness, beauty for ugliness, and protected watersheds with running streams in place of dry hillsides and waterless watercourses. In other words, forestry, wildlife production, stream management, water-supply, and scenery are all parts of one great public enterprise, and the only name for this enterprise is an understatement of the whole—conservation. While the citizens await the leadership of the State, and the State listens for rumblings from the citizens, the job isn't being done. Yet in no public undertaking as in this, can any one man or group of men, or civic unit, or club, accomplish so much unaided by just going to work at it. In the next section of the chapter an attempt is made to present several of the possible avenues by which Kentucky may find her way into what may be the greatest accomplishment of her history.

EXPLOITATION YIELDS TO CONSERVATION

In many sections of the United States we have the encouraging spectacle of entire populations becoming aroused by the threatened loss of their resources and correcting some of the errors of the past. The conservation of mineral resources is a matter of saving that which is already stored in the earth's crust. The conservation of biological resources should rather be characterized, not as a hoarding, but as the application of natural processes of growth and reproduction. No rule-of-thumb code of practices exists whereby these processes may be interpreted on a certain page and



W. Brooks Hamilton

...wildlife... can again be plentiful....



W. Brooks Hamilton

No section . . . is more glamorous . . . than Kentucky

the one-and-only medicine prescribed. Nature is too complicated for that, and in this complexity lies both her charm and the hope of her restoration. Every situation is a somewhat unique subject for study and evaluation, by all the techniques known to the conservationist.

A TREASURY OF FACTS AND PRINCIPLES

A systematic application of scientific principles and methods to the problems of wildlife management has not yet been made in Kentucky. Yet such are the necessary first steps. Success in a wildlife program has nowhere been attained without a governmental agency to perform these technical services. Under whatever name a Kentucky natural history survey be created to perform these functions, it has many duties ready at hand, such as the following:

Preliminary Survey.—Its first undertaking should be in the nature of preliminary biological surveys of several selected, typical areas of the state, so as to formulate an overall pattern for the first steps in development. These should look toward the realization of the recommendations of the State Planning Board, and beyond.

Permanent Survey.—The survey should continue field explorations so as to refine its procedures in the light of experience. But then its duties are only well begun, for one of its obligations is to disseminate knowledge among the people. This body of knowledge will not exist in the mind of any man, however well informed, but in a well organized group of technical men and a central repository of records, specimens, reports, bulletins, and book collections. This bureau should be kept in intimate contact with the details of the plant and animal life all about the state. Such procedures are well known in geology, and in anthropology and archaeology, but in the biological fields the green light has not yet flashed.

In relation to plant and animal life of all kinds there is a widespread hunger and thirst for knowledge on the part of people generally, a most natural curiosity. A natural history survey can satisfy this public need in several ways. Correspondence of a technical nature and pertaining to natural history would fall within its province. The permanent displays of its modest natural history museum will attract more and more visitors as it grows and comes

to be better known. Its traveling exhibits and extension service will visit fairs, clubs, and schools throughout the state.

Research in Wildlife Management.—Many of the present activities of conservation departments are entered into by trial and error, with much loss of effort and money. The wildlife survey as the right hand of the conservation, fish and game, and forestry services of the State should be in touch with the experimental phases of their work at all times, giving them the necessary scientific controls which any experiment needs, and making the scientific records of them. The survey should be in touch with the program for improving the wildlife areas, land and water, the management of bird sanctuaries and preserves where hunting is permanently prohibited, the management of spawning and feeding grounds for fishes, the chemical studies of public waters to determine their fitness for stocking, studies of the effectiveness of stocking, studies of natural populations, "rough fishes," etc. Such are a few of the duties in which the survey would find itself busily engaged as it gains the confidence of itself, of the people, and of the administration.

Publication.—As a service to the schools of the state the Game and Fish Commission has recently issued a comprehensive natural history bulletin (Gilpin). This is an excellent beginning, and should be the first of many such undertakings. This also is one of the duties commonly assumed by a natural history survey, and should be an important means of "selling" Kentucky to her young people. Eventually there would be issued a graded series to reach all ages.* It would be a worthy contribution toward adult education and public information along many lines. As a vehicle for "propaganda" in behalf of wildlife and information as to the progress of its management, such a vigorous publication program is indispensable.

Centralizing the Commonwealth's Scientific Activities.—The political and public relations officials belong, no doubt, at the capital. The laboratories, records, museums, and scientific personnel, however, can do their best work at the state university. This is the arrangement in many states, such as Michigan and

*A volume for use in the seventh and eighth grades has been projected under sponsorship of the State Departments of Conservation and Education.

Illinois, which have done their survey work in a big way. The state bureaus can best carry out their own program of administration, supervision of wildlife areas and public parks, regulation, and public relations. Other functions, such as the following, can be more advantageously performed in the laboratories, libraries, and museums of a university:

(1) Training technical personnel for water-supply engineering; biology of streams and impounded waters; specialties in zoology, ichthyology, ornithology, entomology, museum technique; directors for local conservation areas; teachers of conservation and biology in public schools and camps.

(2) Maintenance of a center for the exhibits of the wildlife services; museum of forestry, botany, wildlife, aquatic resources; native industries based on local resources; exhibits of living native land and aquatic species.

(3) The designing and construction of traveling exhibits of wildlife subjects for fairs, clubs, and schools; the sponsorship of informational services at the state parks, etc.

(4) Provision of technical services and consultation in technical projects of the state and local conservation enterprises; maintaining informational and publication services, editorial and distributional services; library extension in natural history.

The consolidation in the university of agricultural, geological, and other scientific agencies is working well, permitting a high degree of technical specialization. Scientific procedures in wildlife and conservation should be the natural outgrowth of its present activities. There may be other frontiers wherein the State might put her university to work in her behalf, such as that of assisting the common schools in working out a natural science curriculum fitted both to the broader outlook and to the local scene.

Some Accomplishments Are in the Bag.—The Kentucky Planning Board has estimated a total of 12 thousand miles of fishing waters in Kentucky, nearly all suited to warm-water species. The board ascribes the failure of fishing in the mountain section to mine-water and other pollution; in the western and central sections to pollution by sewage. Dynamiting and seining should have been included in their diagnosis. They recommend the erection of small dams against drouth conditions, and the control of pollution.

The State Divisions of Forestry, of Conservation, and Game

and Fish have existed in various forms for many years, and are a practical nucleus for the continuation, not only of routine administration, but of constructive enterprise. They need still to be fortified with power, with responsibility, and with permanency. At present the wildlife service is limited to a few activities such as licensing and policing, and the production of young birds and fish for distribution. Five plants very inadequately meet the purposes of fish production: the Gatliff Hatchery, Whitley County; the Trigg Hatchery, Barren County; Glen Springs Hatchery,* Lewis County; the Ashland Hatchery; and the Floating Bass Hatchery, Herrington Lake, an ingenious invention of the local sportsmen of that region. These have a combined estimated capacity of over two million fry, distributed through some twenty-five rearing ponds in the various regions. A variable success has been achieved in the operation of these hatcheries, for seasons have been variable, and locations are poor with respect to water supply; all the hatcheries are crowded and none are well planned for the growing of natural food or to meet the needs of operation. Plans for improvement, however, are being developed.

A project for producing healthy young quail, and a number of game preserves have been in progress under the Game and Fish Division, with others privately sponsored. During a period of three years the division maintained a field study of several northeastern Kentucky streams, a very fair beginning toward a preliminary biological survey, with results which emphasize the need of a permanent survey. From collections made by the division, and from scattered field work of others, beginning with David Starr Jordan, an estimate may be ventured that Kentucky has, or has had some 150 species of fishes. This includes all natives, large and small, from muskellunge down to the minute minnows and darters. Further, the Game and Fish Division has maintained for certain periods of time a field agent with duties along the lines of public information and extension work in schools.

PRIVATE RIGHTS AND THE PUBLIC INTEREST

The state long ago sacrificed about all of its public domain to the land-hungry settler. Its citizens will now have to be content with a very restricted area, limited in capacity for wildlife, or

*Discontinued except for rearing and distribution.

incur some invasion of personal rights in order to re-establish adequate areas for a more ambitious program.

Rightly or wrongly, the private citizen and landowner has been in undisputed possession of both land and water so many generations that he considers not only the land but the water as his own, regardless of the number of other freeholders who share his stream. He is lawmaker and warden along his boundaries. He would resent sharing the jurisdiction over his stream. If in the name of sanitation, of aquatic resources, or public interest, the State should resume jurisdiction over public waters in fact as in theory, an area of conflict presents itself.

However, the landowner has yielded some of his manorial isolation on numerous occasions, in favor of railroads, highways, and power or water-supply requirements. More recently large tracts have passed into the possession of the federal government for flood control; in other cases coal, oil, and timber lands have been sold to corporations. The present question is whether public forests, state parks, and game preserves are important enough in the eyes of Kentuckians to warrant similar acquisitions of land; whether the individual citizen can afford to go on trying to make a living and keep up taxes on the lands in question. Few will dispute the need of elbow-room or breathing space on the part of city folk; more will consider the cost prohibitive.

True, some mistrust and suspicion exist between town and country people which holds them back from getting together on their common social and economic problems, and this is sometimes justified by the carelessness of the former in leaving gates open or starting fires, and by the jealous grip of the latter on the hunting and fishing grounds, or hiking and picnicking spots. The situation is aggravated by a too frequent violation of the laws of hospitality and those on game and fish. Through this state of confusion wildlife suffers. A constructive state-wide effort to get town and country people working together for this and other public interests is sadly needed. Through such a positive approach emphasis should gradually be shifted from law enforcement to co-operative enterprise. Of course, rigid enforcement procedures will still have to be exercised against a diminishing minority. But it is encouraging to note the small number of violations that other states have been obliged to prosecute in recent years; Kentucky can do as well when her people decide where their best interests lie.

THE NEED FOR WILDLIFE AREAS

The exploitation of privately owned lands and waters for wild-life projects is timely and good. It is, however, temporary at best, and subject to the continued good will and co-operation of many persons. Public ownership of some areas is the only final solution. Fortunately the cheapest land is about as well suited, sometimes better, than good farm land, and more adaptable to wildlife and recreation. A tenfold increase in the state park areas would be little enough, especially if generous sections of some of Kentucky's finer streams, with their canyons and palisades, be included. A few acres of recreational lands do not meet the needs of nearly three million people; a few miles of fishing waters will not meet for long the fishing requirements of thousands. At present too much is being asked of Nature, and of the Park Service.

It is important to point out that, in contrast with the types of natural resources elaborated in other chapters of this book, wild-life is subject to rapid renewal. Whenever the citizens want badly enough, now or generations hence, to bring about its restoration, they have the power to do so. Once abundant, now scarce, it can again be plentiful. Can this be said for gas or oil or coal?

The greatest possible provision for wildlife is to set aside for it the maximum amount of public land, planted for timber and forage, and given proper administration. The second best procedure is that of stocking good-sized areas of private land, administered by government or by hunting and fishing clubs. The third best method is the stocking of individual farms. If Kentucky decides to join Michigan and Pennsylvania as a deer-hunting state, there are enough large areas of inferior land for the purpose. Mixed areas of farm and forest are not so well adapted, for the deer encroach upon the farm crops, and the indignant farmer poaches on the deer. Large consolidated areas with the shortest boundaries alone are practicable.

An Invitation to Noah's Passengers.—Kentucky will probably not attempt to bring back the bison or elk, once common, but there should be room for the bear, now nearly extinct. Numerous valley meadows now under plow owe their existence to the beaver, no doubt the most useful citizen of all the fur-bearers, who should be invited to return and resume his conservation labors. The

muskrat, which has brought much wealth to pioneering generations, might again become a significant source of income.

In the economy of Nature there is a place for the squirrel, the skunk, even for the predators such as the fox and the wildcat. Without them a good balance cannot be maintained, and that goes for all the former wild inhabitants, large and small, in fur and feathers. Wild turkey should come back in numbers; in large areas, grouse, prairie-chicken, bobwhite quail; and in season the many species of waterfowl, formerly abundant, and not doing badly in the sloughs of Western Kentucky now. The bald eagle should again sweep the skies unmolested to give citizens the satisfaction of seeing their national bird now and then. The broad-winged hawks should again take up their work of holding the rats, the mice, the chipmunks, and the weasels in control. About 300 species of birds are known to have lived or come to visit in Kentucky, of which number about 200 may be considered fairly common, including game, predatory, song, and insectivorous species. Some birds which adjust themselves readily to man's activities and to open spaces have actually increased since pioneer days, among them the robin, chimney swift, and chipping sparrow. The enforcement of the migratory bird act has even now resulted in a perceptible increase of other species.

For the even balance of wildlife, in order that all may be fed, it is essential also to have regard for all the lesser wildfolk, such as the several species of frogs, toads, turtles, salamanders, crawfish, some of which are on the verge of extinction.

EVERY FARM A POTENTIAL PARK

Wildlife restoration might well begin with, and eventually should extend to the farm—every farm. A farm without its permanent woodlot and without its pond is not the complete farm—that is, it does not give every farm boy the background in Nature which his own nature calls for. The woodlot should contain samples of many native trees, the oaks, elms, hickories, maples, ashes, birches, beech and sycamore; the minor trees and shrubs, redbud and dogwood, sumac and pawpaw. To pond and creek belong the hardy bullhead and sunfishes, chubs, minnows, suckers, and darters. These are only a few which the pioneer family knew. No better project could be conceived for the 4-H boy or rural science

class, having a well-informed county agent or science teacher to point the way, than to create this life anew.

The individual farm program should grow into something still better. Not only the land unsuited to cropping and serving most usefully as woodlot and recreation center of the farm family, tenants, and guests, but every field needs its own park area—the home of the squirrel and chipmunk, the possum and the coon, and all the wild friends of the farm boy and his dog. Every field needs wide hedgerows or swales with native shrubs, grasses, and wild plants, or other such shelter near at hand, where insectivorous birds may nest and do their work. This is counter to the practice of generations, that of clean-farming—a type of culture reduced to rote and rule, with much of the heart left out of it.

The plan of re-establishing a network of woodland about cultivated fields of a whole region is more than a nostalgic memory. It is in accord with sound ecological principle. A screen of timber is a reasonably effective barrier not only to winds, but to the easy passage of plant diseases and insect pests from farm to farm and field to field. Its best effects are realized, as has been shown in the boll weevil campaign, under a neighborhood co-operative system of rotation. A given crop is left out for one year, and another year the re-entrance of its starved-out pests is slowed up to a worthwhile degree, and the denser the barrier, the more effective it is.

The old-fashioned, pre-tractor farmer who would sometimes stop at the end of the furrow, to "blow" his team in the shade, and to listen to the mockingbird or the "fie'lark," did not think of his farm as an outdoor factory. No one generation has sentenced the farm to treeless desolation, but each has left it a little poorer.

THE ROLE OF COMMUNITY WILDLIFE AREAS

If Kentuckians believe with all their hearts in the recreational values of outdoor living, they have an unusual opportunity to create an adequate system of public lands devoted to such a purpose. They will not look exclusively to their rich uncle to set aside for them such areas as Mammoth Cave Park, or even to the State for regional parks, but will set up local park systems of their own, near home. These may be financed and managed by county or municipality, with State technical supervision in

forestry, game, and fish. Such a program will give all conservation-minded citizens something to do. Parks and forests are as appropriate for counties, groups of counties, or cities as for the Federal Government, and twice as useful to the people in general. Their administration under a county agent or other supervisor is readily combined with various other civic activities which the local government might wish to encourage. They might serve, for example, as camp-meeting grounds, fair-grounds, county agent's demonstration areas, ball parks. The county historical or natural history museums, sportsmen's clubs, or air fields are equally worthy of a place. Within these areas the public forest should have much the most generous allotment of space, both for demonstration and for the production of income. Certain New England towns have shown how this can be done on a scale sufficiently large to meet all the public expenditures for roads, schools, and other enterprises without a tax levy.

Community areas should be important adjuncts to the schools—outdoor laboratories for agriculture, forestry, biology, nature study, physical education, and phases of practical community living. There the boy or girl can be taught objectively how to recognize, use, enjoy, and conserve the gifts of nature—how to adjust human life to the environment from which it sprang, and of which it has forgotten how to be a part. America needs this de-emphasis on making a living, and re-emphasis on how to live—a new evaluation of the gift of life, with natural law as its guiding principle. If well conceived and wisely administered, these regional areas, close to everyone, should be the most valuable part of the public lands in terms of human, if not economic, values. They should especially commend themselves to the governments of cities, whose young people are most lacking in suitable leisure-time employment and outlets for wasted energies; most in need of the training and experience of the great outdoors.

WILDLIFE PROJECTS OF STATE-WIDE STATURE

At present the state-operated areas go but little beyond the provision for day-excursionists and picnickers. They should have types of facilities which necessitate extensive additions of land and the creation of new areas. There should be wildlife preserves and aquatic breeding-grounds, together with sections for hunting

and fishing on a sizable scale. There should be boys' and girls' camps with roomy grounds of suitable character, extensive forest tracts for demonstration and for timber-production, family camp-grounds with facilities for sports and swimming, to accommodate citizens and tourists. There should be park naturalist and guide services, trailside museums, and informational services in the form of talks and printed matter.

COMMERCIAL DEVELOPMENTS IN WILDLIFE PRODUCTS

Game.—If the territory now in gullied hillsides, producing next to nothing, not even taxes, were boldly taken over and put into forest, it is not difficult to imagine game as well as timber coming back on at least a limited commercial basis. Skepticism on this point of growing timber on "exhausted" lands and abandoned strip-mines is out of order, in the face of what the national forest service has now accomplished in the Cumberland National Forest. Pennsylvania has pioneered the way. With a population much greater than that of Kentucky, it still has room for extensive forests and game on a large scale—deer, for example, by the scores of thousands. The markets, with modern refrigeration, will absorb almost unlimited amounts of the surplus crops of venison, quail, turtle, frogs—even opossum and other game.

More important than the game itself would be the opportunity of local citizens to develop housing, catering, and guide services to hunters, and to supply their needs in equipment.

Fisheries.—Little by little, and without the shock of any sudden catastrophe which would be reported in the newspapers, not only the fishes, but other forms of aquatic life have nearly disappeared. Living in Kentucky becomes by degrees a less interesting experience. Furthermore, such a valuable resource as the former mussel population of rivers has become almost totally exhausted, although once very abundant in species and numbers. As the State government continues to struggle along without a resources planning agency, adjoining states have lured the business away almost entirely, in spite of the originally unsurpassed suitability of Kentucky streams.

Few citizens now remember when the commercial fisheries of Kentucky were on a large scale, and when the markets were supplied from nearby sources rather than from the sea and the Great

Lakes. It should be one of the major objectives of a Kentucky natural history survey to determine to what extent certain sections of rivers can again be brought into production. Then there would be the further problem of their administration, possibly through lease of various sections to individuals or companies.

Fur-production.—Trapping has always been a favorite avocation and seasonal employment for many Kentuckians, and has been made a more modern and humane practice by recent legislation. It is a minor industry at present, and will not likely wrest first place from the swamps of Louisiana. But the return of many thousands of acres of unproductive lands to the muskrat, beaver, raccoon, and rabbit should increase the annual catch enormously.

THE HUB OF THE AMERICAN TOURIST-MAP

Many Kentuckians are heard to express the desire that more tourists may be induced to stay longer, instead of funneling through the state without more than a glimpse of its charms. They come from every corner of the Union, *via* Kentucky. Some beauty spots are visible only from places in the road too narrow for the driver to turn out—he must keep going. But a beginning has been made to provide shaded roadside spots where the traveler may find rest, good water, and facilities for cooking and eating. No section of the country is more glamorous through song and story than Kentucky, yet her visitors often fail to find the glamour in passing through.

Meanwhile there are a thousand nooks among the hills and along the streams where the sportsman and nature-lover would gladly linger if only the simplest facilities existed. Kentucky, with her mid-continental position, moderate climate, wealth of suitable low-cost lands and scenic attractions, is in an unusually favorable situation for such developments. Yet there is no more than a beginning toward making these unsurpassed attractions available, or in providing accommodations for a prolonged sojourn in a state whose name is a synonym for hospitality.

Together with some unborn tourist bureau a Kentucky association of tourist camp proprietors might make a study of the needs and wants of the visitor and his family, with the view to meeting the deficiency in part through private enterprise. The wants of the dancing-and-dining public are being met in this way. Owners

of submarginal lands have done little toward exploiting their holdings, and almost never in a manner to increase their productivity in timber and wildlife. Not only suitable tracts on the tourist lanes, but secluded areas may have a future, drawing their clientele from nearby cities and countryside, people with genuine interest in the out-of-doors.

Fewer and fewer citizens will recall Kentucky's history as a vacation-land, when the forerunner of the tourist came to Dawson Springs or Crab Orchard, and other such resorts, or savored the delights of a Green River excursion-boat trip. While these forms of recreation belong now only to history, they do recall the wealth of attractions still available for constructive exploitation in other ways. It would be hard to exaggerate the debt which Kentucky owes to her streams. They have sculptured the face of the land into hill and valley and given the landscape an indescribable variety—every turn in the road (and there are many) opens a new and unique panorama, each of which is given to some Kentuckian to make or to mar. Man has only to take up where Nature leaves off to make of his surroundings all that his imagination can conjure.

An all-Kentucky tour of the future should rival any vacation that might be planned for an American family. Following the inter-park highway from one historic spot to another, the visiting family should be able to find convenient hotels, lodges, or tourist camps at the end of every day's journey, every one with something created for them to remember. Some camps should be of longer duration in the larger areas of the state parks, with miles of trails to be followed, and with hunting and fishing in season. Having once heard the mountain-stream on its rocky bed all night long, the patter of raindrops on the leaves of the cucumber tree, the calls of the whippoorwill at dawn; having seen the acres of rhododendron and laurel, the vine-curtained, fern-decked rocky cliff as a backdrop to his camp-site; having climbed to the ridges and scented the pines and cedars under the noonday sun, or watched and sniffed the smoke of wood-fires drifting up the ravine—the visitor will return often in memory and in person.

However, building Kentucky for *Kentuckians* should be an even more moving motive, the most challenging enterprise confronting the young people of every generation. Every generation is either lamenting lost horizons or seeking new ones—new pioneering

opportunities. Here at home is a new frontier, one particularly well adapted to the requirements of postwar rehabilitation and re-employment. The problems of restoring wildlife, aquatic life, outdoor living—creating new forests and fields out of prematurely old lands—all that is the necessity and opportunity of younger Kentuckians—yet at present it is given no emphasis in their educational program. A new educational orientation in that direction might appeal to the leaders in education and public life of the Commonwealth.

THE COSTS ARE INVESTMENTS

The planners of Kentucky's future have now, and will continue to have, regard for the many subjects mentioned in this chapter. There has been an effort to mention, at least, most of the factors concerned in the utilization of public lands, and in the development of scenic and wildlife resources. In these matters there is assurance that, whether the Commonwealth chooses to do a big job in a big way, or any part of it on a smaller scale, she will create values in proportion to the effort. Any part put into effect will be that much gained, whether accomplished by the State, by its respective regions, by groups of citizens, or by individuals.

Some outlay is involved in any program, and the larger the program the greater the cost. However, most of the expenditure will be capital investment, represented by values which will not only be permanent, but increasing with time. These new values, such as forest crops and renewed soil for future centuries, will be convertible into cash at any time. The expenditure on an all-out program need not be prohibitively high, and when spread over a period of years, may finally approach any long-term goal. Furthermore, certain income-producing features, such as the sale of timber, licenses, leases, rentals, admissions, and concessions should go far toward getting the program on a self-sustaining basis.

It may also appeal to the business judgment of citizens to reflect on the other real, if less tangible, gains, such as enhanced real estate values of adjoining areas, protection of watersheds, betterment of public health, and numerous educational by-products and the social gains from wholesome living, beyond estimate.

CONSERVING KENTUCKY

The sun shines bright on the old Kentucky home. It is the source of all life and energy. At present it is being allowed to shine on several million acres of land producing little or nothing, and wasted in heating barren rocks and sterile waters. If that acreage of sunshine be converted into the growth of trees and other plants, it can go to work for human advantage. The waters are a second great resource, similarly wasted, and convertible into wealth, food, and other assets, when united with sunshine in the production of plant growth. The substance of the earth, necessary to full utilization of sunshine and water, is also wasting away. Using it for wildlife, plant and animal, is building soil for impoverished generations to come.

In the competition for the good earth of Kentucky which once was spoken of as inexhaustible, three products have nosed ahead of all others and taken *win, place* and *show*. These three luxury items, whisky, tobacco, and racing stock, none of them essential to human welfare, have won for Kentucky her widest reputation and a place in the hearts of all Americans. They are given a great share of her very best lands. Kentucky can, then, be generous and even lavish with her resources. The issue of the present chapter is, whether she considers conservation sufficiently important as a claimant, not for those smiling acres of the best land, but for the unproductive wasteland of her out-of-the-way corners.

Chapter VII

INDUSTRIAL RESOURCES AND RESOURCEFULNESS

By MARSHALL D. KETCHUM

Kentucky is an important producer of basic industrial raw materials, but large quantities of these products are sent out of the state and are processed and fabricated in other states. The people of Kentucky have begun to ask whether this is desirable and to what extent the development of manufacturing within the state should be and can be encouraged.

Manufacturing is a process by which things are made more useful through a change in form; it takes place in the application of labor, machinery, and managerial skill to natural raw materials. It is but one part of the economic process, and other phases are fully as essential to economic welfare. For example, once goods have been manufactured, they must be transported to where they are needed. This subject is considered with reference to Kentucky in another chapter. In addition, manufacturing depends partly on the kinds and qualities of natural raw materials available. Previous chapters have reviewed the position of Kentucky with respect to a number of important materials, such as coal, oil, gas, rock asphalt, fluorite, various limestones and clays, timber, and a variety of agricultural products. These are made available by the so-called extractive industries, such as mining, lumbering, and farming and they are all essential to manufacturing. Supplies of labor and sources of power have also been discussed in previous chapters, but in this chapter attention is directed to the conversion of raw materials into finished products and the possibility of more of this conversion occurring within the borders of Kentucky.

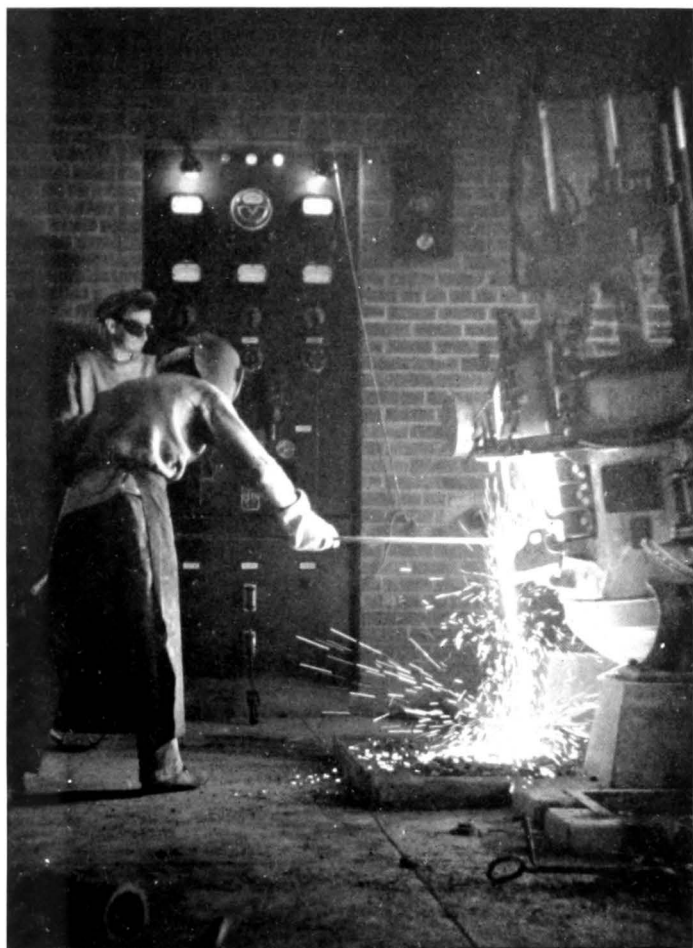
INDUSTRIAL HISTORY OF THE STATE AND NATION

MANUFACTURING IN KENTUCKY AND THE SOUTH

A study of the history of industry in Kentucky shows that manufacturing has developed along with other types of economic activity, although not to the same degree. As early as 1810 Kentucky had made some progress in this field. The eastern seaboard was so far away and travel across the mountains so difficult that Kentuckians had reason to try their own hands at manufacturing. Then, too, there were many local raw materials, and the growing towns provided markets for locally manufactured goods. Lexington was the metropolis of the state during this period. Here were located two factories manufacturing hemp into bale rope to supply boats built on the Ohio. There were in the surrounding area several tanneries, potteries, powder mills, flour mills, and hat manufacturing establishments. The fact that the supply of labor in the region was so small encouraged the invention of machinery which would make it possible to manufacture goods with less labor.

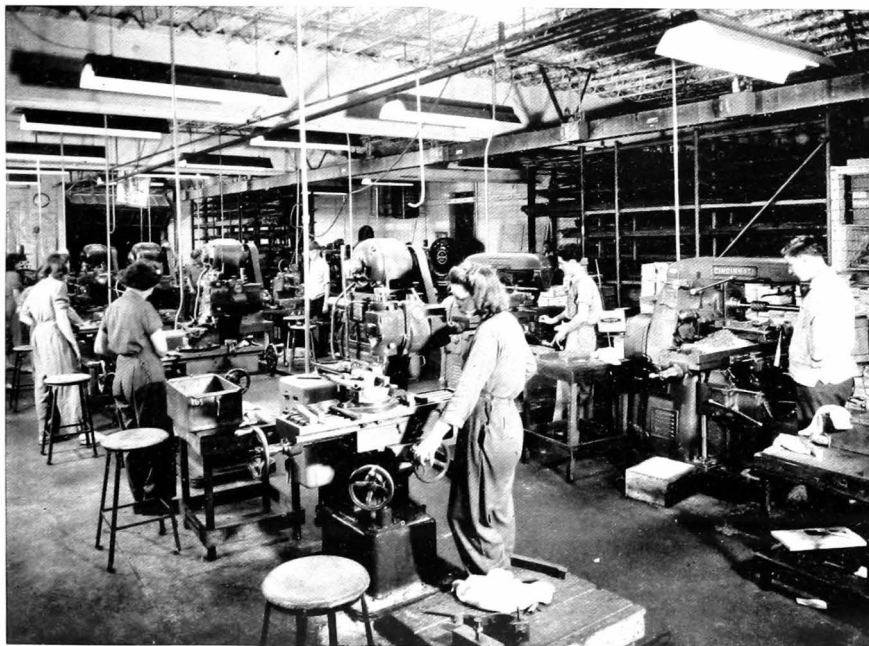
According to a contemporary writer of the period, there were in Kentucky in 1810, 267 tanneries, 2,000 distilleries, 24,450 looms, 53 powder mills, 33 fulling mills, 36 salt works, six paper mills, 38 rope works, 13 cotton-bagging factories, 15 spinning machines, three forges, and four furnaces. However, even as early as 1810 the different regions of the nation had begun to specialize in particular economic activities, and manufacturing development in the North had exceeded that of the southern states. The value of manufactures in Kentucky in 1810 has been estimated at four million dollars, which compares with 32 million for Pennsylvania, nearly 20 million for Massachusetts, and nearly 15 million for New York. It is important to note that in this year there were only two southern states, Virginia and North Carolina, which had a value of manufactured products larger than that of Kentucky. It is clear, however, that in Kentucky manufacturing was secondary to agriculture.

Between 1810 and 1850, although the South made some advances in manufacturing, the progress was small as compared with that in the Northeast. In this forty-year period the South's percentage of value of the nation's manufactured products decreased from about 30 per cent to about 11 per cent, while its proportion of population was decreasing from 46 per cent to 39 per cent of the



W. Brooks Hamilton

... things are made more useful through a change in form.



Courtesy of Archer & Smith, Ltd.

In 1939 . . . Kentucky had 1,640 manufacturing establishments.

national total. Between 1850 and 1860 there was a slight increase in the proportion of total manufactures accounted for by the South, but the northern blockade and the economic disintegration caused by the War Between the States and postwar conditions caused the percentage to decline. In 1870 the proportion was slightly more than six per cent, with total manufactures in the South of 339 million dollars. Since 1880 considerable progress has been made in the economic reconstruction of the South, so that in 1930 manufactures amounted to 10 billion dollars, or more than 14 per cent of the nation's total. In 1939 the 13 southern states of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, and Virginia accounted for slightly less than 13 per cent of the national total of value added to products as a result of manufacturing operations. During the nation-wide declines in manufacturing output in the 1930's, southern industry in general held its own, and even made significant gains in several southeastern states.

INDUSTRIAL GROWTH IN THE NORTH

The background of the industrial situation in Kentucky lies partly within the broad history of manufacturing in the United States. New England was the first section of the country to develop manufacturing on a considerable scale. A number of factors made New England particularly well suited for manufacturing. These included the proximity to Europe and the trade advantages resulting therefrom, and the capital available in that area resulting from profits made in the shipbuilding and shipping industries. There may also be cited the limited agricultural resources of the region and the plentiful labor supply available for employment in manufacturing. The rural-urban migration, now so conspicuous in Kentucky, began in New England a century and a quarter ago. The water-power resources of the many small rivers of the region were suited to the development of manufacturing in its early stages. The climate, while cool enough to stimulate physical and mental activity, was humid enough to make possible the growth of one of the earliest important industries, the spinning of cotton thread and the weaving of cotton cloth. The long cold winters and the long nights encouraged

the growth of indoor occupations and led to the construction of factories.

As the Middle West was opened up with its superior resources for farming, and with the completion of the Erie Canal in 1825, the farmers of New England were placed at a still greater disadvantage and the tendency toward manufacturing was reinforced. Industry expanded in New England, but it also moved westward. It might then have moved southward along the Atlantic seaboard, but the change in source of industrial power from water to steam and the discovery of coal in Pennsylvania caused manufacturing to move westward into that state. Then, too, the discovery of iron ore in Pennsylvania made possible the development in the state of the iron and steel industry, the basic industry in a manufacturing economy. The labor situation in the South also retarded the southward progress of industry. The prevalence of cheap slave labor in the South induced immigrants from Europe to settle in the North where wages were higher. This in turn provided industry in the North with an adequate supply of labor much of which was already trained in industrial skills.

Manufacturing continued its westward movement. For a time it was thought that its course would take it down the Ohio River and several important industrial enterprises were established in Kentucky cities along that river's banks. But a northward shift occurred as a result of the change from waterways to the railroad as the principal means of transportation. Recently, war conditions have brought about a revival of traffic on the Ohio and other Kentucky waterways. The earlier northward shift of manufacturing resulted also from the discovery of iron ore in the western Lake Superior district when the supply of Pennsylvania ore proved insufficient. It would be difficult to overemphasize the historical importance of the relationship between the locations of iron ore and coal in determining the location of manufacturing industries. Most manufactured goods are either themselves made of steel or the machinery used in manufacturing them is made of steel. The principal coal areas of the country in Pennsylvania, West Virginia, and Kentucky are hundreds of miles from the principal source of iron ore in Minnesota. The coal and iron ore must be brought together to produce steel, yet both are bulky and are costly to move. With

the opening of the Minnesota iron fields the steel industry began to move westward from Pennsylvania, first to what is now known as the Youngstown-Pittsburgh district and later to the string of southern lake ports, Cleveland, Toledo, Detroit, Gary, and Chicago. Kentucky has participated in this westward movement through the steel mills at Ashland. Here we have an industrial location close to the source of types of coal used in making steel, but the distance from iron ore has continued as a handicap.

THE INFLUENCE OF MARKETS

This example of the effect of location of raw materials upon the location of a specific industry could be multiplied many fold. In addition, many factors other than location of raw materials can be given to account for the earlier growth of industry in the North. Among the most important of these is markets. Industry attempts to locate not only to reduce to a minimum the transportation costs involved in bringing together the required raw materials, but also with reference to markets. The trend in the development of manufacturing has been toward the growth of large-scale enterprises—companies producing a large number of units of a product under one roof and under one company management. This concentration of production at a particular point often increases the costs of acquiring raw materials from widely separated districts and the costs of shipping the finished products to scattered markets. However, in the previous experience of industry, the concentration has generally been justified in that the savings in manufacturing costs have more than offset the increased costs of securing raw materials and distributing the product.

The conversion of extractive raw materials into finished products is often divided into steps. When this is the case, some of the various stages of the process will be performed between the principal source of raw material and the principal market. At the point where the raw material is produced, emphasis is placed upon changing the form of the material so that transportation costs will be as low as possible. When the partly-processed material reaches a point closer to the market, the existence of a skilled labor supply makes it possible to complete the more difficult stages necessary near the end of the process. In agricultural areas the manufacturing industries tend to be based upon the partial proc-

essing of agricultural raw materials. For example, Kentucky leaf tobacco undergoes the redrying process close to the producing center, but much of it is shipped elsewhere for manufacture into tobacco products. Hemp is retted near the point of production but its manufacture into rope and twine usually takes place nearer the final markets for these products.

In a sense the factor of markets tends to cause the growth of manufacturing in a particular locality to feed on itself once it gets started. A manufacturing company starts somewhere for some reason or other. This attracts labor and thus population increases. As a result markets are built up close to the manufacturing plant and this draws other manufacturing enterprises to the same location. In addition, new companies entering the industry tend to place themselves where there are already some companies manufacturing like products because they are more certain that they will find a trained labor supply. They may have to pay slightly higher wages to attract workers from competing plants, but they would have to offer still higher wages to get the workers to move long distances to the location of a new company. Other advantages accrue to a business enterprise from proximity to neighbors in the same industry. Contacts with other companies make it possible to learn of cost-saving methods, to exchange ideas, and to co-operate with others for the mutual advantage of all the companies. Where a particular industry is of great importance in a city because of the existence of a number of plants, the local banks develop a greater knowledge of conditions in the industry and a greater willingness to assist in the industry's growth. Industries supplying machinery, parts, and supplies for the companies' product tend to locate here and this, too, reduces costs. A Kentucky example of this situation may be found in the significance of the cooperage industry, the products of which are used in a number of other industries in which the state is important. This tendency for companies in an industry to cluster at a few points is typical of many industries.

THE ADVANTAGES OF AN EARLY START

A manufacturing industry gets started in a particular section because of some basic economic factor, often related to the location of the raw material or the factors affecting its transportation

to the point of use. Once the industry has established itself, its growth in that section is aided by the many advantages which come from an early start. These advantages of an early start exert a pull to keep the industry where it is, but they are often not sufficient to offset the pull exerted by changes in technological conditions which tend to cause it to move somewhere else. This is illustrated by the shift of the steel industry from Pittsburgh to Gary-Chicago, previously noted, and the movement of the meat packing industry from Philadelphia, to Cincinnati, to Chicago, to Kansas City-Omaha. This factor has application also to the growth of the distilled liquor industry in Kentucky. An early start in the industry gave rise to a consumer preference for "Kentucky bourbon" and this induced other companies to start production here to take advantage of the demand of consumers for this product.

THE PRESENT POSITION OF KENTUCKY IN MANUFACTURING

SIXTEEN HUNDRED PLANTS

According to the federal Census of Manufactures based on data collected for the year 1939, Kentucky had 1,640 manufacturing establishments. These companies hired 62,791 employees and paid wages and salaries amounting to nearly 62 million dollars. The value of the manufactured products turned out by these companies in 1939 was 481 million dollars and the "value added by manufacture," that is, the difference between the cost of raw materials and fuel, and the value of the finished products, was 187 million dollars. Kentucky's rank in terms of value of manufactured products was 25th among the 48 states, but on the basis of the 1940 Census of Population, Kentucky ranked 17th in number of people. All of the 23 states which rank lower than Kentucky in manufacturing also rank lower in population.

Since 1890, the population of Kentucky has been a little over two per cent of the national total, but her share of manufacturing, however it may be measured, has usually been less than one per cent. Kentucky in 1939 ranked 32nd in the ratio of manufacturing wage earners to population, with a ratio of 26 per thousand

people. The national average was 63 wage earners in manufacturing per thousand population.

Although Kentucky ranks below the national average in manufacturing, so do 10 of the other 12 southern states. A comparison of Kentucky with the remaining southern states is much more favorable to Kentucky. Such a comparison is also fairer, because it involves a comparison of Kentucky with states having similar economic and social characteristics.

There are given in the table below data showing the value of Kentucky's manufactured products in 19 of the 20 groups of industries in the census classification (the miscellaneous group is omitted). There is also indicated for each group of manufactured articles the rank of Kentucky among the 13 southern states.

THE VALUE OF MANUFACTURED PRODUCTS IN KENTUCKY IN 1939,
AND KENTUCKY'S RANK AMONG 13 SOUTHERN STATES

(AMOUNTS IN THOUSANDS OF DOLLARS)

PRODUCT	VALUE IN 1939	KENTUCKY'S RANK
1. Food and kindred Products	\$122,917	5
2. Iron and Steel and their Products.....	56,897	2
3. Tobacco Manufactures	56,075	3
4. Automobiles and Automobile Equipment.....	39,846	2
5. Products of Petroleum and Coal.....	35,086	5
6. Furniture and Finished Lumber Products.....	22,414	5
7. Apparel and other Finished Products made from Fabrics and similar Materials	19,277	6
8. Chemicals and Allied Products	16,750	12
9. Printing, Publishing, and Allied Industries.....	16,463	6
10. Machinery (except Electrical)	14,915	2
11. Rubber Products	13,282	1
12. Lumber and Timber Basic Products.....	11,998	12
13. Textile-Mill Products and other Fiber Manufactures..	11,056	8
14. Stone, Clay, and Glass Products.....	10,206	9
15. Leather and Leather Products	9,654	5
16. Electrical Machinery	8,709	2
17. Nonferrous Metals and their Products.....	7,145	5
18. Paper and Allied Products.....	2,941	12
19. Transportation Equipment (except Automobiles)....	1,213	9

The arithmetic mean of the ranks of Kentucky among the 13 southern states is 5.8. If a table similar to this one were prepared for each of the other 12 states it would be found that the average southern state had an average rank of 6.5. Thus Kentucky ranks a little above the average of the southern states in manufacturing on the basis of value of products.

THE INFLUENCE OF RAW MATERIALS

It will be noted that the availability of raw materials within the state accounts for the importance of a number of the industries which rank near the top in terms of value. This is characteristic of an industrially young region such as Kentucky. Both the agricultural and mineral raw materials of Kentucky are seen to be contributing to the industrial growth of the state and we may expect this to take place to a greater extent in the future. The industrial processing of raw materials may be accomplished successfully, too, through the use of small-scale producing units. Enterprises of this type seem particularly well suited to Kentucky conditions. Such a disposition of manufacturing facilities fits in well with the distribution of Kentucky population in small towns.

In contrast with the group of industries the existence of which is related primarily to the presence of raw materials, there are a number of industries of some importance within the state which represent the final stages of fabrication. Within this class may be included machinery of different types, iron and steel manufactures, rubber products, chemicals, and automobile equipment. Most of the production of these commodities takes place along the Ohio River in the southern fringe of the so-called midwestern industrial belt. The progress made by these industries provides a nucleus with which to work in the encouragement of further industrial development in Kentucky.

THE 40-YEAR TREND

The data in the foregoing table emphasize the present position of Kentucky in manufacturing. A comparison of the trend of manufacturing development in Kentucky and nearby states is less favorable to Kentucky. Over a period of time Kentucky has lagged in industrial development, even as compared with most of the southern states. The table below shows the ratio of manufacturing wage earners per thousand population, in the years 1899 and 1939, for the 13 southern states, and also for the United States and for five northern states which are contiguous to Kentucky on the west, north, and east. The per cent of change in the 40-year period in the ratio of manufacturing wage earners per thousand population is also indicated for each of the selected states.

AVERAGE NUMBER OF MANUFACTURING WAGE EARNERS PER THOUSAND POPULATION, FOR THE UNITED STATES AND SELECTED STATES AND PER CENT OF CHANGE, 1899 AND 1939

REGION	NUMBER		PER CENT CHANGE
	1899	1939	
United States	62	63	1.6
Indiana	55	86	56.4
Missouri	35	51	45.7
West Virginia	35	44	25.7
Ohio	74	91	23.0
Illinois	69	80	15.9
Oklahoma	3	13	333.3
Tennessee	23	49	113.0
North Carolina	38	77	102.6
South Carolina	35	68	94.3
Texas	13	22	69.2
Virginia	36	55	52.8
Alabama	29	44	51.7
Georgia	38	57	50.0
Mississippi	17	23	35.3
KENTUCKY	24	26	8.3
Louisiana	30	32	6.7
Arkansas	24	21	-12.5
Florida	67	33	-50.7

It may be noted from the table that Kentucky is tenth in rank among the southern states on the basis indicated, and that the per cent of gain is much below all of the contiguous states to the west, north, and east.

Computation of the per cent of increase in number of manufacturing wage earners per thousand population for the seven states to which Kentucky is adjacent indicates an average increase for these states for the 40 years of 39.4 per cent. This may be contrasted with the increase for Kentucky of 8.3 per cent. It is this comparison with contiguous states which justifies the characterization of Kentucky as an "island" in the stream of industrial development, around which and past which manufacturing has flowed in its westward progress.

It should be remembered that only manufacturing development is shown by these data. They do not represent a measurement of the economic welfare of Kentucky people. Manufacturing is only one of many types of economic activity. One of the reasons for the limited expansion of manufacturing in Kentucky during the 40-year period is the fact that agriculture and mining are better suited to Kentucky than to many other states.

THE EFFECT OF WORLD WAR II

The effect of the war has been to retard rather than stimulate the industrial development of the state. From June, 1940, to June, 1944, war contracts aggregating 1,042 million dollars were awarded by government agencies to firms operating in Kentucky. This was only 4.5 per cent of the war contracts placed in the 13 southern states, which totaled slightly more than 23 billion dollars for the period, and only six-tenths of one per cent of the national total of 184 billion dollars. While Kentucky ranked approximately sixth among the 13 southern states in the value of manufactured products in 1940, it ranked tenth in the amount of war contracts awarded through the month of June, 1944.

The tendency of a war fought on foreign soil is to pull manufacturing toward the coasts, toward the ports of embarkation. In addition, war causes the greatest expansion in the heavy industries, whereas it is the light industries and the industries producing consumer goods which predominate in Kentucky. Still another factor has been the tendency for the government procurement agencies to place contracts with the large enterprises and these are located principally in the more important manufacturing states. It is true that these large companies have done a great deal of subcontracting with smaller companies, but in general smaller manufacturing concerns, which are found in large numbers in Kentucky, have been hurt by the extensive placement of war contracts with the large corporations.

WHERE ARE KENTUCKY'S FACTORIES?

As is true of other regions there is a tendency for Kentucky manufacturing to be centralized at particular points. In 1939 about half of the wage earners in manufacturing were employed in Jefferson County, and this county produced about the same proportion of the value of the state's manufactured products. Six counties facing the Ohio River contributed more than 81 per cent of the value of manufactures, and about 85 per cent was accounted for by the counties facing the Ohio and Mississippi rivers. Ninety-two inland counties contributed less than 14 per cent of manufacturing output. In the future attention should be given to the

possibilities of increasing the amount of manufacturing in these interior counties as well as in the counties along the rivers.

THE OPPORTUNITY FOR MORE MANUFACTURING IN KENTUCKY

The economic welfare of the people of Kentucky, as everywhere, depends on the amount of goods and services they have to consume and on the number of people to share them. Usually people get things by buying them. But they can buy only with income they earn in producing and selling goods and services. So ability to consume is just the other side of ability to produce. Moreover, it is not the total of goods for consumption but how much there is for each person that determines welfare. Hence, it is per capita production which is most important. The standard of living is the result of a relationship, a ratio of developed resources to population; neither the aggregate of the population alone or the quantity of resources alone tells the story. The higher this ratio, the higher is the standard of living.

THE BASIS OF KENTUCKY'S INTEREST IN MANUFACTURING

The belief that the standard of living in Kentucky would be higher if there were more manufacturing in the state is based on the supposition that if there were more manufactures within the state there would be more jobs and total production would be greater than is now the case. Manufacturing, especially of some types, requires large amounts of labor and Kentucky has an abundant supply. Moreover, more labor is required per dollar of value of manufactured products turned out than is the case for many agricultural commodities. For example, we may note the following percentages which wages constitute of the value of products added by manufacture for a number of important commodities: hosiery, 68; lumber and timber products, 55; rayon woven goods, 61; household and office furniture, 49; cooperage, 52. These percentages are much higher than the labor costs involved in the production of many agricultural commodities, especially those which are produced on an extensive basis. However, in the cultivation of tobacco, in dairying, and in some other farm products

important in Kentucky, the percentage of value of product accounted for by labor costs is high. It is noteworthy that in two manufacturing industries which are important in Kentucky, cigarettes and distilled liquors, the percentages which wages are of the value added by manufacture are only 12 and 19 respectively. It nevertheless appears that manufacturing in Kentucky would make use of large amounts of a relatively plentiful factor of production, labor.

On the basis of the foregoing it may be concluded that the further development of manufacturing should be considered one of many possible objectives for economic planning in the Commonwealth. Many factors combine to indicate that Kentucky may not aspire to a leading industrial rank among the states. Her dominant business in the foreseeable future, as in the past, will be agriculture. But there are many factors that are favorable to some industrial expansion. Manufacturing could have a larger part in Kentucky's future than it has held in the past.

COMBINING THE FACTORS OF PRODUCTION

In general, the North is engaged primarily in manufacturing and the South is primarily agricultural. In manufacturing, the number of people who can be productively employed per square mile is large; hence, manufacturing brings about intensive use of land area. The southern states, with little manufacturing, work primarily in agriculture. This represents a type of land use which is extensive and as a result the number of people who can find productive employment per square mile is small. This difference in economic organization underlies the usual flow of population from South to North. The foregoing chapter on population has shown how Kentucky has participated in this movement. The exodus of Kentucky's native sons and daughters to the North has been large. To many people this has seemed a cause for regret. But it must be recognized that, unless ways of working more productively had been developed, standards of living in Kentucky would have been lower had this outflow of people not occurred. In a society which is growing, developing, and rapidly changing, it is to be expected that there will be shifts in population. Production requires the combination of many factors, especially land, labor, and capital.

Land, or the natural resource factor, is fixed in location. Therefore, the other two factors, which can be moved, must go where the natural resources are awaiting development. When economic conditions are changing swiftly, labor and capital do not always move as rapidly as they should. It is proper to make these maladjustments as temporary as possible by encouraging the shifts of labor and capital so that the best combination of the factors of production will be brought about. To attempt to prevent changes which are in the social interest because they cause difficulty for particular groups would be both futile and unwise.

There are few who would contend that industrial changes should not be permitted to occur because they result in shifts of population, or that artificial methods should be used to require that manufactures spring up equally throughout all areas of the country. In every industrialized country there is some concentration of manufacturing in a few sections. Nowhere is there even a fairly equal distribution of manufacturing facilities on the basis of area.

FACTORS SUBJECT TO HUMAN CONTROL

The conditions of economic production are set, it is true, partially by economic factors which are beyond human control, such as the location of mineral raw materials. But the conditions are also partly determined by economic arrangements and institutions and community situations which can be modified by the people through changes in attitudes and laws. It is probable that the combined effect of local institutional factors in determining industrial location is small as compared with the more fundamental economic factors; yet the establishment of a favorable institutional framework is certain to be of some influence in stimulating manufacturing.

It is to this set of factors that special attention should be paid by the southern states and by Kentucky in their efforts to foster such manufacturing as will enhance the general welfare. Some of the institutions concerned are formally organized, such as the government, the corporation, or the trade union. Some consist of a set of arrangements for accomplishing objectives, such as the use of money and public regulation of business. One important element in the institutional setting is the attitude of the people

toward new manufacturing enterprises. The influence of such factors may be shown by an example.

THE IMPORTANCE OF ATTITUDES

Let it be supposed that the promoters of a manufacturing company have examined the economic factors in two cities and have decided that from the standpoints of access to raw materials and to markets, skilled labor supply, power, capital costs, and other economic factors, there is little choice between the two localities. But the Chamber of Commerce in one city takes an antagonistic attitude towards the new firm while this association in the other city is sympathetic and co-operative. The former has not assisted the promoters in gathering data on the advantages of location in the city; the latter has seen to it that truthful and adequate data have been made available. In the former city it is found that property assessment policies have fluctuated from one period to another, while in the latter city property valuations and tax rates are fair. In the former city there are a number of municipal ordinances which are unfavorable to manufacturing enterprises, and a study of the municipal records shows that the administration of the ordinances has been biased and erratic. Also it is found that in the past there have been a number of large fire losses to manufacturing property because of inadequate fire protection. In the latter city none of these conditions exist. Under the circumstances the promoters will quite naturally establish their plant in the latter location.

KENTUCKY AND THE REST OF THE NATION

It cannot be overlooked that much of the lack of manufacturing in Kentucky is a result of national and international policies as well as local factors. Consideration of state policies is not enough. Citizens of all states should be concerned that national and international policies shall be in accordance with the national interest. At the same time the citizens of Kentucky may well inquire what policies of the federal government lower national well-being and at the same time decrease the prosperity of the people of Kentucky. The real problem is not one of trying to raise Kentucky's living standards *relative to* those of other states, but rather it is one of benefiting Kentucky *along with* other states. It is probable that the United States cannot be prosperous unless other nations partici-

pate in this prosperity, and the states of our Union are so interdependent that it is certain that no state can prosper in the absence of a high level of economic activity in other states. Certain national policies in the past have been more detrimental to some states, including Kentucky, than to others.

One general effect of national policy has been to permit and to encourage the growth of large-scale business units more than has been called for by the economies of manufacture to be obtained from large-scale operation. The most positive evidence of this policy is the failure adequately to enforce the set of legislative enactments designed to prevent the growth of large-scale enterprises through monopolistic agreements. This situation has had the effect of making it difficult for the small manufacturing enterprise to compete and, since Kentucky is interested in firms of this type, the policy rests with particular weight upon this state.

Federal patent laws need revision in a number of respects, especially relative to those features which permit large corporations to buy up new patents and prevent the manufacture of the article for which the patent was obtained. This, too, discourages the formation of small, new enterprises.

TARIFFS AND TAXES

National policy with respect to the protective tariff is in great need of change. It discriminates against the small manufacturing firm in favor of the large firm, and against agriculture in favor of manufacturing. Kentucky will no doubt continue to be primarily an agricultural state. The tariff affects agricultural income adversely by reducing foreign markets for agricultural products at the same time that the people of the state are forced to pay prices for manufactured goods, which are in many cases increased by the existence of a tariff, and the impossibility of importing from abroad manufactured articles produced at lower costs in other countries.

It is probable that certain revisions in the federal tax laws would encourage people to save more of their income and would induce them to invest their savings in equity securities. High rates of taxation on profits discourage the formation of new enterprises on which Kentucky must rely. The effect of the tax laws is to encourage the acquisition of capital by means of bond issues, since

interest payments on bonds are deductible in arriving at the amount of corporate income which is to be taxed. But small new corporations ordinarily must secure their capital from stock rather than bond issues. The risk involved in starting a new enterprise is great and capital may be expected to be unwilling to assume this risk unless it is permitted to keep the profits it makes from the enterprises which are successful as an offset to the losses which come from investment in those which are unsuccessful.

The effects upon agriculture of national economic policies are especially important. Although in an economy which is passing from an agricultural to an industrial state, there is a tendency for agriculture to become less profitable, this is true only if there is no expansion in markets. Kentucky might well participate along with American agriculture in general in an undreamed-of prosperity if there could be world peace, revival of the principle of regional specialization throughout the world, and inauguration of an era of expanded trade relationships with other nations. Especially is this true if the United States would abandon its addiction to a "favorable" balance of trade and start buying from abroad many manufactured products which other nations can produce more cheaply.

In considering these problems, of course, Kentucky should have a broad rather than a narrow, provincial outlook. It is the national interest which is paramount, not the interest of the State. Only those changes should be encouraged which would have the effect of raising the average standard of living through raising that of Kentucky. If the effect of the proposed changes were to decrease the living standards of other sections more than those of Kentucky were raised, the national average would be lowered. The advantages of equalization of living standards are not so great as to warrant us in pulling down others more than we raise ourselves.

However, entirely apart from national policies which can be influenced but not controlled by the people of Kentucky, and which do not completely prevent industrial development, there are many other factors that can be changed by the efforts of those citizens in the Commonwealth who seek the most effective use of their State's resources.

OUTLINE FOR A PROGRAM OF INDUSTRIAL DEVELOPMENT

ATTITUDES MUST CHANGE

There are many people in Kentucky who are lukewarm toward manufacturing. Many farmers feel that the presence of manufacturing industries would increase the wages which they would have to pay to agricultural labor. Often manufacturing companies already located in a city will discourage the entrance of additional enterprises because of the effects upon the demand for labor. Many believe that the benefits from having more manufacturing would be more than offset by the existence in the community of unsightly industrial plants and the danger of unemployment and high relief costs in depression periods. Some are opposed to manufacturing because it would represent a break with Kentucky's frontier agrarian heritage. If manufacturing is to be promoted, either these groups must be convinced of the desirability of the change or their influence in the determination of policy must be overcome.

THE NEED FOR RESEARCH AND PLANNING

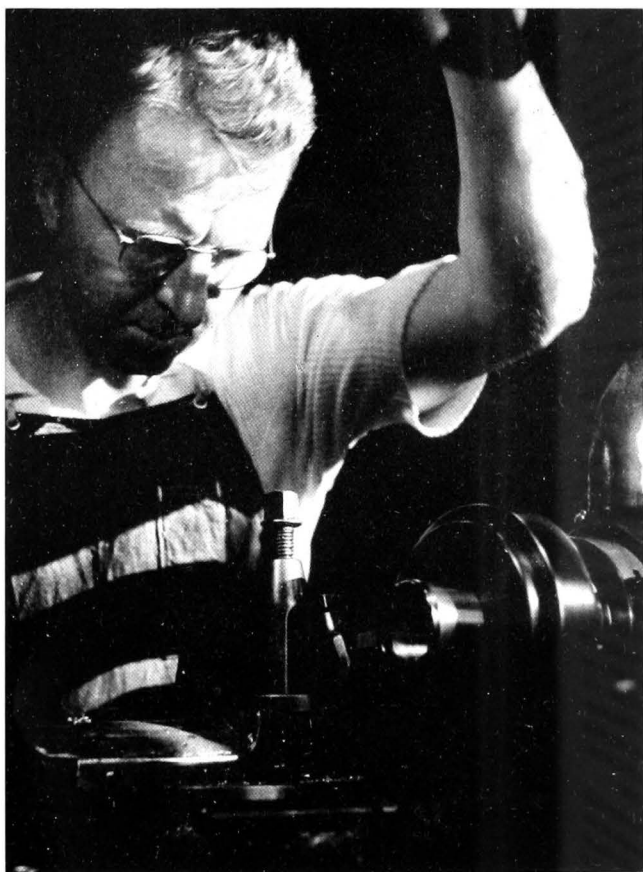
Kentucky has not undertaken sufficient study of the locational needs of industries which might be encouraged to come into the state and of the availability of factors in the state to satisfy their needs. Kentucky has important advantages which would be attractive to some types of manufacturing industries, but the promoters of manufacturing firms cannot be relied upon to discover these advantages for themselves. Enterprisers do not survey all possible locations for their plants before making their decisions. More information is needed on what causes industries to go where they do. To quote Professor Scott Hall, "We need to have a survey, industry by industry and cost-factor by cost-factor."¹ When it is known what manufacturers want and what there is to offer them, then there must be a good job of sales engineering, of selling prospective manufacturers on the advantages of location in Kentucky. Until the efforts of other states have been matched in

¹ From a radio broadcast over Station WHAS, Louisville, October 31, 1943. See also his *Kentucky Manufacturing, an Initial Report*, Kentucky Department of Revenue, Special Report No. 4, 1941.



W. Brooks Hamilton

In manufacturing the number of people who can be . . . employed per square mile . . . is large . . . in agriculture . . . small.



W. Brooks Hamilton

*... employers seek workers who are skilled in the use of
machinery*

this respect, Kentucky cannot expect to progress far in expanding manufacturing.

Many economic problems can be solved co-operatively through activity by private agencies, such as trade associations, and with governmental agencies, such as state industrial commissions. Co-operation makes easier the study of what is wrong with and what may be improved in the economic life of a region. What are the available resources of the area which need development? What industries should be encouraged with benefit both to the region and to the nation? Are the social arrangements such as to stimulate the growth of industries offering employment to available labor? Are the system of taxation, the system of business regulation, and the facilities for assisting business in its plans in need of modification and improvement?

A task of this sort necessitates attention to it on the part of individuals, private agencies, and public agencies. It requires also a degree of co-operation among all groups such that the best possible job will be done with the expenditure of a minimum of resources. Especially there is needed a state industrial commission or state planning board which will undertake research in an effort to determine answers to such questions as are mentioned in the foregoing paragraph. Such an agency might also function in assigning segments of the research task to other agencies, private and public, and correlate the results of the studies thus carried on. Overall policies could then be established which would be based upon an adequate knowledge of conditions and a body of data and recommendations provided by the board. A law was passed in Kentucky in 1934 providing for a state planning board. In 1936 the functions of this board were transferred to the Governor's cabinet but little has been done in recent years. In each of the years 1939 and 1940, the sum of five thousand dollars was appropriated for planning work; nothing has been appropriated since. A revitalization of this board, in body and in spirit, could be of great value in an attack upon the problem.

We have seen that the location of industry is to a considerable extent determined by geographic and economic factors which are beyond human control. However, changes in the needs of manufacturing industries for raw materials and the other factors de-

termining location are continuously occurring. It is important to watch these changes and to note when something happens which may create a demand for Kentucky's resources. New products from the raw materials abundant in Kentucky are important to this question, and they will be discussed in a subsequent chapter. The advantages which Kentucky has to offer should then be pointed out to manufacturers, and the development of these industries in the state should be encouraged.

Although emphasis has been placed upon the fact that industrial location is determined to an important degree by certain economic factors which cannot be controlled, such as the location of raw materials and markets, too much stress should not be laid upon this set of causative factors. In many cases the location of a manufacturing industry can be accounted for only by the factor of chance. It is said that Westfield, Massachusetts, came to be the center for the manufacture of two-thirds of the nation's whips because one irate farmer, incensed by his neighbors' pillage of his willow hedge when they needed whips to belabor their horses, cut the willows himself, bound them with twine, and sold them to the erstwhile plunderers. Another example is to be found in the importance of hosiery manufacturing in the Philadelphia area. This industry grew here primarily because certain immigrants from Germany, fleeing from religious persecution, found congenial religious freedom in Penn's settlement at Philadelphia. These immigrants were skilled in knitting and took up in their new homes the trade which they had practiced in their native country.

Kentucky is dotted with scores of small manufacturing enterprises the location of which seems to be unexplainable on the basis of economic factors. The answer is usually to be found in the ambition, energy, ingenuity, and managerial skill of some enterpriser who is willing to devote sufficient effort and exercise sufficient diligence to make the business succeed in spite of obstacles. Kentucky needs more individuals of this type.

NEW OR OLD INDUSTRIES?

Kentuckians will probably make more progress by encouraging the location in the state of new industries rather than by attempting to get old industries to move. Old industries do change their locations, but they usually change slowly in response to changing

economic conditions. There have been, of course, instances of movement forced by the exhaustion of the best sources of raw material. Eventually, Kentucky may attract some industries which find themselves in this position, since the state has abundant supplies of many mineral raw materials which have a lower metallic content or are less accessible than sources now being exploited. Large enterprises often adjust themselves to these shifts in raw material sources by setting up producing branches close to the new sources at the same time that they permit production from their older plants to decline.

In studying the factors affecting industrial location, Kentucky should lay stress on the importance of institutional factors and how these may be modified to attract manufacturing. The whole attitude must be one of assistance to and co-operation with manufacturing companies. In some cases Chambers of Commerce and other agencies must bring about changes in municipal regulations which have thwarted industrial growth. It may be found, for example, that zoning regulations and license laws are unduly restrictive. The available evidence indicates that state and local taxation are relatively unimportant in their influence upon industrial location and that, in any case, tax rates in Kentucky are favorable to manufacturing development; but the whole question needs further study. The freight rate situation needs additional analysis to determine what effect it has had in preventing industrial growth. If the load and length limits on trucks are more restrictive than in surrounding states this may turn away industries relying on this method of transportation. The laws of the State wherever they impinge on business enterprise should be analyzed with a view to possible modification where it is discovered that changes can be made which would make the state more attractive to industry without giving one class an unfair advantage over another. This necessitates a study of the incorporation laws, legislation regulating the issuance and sale of securities, laws regulating banks and public utilities, and legal control over prices and trade practices.

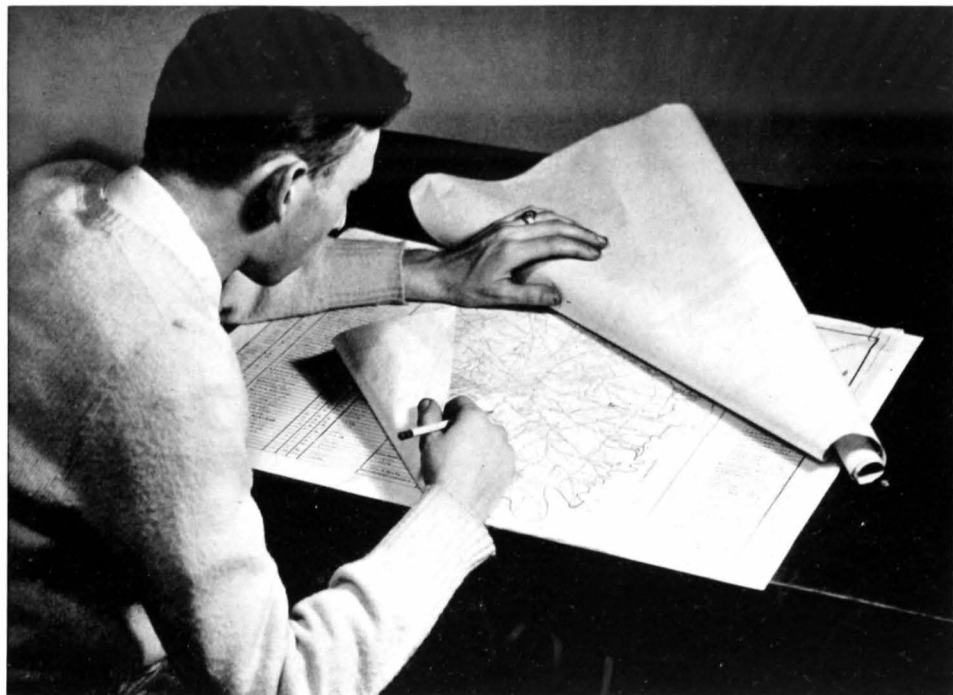
WHAT KINDS OF INDUSTRY ARE BEST FOR KENTUCKY?

Kentucky should consider carefully the type of manufacturing industries which she would like to attract. In general it is best to encourage the development of manufacturing firms which will

provide stable employment, although in many cases it might be found desirable to sponsor in a community the introduction of seasonal industries which would permit the year-round use of the labor force which might be employed for part of the year in agriculture or in mining. In view of the importance of providing jobs for a large population, favor should be shown for manufacturing industries in which a large share of the value of the finished product is in the form of "value added in the process of manufacture" and in which a large part of this "value added" comes from the work performed on raw materials by labor. Since capital is relatively scarce in Kentucky and labor is relatively plentiful, those industries using large amounts of labor as compared with capital should be expected to develop first. It is true that such industries are generally those which pay low wages, but we cannot expect to develop at first industries which use much labor and still pay high wages. Kentucky should not be interested in attracting industries which will offer workers lower wages than they are worth, but it is also true that the industries which come cannot be expected to pay wages higher than the workers are worth.

It is not the absolute level of wages in which manufacturers are primarily interested; their real interest is in getting as large a value of product as possible for the wages they pay. Because of this, employers seek workers who are skilled in the use of machinery and adaptable to machine techniques. One thing needed to attract manufacturing to Kentucky is a large body, not merely of workers, but of workers skilled in the use of industrial methods. This calls for greater interest in and attention to the problem of vocational education.

It has been mentioned that Kentucky will probably find that greater progress will be made through encouraging new companies to start here than in trying to get old companies to move into the state from elsewhere. Most new companies start out on a small scale. Therefore, we should be interested especially in the small manufacturing enterprise and in the development of industries in which there are not many advantages of large-scale production and in which the small firm can thus compete. This calls for determination of what industries can operate profitably on a small-



Goals cannot be selected without analysis . . .

W. Brooks Hamilton



Courtesy of Geology Department, University of Kentucky

... may not new uses be planned ... for coal?

scale basis and a study of state laws to insure that they are not onerous to firms wishing to start out with limited facilities.

Since the supply of capital in Kentucky is limited and since capital is so necessary in manufacturing operations, attention should be paid to the problem of provision of a financial framework which will facilitate the transfer of capital from investors to Kentucky corporations. Kentucky investors should examine thoroughly the opportunities for local investment before deciding to send their capital out of the state. On the other hand, it is important that prospective investors in small, new corporations appreciate the large risks they are assuming in the purchase of the stocks of such enterprises. A possible solution to the capital problem of small manufacturing enterprises in Kentucky is the organization on a semi-co-operative basis of an institution which would provide technical managerial services for new firms and which would itself furnish equity capital or would serve to bring the new enterprise into contact with existing capital sources.

UNFINISHED BUSINESS

The principal need which Kentucky has in the field of manufacturing today is a need which is common to all other fields of activity, the need to understand the forces which are shaping the destiny of the people of the state and how these forces may be controlled with a view to increasing welfare. There has been but little general analysis of the influence of manufacturing upon the life of a people and of the factors which cause industries to thrive in one place and not in another. There has been even less study of these problems as they apply to Kentucky. Goals cannot be selected without analysis as to their desirability; and, once selected, they cannot be reached without thought and action as to the best means of achieving them. These represent items of unfinished business in the lives of the people of the state.

Chapter VIII

NEW PRODUCTS FROM OLD MATERIALS

BY LAURENCE L. QUILL

During wartime, public attention becomes focused on new weapons, machines, foods, alloys of the metals, and on the host of substitutes and inventions developed in the mobilization to gain victory. Later, questions are asked about the influence of these new products upon postwar industry and on the national economy in general. Scientists (chemists, physicists, and the like) are keenly aware of the complexities of these problems. The chemist is vitally concerned since he is always looking toward the development of new materials from the old, to the creation of new compounds which will provide better medicines, better foods, and innumerable other items to raise the level of living.

Kentucky's natural resources afford a supply of raw products which must be considered in the transition from war to peace. These materials were listed in earlier chapters: They include coal, petroleum, natural gas, rock asphalt, oil shale, fluorite and a few other vein minerals, clay, building stone, rock phosphate, sand and gravel, brines, low grade iron ore, timber, and a profusion of crops and livestock.

The conditions that will affect the growth of manufactures from these raw materials will still be those examined in an earlier chapter: Kentucky's opportunity will be chiefly the development of new industries with relatively small establishments, making large use of labor, and responsive to community situations and attitudes as well as to the nearness of raw materials and other unchangeable conditions. With a definite offering of raw materials, and with a special kind of opportunity in manufacturing, what will be the effects upon Kentucky of new products from old resources?

THE FUTURE OF COAL

ITS PRESENT USES

The question may first be applied to coal. After the attack on Pearl Harbor, Kentucky coal went to war. Day and night, long trains of loaded coal cars snaked their way to the coking ovens, the power plants, the shipyards and the chemical plants of a warring nation. Between one-fifth and one-fourth of the coal was used by the railroads themselves. Much of it was hauled through adjacent coal producing states. The war created a heavy demand for coal, one that will inevitably decline with the coming of peace. To help in preparing for the decline, may not new uses be planned, especially some that call for operations near the mines?

Although the common uses of coal are many, it is known to most people almost entirely as a substance for heating their homes and places of business. It is a material which furnishes, in addition to heat, a tremendous amount of dirt. In areas where soft coal is burned, a large share of all housekeeping drudgery must be charged to its smoke and soot. Basements become dirty from both coal dust and ashes.

But other uses of coal are important. The chemical industries use it as a raw product in the making of perfumes and antiseptics; nylon for hosiery, parachutes, and fishing lines; plastics such as gun stocks and transparent noses for bombers. It is used for making steel and for generating electricity. The list is almost endless. Many uses were known before the war, but their number has multiplied because of the need for new materials.

THE OPPORTUNITY FOR SMOKELESS FUEL

The complaints of the housewife about sooty spots on freshly laundered clothes and of business men whose buildings rapidly become smudged because black smoke fills the atmosphere have instigated many attempts to create and enforce laws about the smoke nuisance.

The History of Efforts to Control the Smoke Nuisance.—Complaints about the smoke nuisance are not new; they have been heard during at least four hundred years. Queen Elizabeth, in 1550, prohibited the burning of coal in London when Parliament was in session for fear "the health of the knights of the shire might suffer

during their abode in the Metropolis." The British government ordered the organization of the first smoke abatement commission in 1819. Many similar committees reported on the smoke nuisance. Their work culminated in the Public Health Act of 1875. Yet in 1915-16, a London health official estimated that 55 thousand tons of soot were deposited annually on the city.

In the early years of the decade 1921-30, it was estimated that the annual sootfall in Pittsburgh ranged from 60 to two thousand tons per square mile. In 1911, the Chicago Association of Commerce Committee on Smoke Abatement reported that domestic fires (including fires in apartment furnaces) produced 57 per cent of the soot and tarry products of combustion discharged into the atmosphere at Chicago. Hence, domestic fires constituted the most objectionable source of atmospheric pollution in that city. Needless to say, any industrial center has a smoke abatement problem which involves two costly processes. It is expensive to waste the valuable constituents of coal in smoke and soot by improper combustion. It is also costly to pay the aggregate cleaning bill resulting from a constant heavy sootfall. Laundering is required more often, building exteriors need cleaning or painting more frequently, and windows need to be washed oftener. All of this cleaning requires the payment of large sums each year by home owners and business men.

In recent years many cities, as for example, Pittsburgh, Louisville, and St. Louis, have passed ordinances on smoke abatement. St. Louis received widespread comment in the magazines and newspapers in 1941-42 because of its achievements in controlling "smog." Despite attacks based on excuses of wartime expediency, that city has been able to maintain its campaign against smoke. Since 1940, the Illinois State Geological Survey has had a research program planned to evaluate Illinois coals for the production of a smokeless domestic fuel which would be acceptable for use in St. Louis and other communities enforcing smoke abatement ordinances. Louisville, in 1943, began advertising its postwar plans through the medium of the Louisville Area Development Association. This association has organized a Smoke Abatement Committee to formulate rules for eliminating the pall which lies over the city. The demand for cleaner atmospheres, as illustrated by this activity in Louisville, will be insistent in the postwar years.

Some industries can eliminate only a part of the dust and dirt from their manufacturing processes. Any area in which their plants are located—a steel making center, for example—will have an irreducible minimum of dirt. It is technically almost impossible to eliminate the dust from such an area. However, the inherent dirtiness of some manufacturing processes does not excuse the presence of a dirty residential area miles away from the plant. The residential area can be clean, if the rules of city planning or of using coal are followed.

The Emerging Preference for Coke.—In areas where smoke ordinances are not in effect, it will very probably be sound business for soft coal producers to encourage the elimination of smoke. The smoke, dirt, and atmospheric pollution which have long been associated with the combustion of bituminous coals led in years past to the conversion of coal furnaces so that they might burn oil, which is a cleaner fuel. The necessities of war, however, forced their reconversion for coal or coke. It is believed that the return to coal will be more or less permanent, regardless of new petroleum discoveries, because of the huge cost of conversion. Only a few years ago, it cost about 150 thousand dollars per unit to install underfeed stokers for a large utility company. Obviously, such installations will be used as long as they are serviceable. In addition the uncertainties about a steady supply of oil will cause many industries to use coal or coke after the war. There is reason to expect that the demand for industrial coke may remain firm in the postwar period.

Trends toward less wasteful burning of coal and toward the elimination of the smoke nuisance will be varied in character. Already a great deal of research has been done and much labor has been expended on new types of stoves for homes, new furnace stokers, and on methods for treating coal to eliminate dirt. When manufacturers can resume normal operating routines these newly developed lines of equipment for smokeless combustion will sweep onto the market. Consumers will be able to generate power or heat cleanly, conveniently, and efficiently, from either coke or bituminous coal burned with new-style equipment.

Laboratory Experiments at the University of Kentucky.—One of the processes for making smokeless fuel has been developed in the Department of Mining and Metallurgical Engineering in the

University of Kentucky, and is now in the pilot-plant stage. The objective is to produce a smokeless fuel for home consumption, yielding as by-products a high-quality motor fuel and other chemicals essential to the plastics, rubber, and medicinal industries.

The first studies on the problem began in 1920 following the development of an interest in extracting oil from Kentucky shales. The experiments with oil shale showed that oil could be obtained but that a large scale venture would probably not then be profitable. Not only oil shale but also cannel and bituminous coals were investigated. As the studies progressed, it became apparent that the more important development might be the production of a smokeless fuel from Kentucky's coal with by-products that could supplement normal motor fuel supplies and furnish crude starting materials for the plastics industry.

The Pilot Plant Shows the Way.—The small-scale laboratory experiments showed that the process was feasible. However, chemists and engineers know only too well that test-tube experiments frequently do not work out on a large-scale basis. The financial assistance needed to expand the studies on a pilot-plant scale began to come in 1942 when the State Legislature appropriated \$7,500 for each year of the 1942-43 biennium for further investigation. This money was used to construct an apparatus large enough to treat one ton or more of coal per hour. The War Production Board looked with favor on the project and granted permission for the purchase of needed equipment, but wartime restrictions delayed construction of the plant.

In order to house the equipment, the Board of Trustees of the University appropriated money for the construction of a suitable building, and a grant-in-aid from the Governor's emergency fund was a great help at a critical time. Prior to the summer of 1944, only about 43 thousand dollars had been spent on the development of this project—a small sum, indeed, for research which may result in large returns for Kentucky residents. Hundreds of thousands to millions of dollars were spent in developing nylon, cellophane, and numerous other products!

How the Smokeless Fuel Is Manufactured.—The process of manufacture is essentially what is known as low-temperature carbonization which makes carbon, or coke, by heating coal to a moderately elevated temperature in a retort. Several products

are formed in the breaking down or degradation of the coal; they are coke, tarry residues which contain raw materials suitable for plastics and chemical industries, an oil fraction which contains the constituents suitable for the production of a high-quality motor fuel, and some gas which can be used as a fuel. The results of this process are quite different from those which follow the burning of coal in a furnace. In making a smokeless fuel, everything produced in the breaking down of the coal can be saved and utilized; no valuable smoke or soot-carrying chemicals can escape into the atmosphere. Although the coal is converted into many new substances by low-temperature carbonization, the exact changes which occur are not known because no one as yet knows the complete answer to "what is coal?"

There is good reason to experiment on a pilot-plant scale with a new method for making coke. To expend money on a full-scale plant on the basis of successful small laboratory experiments is not good business; to try a process on a semi-commercial scale is. It does not follow, however, that a successfully operating pilot plant is a positive indication that a full-scale plant could be built without the development of additional troubles. The pilot plant serves to show those conditions which must be changed as a process is "growing up." In the case of this coking process, twenty to thirty tons of coal can be treated per day. This scale of operation will permit the experimenters to better estimate yields and costs, and to learn how to plan larger units.

Coke Ovens Could Be Built Near Kentucky Mines.—It is within the realm of possibility that the equipment for making smokeless fuels could be constructed near the coal fields. However, there are various arguments to consider. One criticism which will be made of attempts to build a new kind of coke industry will be based on the argument that the coke ovens now being used by steel companies and other coke producers who have equipment in operation, will be suitable for making the new kind of coke. This argument is not valid, however. The type of coke which will be made for use as a smokeless fuel will not be the same as that needed for blast furnaces. Coke for the steel industry must be hard; it must not crush easily; it must not contain too much volatile material which will interfere with the proper functioning of the blast furnace; it does not need to ignite at a low temperature. Coke

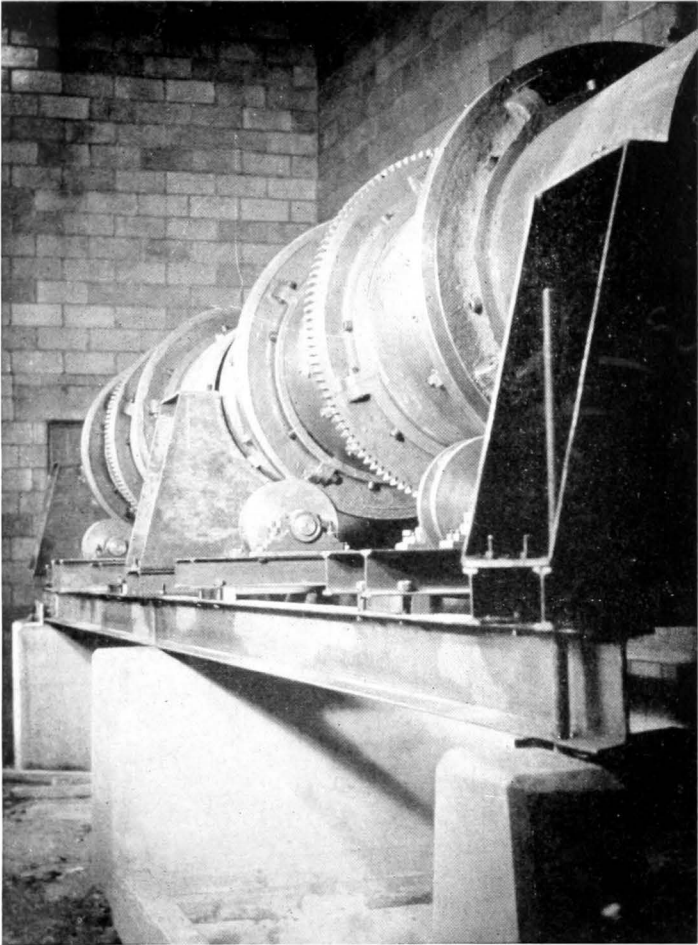
for smokeless fuel can be weaker than that needed for the steel furnaces, yet it must not break down to a powder too easily; it must contain a certain amount of volatile material and must ignite easily or the householder will not want it for the furnace in his home; it must not give off too much smoke or it will fail to satisfy smoke-abatement regulations.

It might be argued that the location of a new type of coke industry near the coal fields would not be wise. There are several points, however, which indicate that such a choice would be a natural one. Labor and the raw product will be available; transportation is already available. Opponents might argue that the necessary skilled and semi-skilled labor will not be obtainable. This objection is overcome by the well-established fact that industries can train, in a relatively short time, persons to handle the various operations of a manufacturing process.

The location of the newer type of coke industry near the coal fields would insure use of existing transportation facilities. Coke, lighter in weight than the coal from which it is made, would have to be moved to market. The resultant by-products also would have to be transported to chemical plants which would utilize them. The railroads could adequately meet these needs, especially after their release from extraordinary wartime service.

Two problems of explanation would be involved in the development of this new industry. The first deals with the producer, the second with the user of the coke. The producer will desire to learn whether the new process guarantees a profit above the costs of building and amortizing new plants. He must also learn that the time is coming when it will not be possible to mine coal only because of its value as a fuel. Conservation of valuable material as well as the demand for smoke abatement will create the need for correct and scientific utilization of coal.

The education of the consumer of smokeless fuel will require both effort and time. Many persons who have been burning coal will be content to continue using the customary process. Their furnaces were designed for coal; they have become reconciled to dirt. These people must be told about the economy effected by the use of coke, and its cleanliness; they will also need to learn the proper method of burning this new kind of coke. Advertising and instruction by fuel dealers can resolve problems of this kind.



W. Brooks Hamilton

*One of the processes for making smokeless fuel has been developed
... in the University of Kentucky.*



... the long list of plastics.

W. Brooks Hamilton

OTHER PRODUCTS FROM COAL

The Question of Plastics.—In public knowledge and opinion, the miracle products of the decade beginning about 1935 have been the long list of plastics. Nylon, lucite, rayon, cellophane, and other terms have become common to the layman. This does not imply that the use of plastic materials is a recent development; it merely means that the demand for silk substitutes, fancy hardware, synthetic rubber, and other products has emphasized the term plastics. In the foregoing discussion of smokeless fuel, reference has been made to by-products. In the manufacture of coke, many other substances will be produced. Some of them will make a mixture which can be used to provide a high-quality motor fuel. Others will be by-products which can be utilized in the plastics industries. It is well to indicate at this point that petroleum and natural gas are also sources of plastics chemicals.

Will Plastics Be Made in Kentucky?—The question arises, therefore, as to whether a plastics industry could develop in Kentucky. First, the distinction between the making of chemicals for plastics and the fabricating of finished plastics articles should be made. The manufacture of chemicals is the more difficult of the two. This is best conducted by large companies, already organized, with large investments and with staffs of chemists and engineers who are familiar with the process.

The fabrication of plastics articles from the proper chemicals, however, is a type of manufacturing that is appropriate for smaller concerns. It is more of an engineering job. The molding presses and other equipment are expensive, yet the nature of the business is such that a small plant could be established to make plastic buttons, dishes, drawer pulls, ornamental objects, jewelry, and innumerable small pieces. This type of manufacturing could well be located in Kentucky. This idea would be consistent with the conclusion that the opportunity in Kentucky is to build new, small enterprises rather than to attempt to bring in large established industries. Many large plants for making plastics chemicals are already permanently located; new plants for the fabrication of finished articles could be established in Kentucky in the postwar era when business can resume normal routines.

Plastics Have a Foothold in Kentucky.—Another possibility must be considered. Some of the rubber manufacturing plants designed to meet war needs are located in Louisville. These plants have a large tonnage capacity. They were located with respect to adequate supplies of raw materials, to water, and to transportation. These rubber plants are now consuming large quantities of industrial alcohol which is converted into a chemical used in making rubber and certain plastics. Although distilleries will return to their normal programs after the war, wartime expansion in the production of alcohol has indicated that henceforth an adequate supply of this chemical will be available for peacetime industrial pursuits.

In the postwar era it is entirely possible that some of the manufacturing plants in Louisville might make plastics chemicals. The difference between a rubber and a plastic is very indefinite, since the types of chemicals used in their manufacture are closely related. Hence, there is a strong possibility that Louisville can maintain its wartime industrial development and keep its rank among the limited number of great industrial centers.

Water and Its Part in Manufacturing.—Water supply is an important problem in Kentucky. Enterprises such as the plastics industries that require large amounts of water must locate near rivers, and even this does not always guarantee an adequate supply. In late summer, rivers may become too low for heavy users. In many areas in Kentucky, the underground water table is being lowered by continued pumping. Near Lexington, wells that have not been dry for decades ceased to furnish water for farm use in early 1944. If there is not enough water for cattle, what would result if a small industry in the same area began to pump only 100 thousand gallons per day? It is practically certain that such an industry would locate elsewhere than in the Lexington area. The importance of water for the chemical industries is already a problem in Louisville. The synthetic rubber plants and other industries which have developed in this area have not only been using river water but have pumped large quantities from underground. In order not to change the level too drastically, some industries return to its sources the water which they pump for cooling operations. However, if the water is not cooled before its return, the temperature of the underground supply is raised. At present, one manu-

facturing concern is spending large sums to cool used water before returning it.

It must not be inferred, however, that research on the manufacture of plastics chemicals can be overlooked as part of the problem in manufacturing a smokeless fuel. The student of this new process must keep in mind the opportunity presented by the plastics industry with its nylon, rayon, koroseal, rubber, bakelite, and wide variety of plastics not yet discovered. It is conceivable that the degradation of coal could become an extensive heavy chemical industry in Kentucky.

MOTOR FUELS AND THE NEW COKING PROCESS

The vital importance of motor fuels has been strongly stressed during the war. Hundred-octane gas gave the Royal Air Force superiority in the Battle of Britain. The outstanding performance of American fighting planes is due in some measure to the high quality of gasoline used. But gas rationing has indicated to the man on the street that petroleum supplies may not meet all demands. This problem has caused chemists in this country to consider the conversion of coal into motor fuel. The proposed new coking industry, in addition to producing coke and plastics chemicals, yields a motor fuel. The problem of motor fuel, like that of plastics, has many phases. In England and Germany plants are operating to make motor fuels from coal. In those nations the main object is the production of motor fuel; in the experimentation with new uses for coal in Kentucky the main objective is coke for smokeless fuel, and the motor fuel is subsidiary in importance.

The United States has imported oil for many years. Heavy war demands forced an increased production from the American fields and there has been some discussion of the depletion of petroleum reserves. Regardless of the status of arguments about the amount of oil available for the future, it will be sound insurance to develop methods for the conversion of coal into high-quality motor fuels. This would supplement present oil supplies, meet part of the cost of the smokeless fuel project, and most important, allow the perfection of processes for making motor fuels from coal. The future, then, offers the possibility that more of Kentucky's coal may be used at home in making a smokeless fuel, in

supplementing the motor fuel supply, and in producing chemicals for the plastics industries.

PETROLEUM AND NATURAL GAS

Opportunity for Expansion Seems Limited.—Petroleum and natural gas are among Kentucky's natural resources, but they will not be important factors in local manufacturing. Kentucky is thirteenth in rank among the eighteen oil-producing states, and production is declining. Nearly all of the oil refined in the state is imported. Natural gas probably will continue to be used chiefly as a fuel. As a raw product for chemical industries, its use probably would occur in other states, since pipe lines are convenient means of transportation and the requisite plants are already established in other areas.

More about Plastics.—Petroleum and natural gas, like coal, can be converted into plastics chemicals. Chemists early recognized the problem of finding uses for by-products from the refineries, so petroleum serves as one of the most important sources of the materials used in making plastics.

As has been concluded above, there is not much likelihood that a large plastics industry will develop in Kentucky. The possibility of some activity in the Louisville area has been suggested. It may now be observed that Ashland is also a potential site for more chemical manufacturing. A refining company in that city is making high-octane gasoline. Crude products from which other chemicals could be made are undoubtedly secured in making the motor fuel. Another company in the same area makes ammonia. Hence, there are two types of manufacturing plants already established that could be the nucleus of an expanded industry if the demand should arise. Factors such as transportation, labor supply, water, and raw products are favorable for extended development.

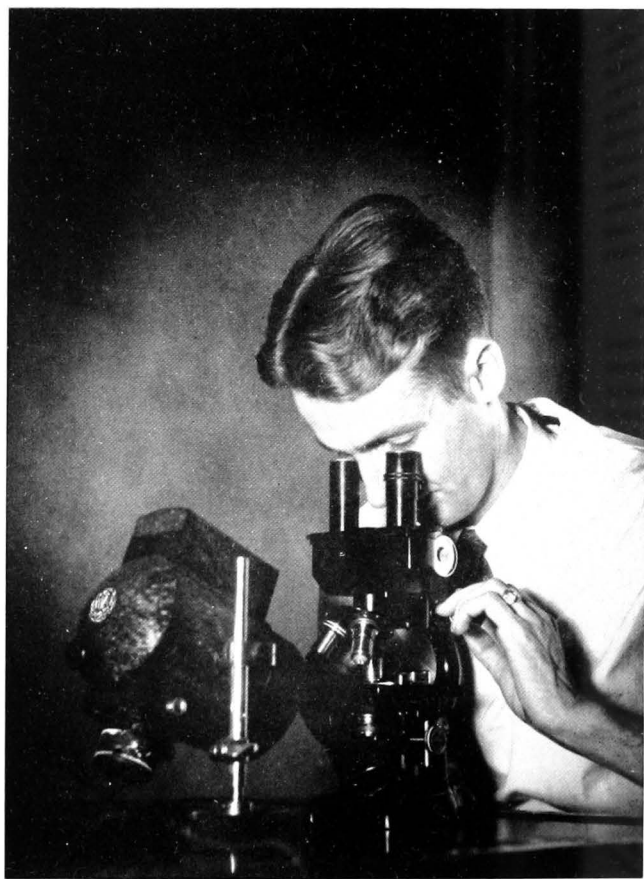
ROCK ASPHALT

The Utilization of Rocks.—In an earlier chapter, rock asphalt was listed among the relatively unused resources of Kentucky awaiting only an increased demand. Potentially, rock asphalt is a source of chemicals which can be obtained by a process somewhat like that proposed for converting coal into a smokeless fuel. However, there are difficult technical problems involved. In the



Bruce Poundstone

Kentucky's forests are a potential source of valuable chemicals



... American industry spends ... for research.

W. Brooks Hamilton

first place only the volatile materials would be valuable as chemicals. In the second place the treating of rock asphalt as well as of oil shale involves heating a great deal of rocky material which is later discarded. This operation adds to the expense of the process and has prevented attempts at commercial development. Since methods of making it are well known, rock wool might be made from waste rock after removal of the oils from rock asphalt. Some rock wool is now made in Kentucky; there is ample raw material for continued expansion. The utilization of the rocky waste material from the treatment of either oil shale or rock asphalt might affect the development of processes to extract chemicals from these two resources.

FLUORITE AND OTHER MINERALS

Liquid-cooled Engines; Refrigeration.—Among important chemicals developed in recent years are new liquids for use in automatic refrigerators. They have not been available for civilian use during the war period, and air-conditioning units have not been used as extensively as in peacetime. There also have been developed certain liquids essential for cooling the internal combustion engines of tanks and airplanes. These liquids are chemical compounds which contain fluorine. One series of such compounds is known as "Freon." This term is a trade name for a group of chemical compounds composed of the elements carbon, hydrogen, and fluorine. The last of these items is obtained indirectly from fluorspar which is the mineral name for calcium fluoride. Obviously, there are other important uses for chemicals that contain fluorine. Discussion of these opportunities will be possible after this war. Fluorspar, or fluorite as it is sometimes called, is one of the more important Kentucky minerals. It is used as such in the steel and enameling industries, and as a source of fluorine in making chemicals such as the Freon refrigerants. Most Kentucky fluorspar is used outside of the area in which it is mined. As is very often the case, the mining industry is interested primarily in securing the materials from the ground. Others, however, especially chemical manufacturers, develop new compounds and new uses for the compounds. Thus a demand for certain raw products is often maintained by the initiative of others than those who mine them.

For many years, research has been conducted in the laboratories of the Illinois State Geological Survey for the purpose of finding new uses for the fluor spar of southern Illinois, and incidentally, of Kentucky. Thus a Kentucky mining industry benefits from studies in another area. After the war, compounds containing fluorine will again be available for civilian use. Many products which were developed for military purposes will also be employed in some kind of peacetime use. Air conditioning will be expanded. Elementary fluorine itself will be used extensively in chemical manufacturing. Hence, there will be an outlet for fluor spar in the future. It also seems probable that Kentucky will serve as a source of raw material rather than as a place of manufacture for fluorine compounds, since the plants designed to handle fluorine chemicals are already in operation in other areas.

Other Vein Minerals.—Extended development of other vein minerals in Kentucky—zinc, lead, and iron ores—is a problem for the future. Even wartime demands have not been pressing enough to create an urgent need for intensive exploitation of these materials.

AGRICULTURE AND CHEMURGY

Does Chemurgy Enter the Picture?—Kentucky's high rank as an agricultural state leads to a consideration of chemurgy, which means the utilization of agricultural products as sources of chemicals for plastics, medicinals, and other materials. Chemurgy has been a familiar term for many years, especially since the publicizing of Henry Ford's interest in the wider use of agricultural products, of Herty's studies on the waste timber of the Carolinas and of the use of soybeans in plastics, and of the many studies of Carver, at Tuskegee. It is important, therefore, to consider whether Kentucky's agricultural products will be needed for new uses in this chemical age. Can new crops be grown to provide raw material for chemical treatment? So many factors affect the final result that it is difficult to suggest answers to these questions.

Products from Tobacco.—Tobacco is Kentucky's main cash crop. Would the likelihood of using it in new industries, especially plastics, point to a change in its acreage? It is true that plastics can be made from tobacco, but this has not yet been shown to be a

practical enterprise. Other sources of plastics chemicals are more economical.

Early in 1941, the Committee on Food and Nutrition of the National Research Council recommended the fortification of wheat flour with certain mineral salts and vitamins. One of the latter was nicotinic acid, the anti-pellagra vitamin. In 1940, only ten thousand pounds of nicotinic acid were made. It is estimated that 600 thousand pounds per year may be the annual requirement. This gives added importance to tobacco as a source of chemicals. Nicotine can be converted into nicotinic acid. Nicotine itself is a powerful insecticide. Higher yields of nicotine are usually obtained from lower grades of tobacco. Present acreages are probably ample to supply all the crude nicotine presently needed, but expansion could occur if necessary. Strains of tobacco which contain an especially large amount of nicotine also could be grown if needed. Two of the many laboratories which are studying the chemical utilization of tobacco are at the Agricultural Experiment Station of the University of Kentucky, and the Regional Laboratory of the United States Department of Agriculture at Philadelphia.

Soybeans.—Soybeans have been developed in many areas as a foodstuff and as a source of vegetable oil and of plastics materials. If necessary the acreage of soybeans in Kentucky could be increased to provide an additional supply, but there is no certainty at present that this would be required to meet the demands of industry.

Corn.—Kentucky is not a major grain- or corn-producing area and cannot compete with certain other states in production for industrial use. Nevertheless, the production of corn in Kentucky is showing an upward trend in comparison with total corn production. Experiments are being carried on to develop types of corn which can be grown more satisfactorily in Kentucky. This factor might cause a greater yield for use in the distilling industries. Kentucky has large distilleries but most of them operate to a great extent on imported raw materials. Furthermore, there has been an absorption of smaller distillery units by large manufacturers in recent years. This may foretell some movement away from Kentucky of present industries except for those which are large and favorably located. An important factor is the expanded production of industrial alcohol. If the synthetic rubber industry is main-

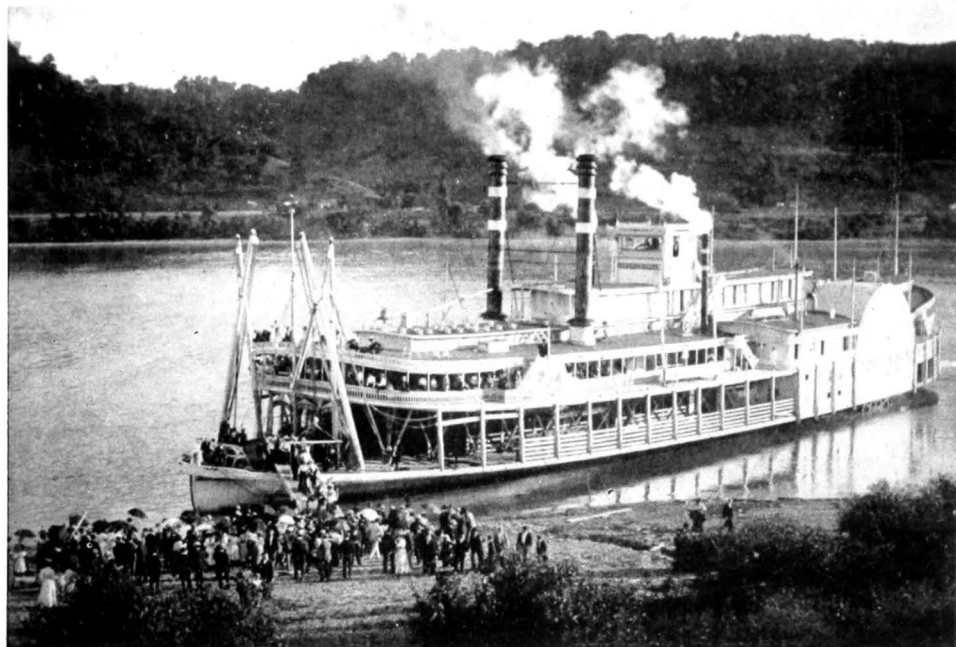
tained after this war, there may be a greater demand for corn from Kentucky.

Milk.—A synthetic wool-like yarn called "lanital" can be made from milk, but its manufacture will not be likely to require the participation of Kentucky farmers. Kentucky is not as yet a state in which dairy products are produced as cheaply as in some other parts of the country. However, should it become necessary to develop a chemical industry based on milk, production could probably be increased sufficiently to become a contributing factor.

Hemp.—After temporary loss of the Philippines to Japan in 1942, Kentucky's interest in hemp revived. If the demand for hemp were to require it, Kentucky could be an important hemp-producing state. How extensively hemp could be used in a "chemurgical" sense is not known. Its use in making high-grade cigarette paper and special textile products has been considered but to date no definite developments in either direction have appeared. It is probable, therefore, that hemp never will return as an important fiber crop in Kentucky.

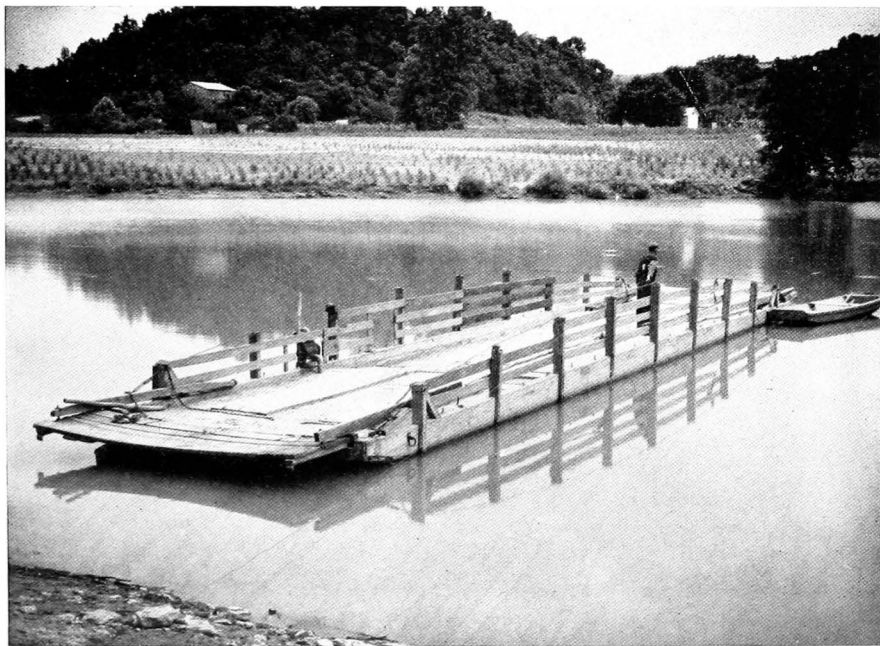
Timber.—Another source of material is the forests of the state. Wood is used to make paper, cellophane, plastics, and turpentine. Recently plants have been constructed in other states for the manufacture of alcohol from sawdust. Kentucky's forests are a potential source of valuable chemicals, and there is opportunity for more development than has yet occurred. Research is needed, however, to find the best uses for the kinds of forest products produced in Kentucky.

Chemurgy Will Not Transform Kentucky's Agriculture.—In view of the present stage of development it may be said that chemurgy will not immediately change Kentucky's agriculture. Conditions of climate will not encourage the establishment of crops greatly different in character from those now grown. Inadequate water supply would limit the location of certain types of new industries because they could only be situated where there is a permanent and regular water source. Kentucky will probably not produce dairy products for uses other than food. Tobacco acreage could be expanded but probably will not need to be in order to meet the demand for chemicals made from tobacco.



... the glamorous steamboat era ...

From the E. G. Sulzer Collection



Roland Roberts

... the size of the market is limited by the efficiency of the transportation system.

RESEARCH PAYS

In normal times, American industry spends one-half of one per cent of its gross revenue for research. The chemical industries, even during the depression, expended two per cent of their revenue on research. Some companies spent four per cent. In these trying times research has "paid off." What condition would the nation be in today with silk from Japan cut off, if one chemical industry had not invested in an idle dream that ended in nylon? In 1940, a House of Representatives committee on chemurgy was told that only one-seventh of one per cent of the value of all agricultural products was expended on research; study in this area has lagged behind some other fields. In the experience of one great industrial organization, from six to ten years is required to convert a laboratory project to a marketable product. Now the time may be even shorter, because war forced scientists to make discoveries, vitally needed, in short order to give first defense and then offense.

An Industrial Research Policy for Kentucky.—The State of Kentucky has by many legislative grants aided materially in research programs affecting the welfare of the State. Budget allotments to the Agricultural Experiment Station at the University, assistance for the project on smokeless fuel, contributions to the State Department of Health, and others, have helped in the procurement of vitally needed data about the utilization of Kentucky's resources and the safeguarding of her people's health. However, it is logical to ask if there should not be a more extensive program planned for the future. The United States Department of Agriculture has embarked on an elaborate research program. The United States Bureau of Mines is studying coal, manganese, and innumerable other substances obtained from the earth.

Should the State of Kentucky try to sponsor more research? To those who know how long it takes to solve some research problems, and who realize that this country would have been at great disadvantage in war had it not been for the research of some governmental bureaus and of industry, the answer is "yes."

There are some who will argue, however, that science should not be mobilized by becoming "socialized" or government supported. It would be an error if government should attempt to

dictate a complete research program. There must be a certain freedom for research, yet it would be possible for the State to expand its grants for that purpose without hindering the actual programs by legislation.

To find new products, to develop new uses for old products, to learn "what coal is," to find out how to make smokeless fuel, all of these and many other equally interesting problems require study, money, and the initiative and drive of dreamers. Can it be said of Kentucky that it is expending one per cent of its income in preparation for the future? Certainly it can be said that important new uses from old materials will help to raise the incomes of Kentuckians when the business of war is ended.

Chapter IX

LANES OF COMMERCE

BY RODMAN SULLIVAN

WHY TRADE FLOWS

The root of the ginseng plant, highly prized by the Chinese as a drug, is said to have been the only product of Kentucky which could stand the cost of pack horse transportation to the Atlantic Seaboard in the earliest days of white settlement. Some historians have fancifully added whisky to double the number of exports, but its inclusion runs contrary to economic reasoning, which would indicate that an article so bulky as whisky could not hope to compete successfully in East Coast markets with locally produced liquor not burdened with a very heavy freight charge.

The Southern Market.—A promising trade with the South developed immediately after settlement of the state was well under way. The opening of the Mississippi gateway at New Orleans in 1803 through the purchase of the Louisiana Territory stimulated it by removing the uncertainties of political intervention. Once the gateway was firmly in American hands, commerce on the Mississippi, the Ohio, and their tributaries grew rapidly for several decades. The story of this flat-boat era, merging as it did into the glamorous steamboat era, has been too often told to need repeating here. One observation, however, may be made. It is noticeable that the flow of Kentucky products was mostly southward, and the flow of products into the state mostly from the Northeast. Even steamboat construction tended more and more to concentrate in the Pittsburgh district. To the extent that Kentucky's products reached the Northeast they did so via the New Orleans gateway. They were just as likely to stay in the South and be transmuted into cotton for export to the Northeast or to Europe, coming back in the form of manufactured goods.

This pattern of trade continued with little change until the Civil War. After that the decline of King Cotton and the poverty of the region cut the South's ability to buy for both productive and consumptive purposes. It was necessary for Kentucky to make adjustments in the nature and direction of its trade. The rapidly growing railway net in the decades after the war greatly facilitated the adjustment. Agricultural and forest products could now move in all directions. It was not to be long before the coal deposits of eastern and western Kentucky would be supplying most of the state's needs and, in increasing volume, a surplus for export to other states.

THE CONTRIBUTION OF TRANSPORT

Most people still have enough of the little boy in them to thrill at the sight of paddle wheels flashing in the sun, locomotive drivers charging down the gleaming rail, the swift-moving pattern of car lights at night, and now the majestic air transport serenely ignoring the earth-bound far below. Admiration of his own progress sometimes causes man to overlook the significance of this costly system of getting people and things from where they are to where they should be. Transportation, aside from travel for pleasure, is not necessarily productive. If it were, a country could enrich itself through endless aimless or circuitous shipments. Production occurs only if the good has more utility, or value, at destination than at origin, the amount of the increase being the measure of the contribution made. This fact must never be lost sight of. It keeps mere hustle and bustle from being confused with productive enterprise. At best, transportation is a necessary evil. Fortunate indeed would be the people who did not need it, whose community furnished them with the best of everything. However, such Utopias are not to be hoped for in this world. In man's quest for more and more and better and better, he has developed an age of specialization, the like of which the world never saw before.

This specialization is so pervasive and persuasive that society has come to be very proud of it. In fact, it brags about it, and the expression Jack-of-all-trades is not a compliment but a derogation. One of the most obvious things about specialization is its great productivity. Men devote a lifetime to the perfection of a certain skill, great factories are built to produce a single product,

entire cities are known for certain types of goods, whole areas are famous for certain agricultural products, and even entire nations may rest their economies on comparatively limited lines of production.

The Size of the Market.—One fact stands out prominently when specialization is closely scrutinized, and that is the necessity of a large market in which to dispose of the great surplus of goods. There is no need for big tire factories to make the tires used in Akron only, no need for Florida, California, and Texas citrus production on the present scale for home consumption only, no need for 113 million sheep to provide the wool and mutton for Australia's seven and one-half million people. The principle may be stated as follows: The degree of specialization depends upon the size of the market. There is no need for a blacksmith in a community of only five families; he will be idle most of the time; no need for a dental surgeon in a village of two hundred people; he will die of boredom if not from starvation.

Now it follows that the size of the market depends upon the transportation facilities. Idaho and Maine could not specialize in potatoes, Kentucky and North Carolina in tobacco, Iowa and Nebraska in grain and livestock, Wisconsin in butter and cheese, and so on, if it cost more to move the goods to market than to produce similar ones at home. It is clear then that the principle stated above should be expanded to read: The degree of specialization is limited by the size of the market, and the size of the market is limited by the efficiency of the transportation system.

THE PARTS OF THE SYSTEM

A modern system is usually thought of as comprising most or all of the following types of transport: highways, waterways, railways, airways, and pipe lines. Naturally, not every part of the world can make use of all these forms. There can be no waterways without water, and pipe lines are useless without liquids or gases to pipe. Advocates of road and rail argue over which is the "backbone" of a transport system. The merits of the argument cannot be considered here. Certainly the essentials of modern civilization could not exist without either. Kentucky's comparative standing with respect to the sinews of transport will now be reviewed briefly.

RAILROADS

A comparison of Kentucky's position with that of its bordering states and the remainder of the southern states in total railroad mileage, mileage per unit of area, and mileage per unit of population gives an introductory view of rail facilities. In this group of eighteen states, Kentucky ranked sixteenth in the first and third criteria and twelfth in the second, though virtually tied with Oklahoma and Louisiana just above it. Inasmuch as changes in railway mileages in this country since 1920 have been occasioned more by abandonment than by construction, a slight change in mileage might easily have put Kentucky in tenth rather than twelfth position on the basis of line per unit of area.

The showing made by Kentucky in contrast with the states north of the Ohio does not appear so serious when it is recalled that the average for the United States as a whole is 77 miles of line per 1,000 miles of territory. Another way of visualizing the relatively great density of mileage above the Ohio River is to recall the fact that Illinois has the greatest rail mileage of any state in the Union, Texas alone excepted.

A glance at the map of the United States indicates one reason why Ohio, Indiana, and Illinois have such a concentration of rail lines, especially lines running east and west. All lines in that direction above the northern boundary of Georgia, Alabama, and Mississippi must cross those states if they would avoid the high mountain ranges in the South and lakes Michigan and Erie in the North.

If taken alone, miles per unit of area or miles per unit of population may be of exaggerated importance. Massachusetts, Rhode Island, and Connecticut, three high-income industrial states have, respectively, only about 41, 27, and 52 miles of line per 100,000 population; whereas California, Oregon, and Washington, three other high-income states have respectively 115, 311, and 302 miles. The same six states, in the same order, have 217, 160, and 177 miles of rail line per 1,000 square miles contrasted with 50, 35, and 77.

The Question of Adequacy.—It is easy to ask whether a rail network is adequate. It is difficult to answer, because no standard of adequacy is available. All would agree that it should be big enough to do the job, but how big is that? About the only measure

RAILROAD MILEAGES OF
KENTUCKY, ITS BORDERING STATES, AND THE SOUTH, JANUARY 1, 1942

RANK STATE	TOTAL RAILROAD MILEAGE	RANK STATE	MILEAGE PER 1,000 SQUARE MILES	RANK STATE	MILEAGE PER 100,000 POPULATION
1 Texas	16,221	1 Illinois	211.57	1 Florida	272.16
2 Illinois	11,933	2 Ohio	205.76	2 Oklahoma	267.12
3 Ohio	8,482	3 Indiana	189.80	3 Texas	252.87
4 Missouri	6,973	4 W. Virginia	157.52	4 Arkansas	226.48
5 Indiana	6,888	5 S. Carolina	108.00	5 Indiana	200.94
6 Georgia	6,242	6 Georgia	106.02	6 W. Virginia	200.26
7 Oklahoma	6,241	7 Virginia	104.30	7 Georgia	199.82
8 Florida	5,164	8 Missouri	100.08	8 Missouri	184.24
9 Alabama	4,949	9 Alabama	95.89	9 Louisiana	184.15
10 N. Carolina	4,629	10 Louisiana	89.71	10 Mississippi	176.57
11 Arkansas	4,415	11 Oklahoma	89.26	11 S. Carolina	176.54
12 Louisiana	4,353	12 KENTUCKY	89.24	12 Alabama	174.69
13 Virginia	4,257	13 Florida	88.18	13 Virginia	158.97
14 Mississippi	3,856	14 N. Carolina	87.82	14 Illinois	151.10
15 W. Virginia	3,809	15 Tennessee	83.56	15 N. Carolina	129.60
16 KENTUCKY	3,605	16 Arkansas	83.14	16 KENTUCKY	126.68
17 Tennessee	3,530	17 Mississippi	80.81	17 Ohio	122.79
18 S. Carolina	3,354	18 Texas	60.68	18 Tennessee	121.06

is the practical test usually applied in capitalistic society—does it pay? Since abandonments of rail line exceeded construction in the state by about 449 miles in the period 1930-1941, it would appear that the system is adequate. Yet this is only *prima facie* evidence. It does not prove that the lines were not needed in the absolute sense of the word nor that lines differently located, had they been built, might not have paid. Canada is well aware of the fact that railroads are not necessarily profitable to investors even though vital to the existing economy. Some years ago the Dominion government took over and consolidated into a publicly owned and operated system more than 23 thousand miles of line vital to the public welfare, but not able to stand on its own financial feet. In all but a few years the venture has been a drain upon the treasury.

Distribution.—Although total railroad line mileage is very important, the distribution of the mileage among the communities of the state is also important. In 1940 there were 2,962 communities in Kentucky not served by rail lines. This number exceeded that of any other state except Pennsylvania. The Keystone State, with a population almost three and one-half times that of Kentucky, had 4,066 or just over one-third more communities without rail facilities. On a percentage basis, Kentucky stood at the top (or bottom, depending upon the point of view) of the list with 65.9 per cent of all communities without railroad service, though there were five other states with percentages in excess of sixty.

From the point of view of the non-farm population not served by rail the picture is somewhat better. The percentage for the state is 12.5, whereas that for New Mexico and Maine, the two highest, is 29.6 and 27.5 in that order. Seven other states exceed Kentucky in this respect.

Some unevenness in the distribution of rail network has hindered the development of certain areas. The largest group of counties without rail lines is in the central southern part of the state, composed of Casey, Metcalfe, Monroe, Cumberland, Clinton, Wayne, Russell, and Adair counties. Green and Taylor counties in the same area are served only by a branch line from Lebanon. The absence of rail line for a considerable distance on the Tennessee side of the state line precludes help from that direction.

The other rail-less counties are scattered. Livingston and Edmonson counties are each touched at one corner, but Butler



It is easy to ask whether a rail network is adequate

Courtesy of Illinois Central R. R.



There can be no doubt of a great extension of air traffic . . .

William Logan

not at all. Others without rail are Owen, Menifee, Powell, Wolfe, Owsley, Jackson, Robertson, Elliott, Morgan, Martin, Leslie, and Trimble. Knott is touched only by spurs to coal mines in the southwest corner.

Still another way of visualizing the distribution of rail line is to note the county seats not reached. Thirty-three of the 120 in the state are without rail connections. In all but a few of the 33 cases the county seats are the centers of economic activity in the county, so the absence is keenly felt. Fourteen other county seats are at the end of unimportant branch lines.

It may be said that, in general, the state is better supplied with lines north and south than with lines east and west. The Southern; the Louisville and Nashville; the Illinois Central; the Nashville, Chattanooga, and St. Louis; and the Gulf, Mobile, and Ohio provide north-south service for the central and western parts of the state. The counties along the Big Sandy and Tug rivers have access to western Virginia, North Carolina, and South Carolina and to eastern Tennessee via the Chesapeake and Ohio and the Carolina, Clinchfield, and Ohio. Much of this mileage is double-tracked: Cincinnati to Corbin, Pineville, and Baxter (Harlan) and Louisville to Elizabethtown on the Louisville and Nashville; Cincinnati to Harriman, Tennessee, except for a few miles, on the Southern; and Cairo, Illinois, to Fulton, Kentucky, on the Illinois Central.

East-west service is provided by the Southern from Lexington to Louisville; by the Chesapeake and Ohio from Covington to Ashland, and Louisville to Ashland (on Louisville and Nashville track as far as Lexington), and by the Louisville and Nashville from Lexington to St. Louis via Louisville and Henderson. The Illinois Central's longest line in the state is from Louisville southwest to Paducah and Fulton, where it joins the main Chicago-New Orleans line. The two main north-south lines of the Louisville and Nashville are connected by a line from Lebanon Junction to Sinks, just east of Mt. Vernon. The same road's northwest-southeast line from Winchester to McRoberts is the third of the three big coal-carrying lines of eastern Kentucky and, like the other two, runs up a hollow and stops—that is, it takes the empty cars in and brings the coal out of the region but moves it in only one direction. It is a coincidence that these three lines (the other two are the

previously mentioned Pineville-Harlan branch of the Louisville and Nashville and the Big Sandy branch of the Chesapeake and Ohio) should have their terminals within a few miles of each other yet take such diverse routes.

HIGHWAYS

In the early days of the "better roads" movement one of the stock excuses of a community that failed to show interest in road improvement was a monologue put in the mouth of a local philosopher which was substantially as follows: "Why all this fuss about good roads? Blankville community has everything to be desired in this world, salubrious climate, inspiring scenery, fertile soil, friendly people, and the most beautiful women to be found anywhere. A man would be willing to endure cheerfully any hardship to reach such a place just short of heavenly bliss and, once there, would never wish to leave. What need is there for roads?"

Relative Standing.—Such a philosophy has little appeal to a gad-about generation that looks at the speedometer to see if it had a good time. It wants to go places in a hurry. By its standards Kentucky's road system is good only by comparison with that of a few states having still greater improvement to make. Compared with the leaders, Kentucky's roads are decidedly second-rate.

On January 1, 1942, the mileage of highway under state maintenance was as follows: concrete, 1,224; high-type bituminous, 810; low-type bituminous, 3,927; and stone or gravel, 3,364—the total paved being 9,325. The high-type surface equaled 21.8 per cent of the total. By comparison, the percentage for Illinois was 96. Illinois, incidentally, appears to hold the state record in this respect.

Naturally, there are large differences in the ability of the various states to build and support highway systems. A high percentage of the revenue available for primary highways in all states comes from motor vehicle taxes, the two best known being the gasoline tax and the license tax. It is obvious that populous states having many cities are at an advantage since the state governments usually keep these revenues for state road purposes, although much of the mileage covered by motor vehicles is over city streets paid for by property taxes.

It is more difficult to show highway mileage per unit of area and per unit of population than rail mileage, as the data are not so exact and comparable, for several reasons. The distinction made by the Public Roads Administration between high-type and low-type surfacing is somewhat arbitrary. In addition, there is the extensive mileage of so-called secondary highway maintained by some states—Louisiana, for example—plus the wide variation in the amount and quality of highway facilities maintained by county and township governments. Furthermore, the width and state of repair of these roads cannot be taken into consideration in such a comparison.

In some respects more important than these limitations is the obvious unfairness of comparisons based solely upon mileage, for a mile of highway represents so much more investment in some states and in some areas than in others. In very rough or mountainous areas it is not at all unusual for the grade and drain alone to cost 100 thousand dollars a mile, enough to put concrete slab paving on three or four miles of level road. Very little of Kentucky is level enough to be comparable with most of Illinois, Indiana, South Georgia, or Florida. Furthermore, Kentucky has many rivers wide enough to make adequate bridges unusually expensive.

Types of Surface.—Kentucky's standing with respect to total surfaced highway mileage is high, especially when it is seen that the states with higher rank are not as rough and mountainous as Kentucky. Her standing in high-type surfacing is relatively low—next to the bottom per unit of population. This is the result to some extent of a deliberate policy and to some extent of no policy at all. When a policy was followed it was that of giving to every community of any size an all-weather road before constructing high-speed interstate roads—the kind usually seen and approved by tourists. Some areas have received relatively better facilities than their traffic entitles them to. Extensive traffic surveys now enable the highway department to determine more exactly the need for highway facilities. These surveys are very useful if rightly interpreted. Naturally they show only what is, not what might be.

Another result of the predominance of lightly surfaced roads is the high cost of maintenance and repair. For the period 1921-1942, inclusive, Kentucky's expenditures for construction of primary highways were exceeded by nine of the eighteen states used

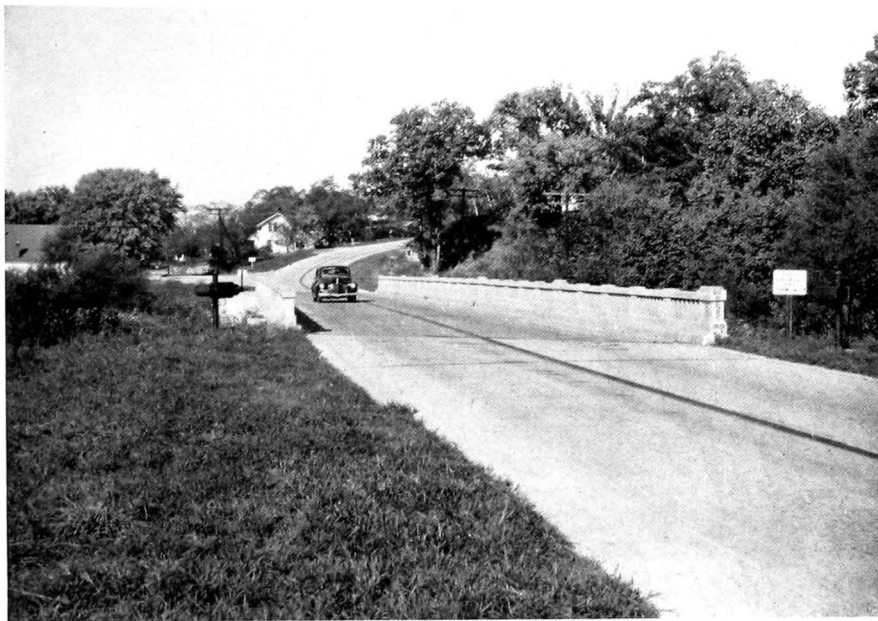
HIGHWAY MILEAGES OF
KENTUCKY, ITS BORDERING STATES, AND THE SOUTH, JANUARY 1, 1942

RANK	STATE	HIGH TYPE PAVED ROAD PER 1,000 SQ. MILES	RANK	STATE	SURFACED ROAD, ALL TYPES, PER 1,000 SQ. MILES	RANK	STATE	HIGH TYPE PAVED ROAD PER 100,000 POPULATION	RANK	STATE	PAVED ROAD, ALL TYPES, PER 100,000 POPULATION
1	Ohio	182.60	1	Ohio	393.62	1	Texas	183.76	1	Arkansas	491.11
2	Illinois	172.32	2	Indiana	256.56	2	Virginia	158.97	2	S. Carolina	360.51
3	Indiana	143.64	3	KENTUCKY	231.71	3	Indiana	152.08	3	Florida	352.00
4	Virginia	104.30	4	S. Carolina	220.54	4	Oklahoma	134.39	4	Oklahoma	338.68
5	W. Virginia	84.32	5	Virginia	208.62	5	Louisiana	131.35	5	KENTUCKY	328.92
6	N. Carolina	76.62	6	N. Carolina	190.54	6	Illinois	123.07	6	Texas	319.20
7	S. Carolina	73.55	7	Illinois	177.51	7	S. Carolina	120.22	7	Virginia	317.99
8	Tennessee	69.45	8	W. Virginia	175.59	8	Florida	113.94	8	N. Carolina	281.21
9	Louisiana	63.99	9	Tennessee	170.43	9	N. Carolina	113.08	9	Indiana	271.63
10	Missouri	54.91	10	Arkansas	158.26	10	Ohio	108.97	10	Georgia	246.72
11	Georgia	52.72	11	Oklahoma	131.59	11	W. Virginia	107.20	11	Ohio	234.90
12	KENTUCKY	52.11	12	Georgia	130.90	12	Missouri	101.09	12	Tennessee	234.89
13	Mississippi	45.33	13	Alabama	120.44	13	Tennessee	100.62	13	W. Virginia	223.24
14	Oklahoma	44.91	14	Florida	114.05	14	Georgia	99.37	14	Alabama	219.42
15	Texas	44.09	15	Missouri	112.68	15	Mississippi	99.04	15	Missouri	207.44
16	Florida	36.92	16	Louisiana	78.23	16	Arkansas	83.26	16	Mississippi	164.21
17	Arkansas	30.56	17	Texas	76.59	17	KENTUCKY	73.97	17	Louisiana	160.58
18	Alabama	22.96	18	Mississippi	75.15	18	Alabama	41.83	18	Illinois	126.77



The question of freight rates is many-sided

Courtesy of Louisville and Nashville R. R.



... state highway expenditures ...

Courtesy of Kentucky Department of Highways

for comparison, but expenditures for upkeep were exceeded by only five of the eighteen. Illinois, with its excellent system of high-type roadways, actually spent less than Kentucky.

However, such a status is not without compensations. Years of weathering and pounding by vehicles produce a fine roadbed for high-type surfacing, a factor of great importance in Kentucky, where the nature of the soil and of the earth strata results in settling that breaks the pavement. Also, there may be advantages in waiting for new mixtures, methods, materials, and machinery. Some of the states that rushed through a construction program made costly mistakes in width, thickness, mixtures of materials, etc. In addition, it must not be overlooked that if large parts of a system are built at one time they may wear out and need replacing at one time—an unhappy event for a state that shuns borrowing for construction. Finally, working within the framework of such financial policy, the State can be congratulated upon having put first things first. It has slighted no important section of the state; all parts have been made accessible. A second-rate road is infinitely superior to no road at all. To repeat, Kentucky's primary highway system is free of debt, though there is a small obligation (\$5,535,000 on January 1, 1942) for construction of toll bridges. This debt is being steadily reduced, and several of the bridges are now free. Virginia has a debt of about equal size. Three states are debt free. The average debt for the remaining thirteen states on the same date was \$72,416,000. Arkansas led with \$136,330,000. No wonder it ranks highest in surfaced mileage per capita!

Also, it must not be overlooked that Kentucky's gasoline tax of five cents is not so high as that of several states to the south. The Carolinas, Georgia, Alabama, and Mississippi have a six-cent, Arkansas a six-and-one-half-cent, and Louisiana, Florida, and Tennessee a seven-cent levy. Still another factor is Kentucky's low motor vehicle license tax for passenger cars which nets the State only \$4.50 on licenses for a full year. Though comparisons with some states are not easy because of the method of computing the tax, it can be said with certainty that Georgia's and Louisiana's fees are slightly lower than, and South Carolina's about the same as, Kentucky's. The other fourteen are higher.

WATERWAYS

Traffic on the Ohio River makes up the bulk of the waterborne commerce which touches the economic life of Kentucky. Twenty million tons of freight moved on the river in 1927 and the same amount in 1938; but the average distance in 1938 was greater than in 1927 and so was the value of the freight, 278 million dollars compared with 168 million dollars. Small amounts of freight move on the Big Sandy, the Kentucky, the Green, the Cumberland, and the Tennessee, but the volume is not great.

Enthusiastic supporters of the program of the Tennessee Valley Authority have envisioned a Great Lakes of the South in the chain of artificial lakes created on the Tennessee River. That the navigation of the river from Knoxville and Chattanooga to Paducah will be advantageous to Tennessee and northern Alabama there can be no doubt, but, in general, the river runs in the wrong direction to be of greatest aid. Besides, Kentucky will benefit from this navigation through only a short distance.

The Cumberland is even less satisfactory than the Tennessee. Construction of the proposed Wolfe Creek Dam would increase the depth of water to Cumberland Falls; but the fact remains that, like the Tennessee, it runs in the wrong direction and has much of its navigable portion in Tennessee. Unlike the Tennessee it has no sizable towns in its upper reaches. Transfer of coal from rail to barge at Burnside might be made feasible by the dam, but up-river traffic is unthinkable beyond the foot of the Falls.

The defense program and the war brought a sharp rise in the volume of river traffic. Every available craft was pressed into service and a few new ones constructed. The magnitude of the increase can be judged from the fact that the freight revenue of carriers on the Mississippi River and its tributaries reported to the Interstate Commerce Commission rose from 11.7 million dollars in 1938 to 25 million in 1942. However, it must not be overlooked that part of this growth was due to the shift of traffic off the Atlantic and Gulf coasts, where the decline in revenue was from 43.3 million dollars to 14.3 million. The possibilities of river traffic have come to be more fully understood and appreciated. It is highly probable that in the postwar period, when speed is not so

essential, the low cost of carriage by water will assure for it a prominent place in the transportation picture.

PIPE LINES

Kentucky has a moderate mileage of pipe line for crude oil and gas, but none for gasoline. However, the latter is really not needed. Facilities for collection of the state's small crude oil production and moderate gas production appear to be ample. Additions and abandonments take place from time to time as producing fields are exploited or exhausted. The 24-inch gas line from Texas to West Virginia now being laid will bring natural gas to an area stretching in a northeasterly direction from Simpson County to Boyd County, as soon as war needs have ceased. Western Kentucky may also get gas from the Southwest if the two big oil pipe lines from that area crossing southern Illinois should be turned into gas carriers after tanker service to the Atlantic Coast has been fully restored and they are no longer needed for the movement of oil. The shift to gas is being seriously considered. A connecting line would not be unduly expensive.

AIRWAYS

At present Kentucky is served by only two lines, one from Cincinnati to Nashville via Louisville and the other from Chicago to Chattanooga via Louisville. An alternate route of the same line provides a stop at Evansville instead of Louisville—useful to the Henderson-Owensboro area. The Cincinnati-Knoxville flight does not now stop in Kentucky, but will stop at Lexington as soon as facilities and equipment are available. The St. Louis to Washington route via Louisville, Lexington, and Charleston has been approved and undoubtedly will be in operation as soon as conditions permit.

It is possible to stress too heavily the importance of cities when planning air routes. Sometimes raw census data are deceiving. Lexington, for example, had a population of only 49 thousand in 1940, but the total population of Fayette County and the counties adjoining it was 182 thousand; Covington, the second largest city in the state, had a population of only 62 thousand, but the total for Kenton, Campbell, and Boone counties was 176 thousand. At no point in the states of North Dakota, South Dakota, Montana,

Wyoming, Nevada, Arizona, and New Mexico is it possible to find so large a concentration of population in such a limited area. Yet, northern Kentucky will be served directly only because it is handy for Cincinnati to have an airport immediately across the river; and Lexington is almost too close to both Louisville and Cincinnati to be favored as a stop.

Air-borne commerce is the present glamour boy of transportation. There can be no doubt of a great extension of air traffic in the postwar world. Prophecy of the future of an industry apparently in its infancy is indeed hazardous, but it may be ventured that, in the absence of revolutionary improvements in technology, mere refinement of detail is unlikely to enable the plane to supplant movement by rail and highway, even for passengers. In their advertising, the airlines have predicted that all first-class mail will move by air—an ambitious program if they envision serving the smaller cities and towns. A recent study made for the Air Transport Association of the probable volume of overseas traffic that might be expected to move by air after the war resulted in an estimate of only 150 thousand tons based upon 1939 exports and imports, the equivalent of seven or eight round trips for one 10,000-ton cargo vessel. Even if air rates were reduced to ten cents per ton-mile the cost advantage of the ocean carrier would still be 50 to one to offset a speed advantage of from six to ten to one in favor of the plane. Since land transport is more expensive than water transport, its cost-advantage over air transport is less, and there is a better chance that more domestic business might be wrested from rail and highway by the plane. But sober thought discounts some of the enthusiasm of those people who visualize the necessity of a municipal airport for every city or village which does not wish to be outstripped by its rivals. Considerable sums have been spent by municipal governments for airports that would have yielded equal public utility as golf courses or picnic grounds. This does not imply that such communities should ignore the question. A friendly and co-operative attitude is not incompatible with caution before making heavy investments that might prove unwise. Air transport arrived upon the scene too late to modify greatly the pattern of population density. It must, to a large extent, accept the existing pattern and conform to it. So far the greatest use of the plane has been in the most densely populated

areas of high-income regions and the next greatest use in connecting high-income regions separated by great stretches of unsettled territory.

FREIGHT RATES

Kentucky, like other southern states, has noted with some concern the small amount of manufacturing within its borders. Freight rates that are unfavorable by comparison with those prevailing in the northeastern section of the country stand high in the list of reasons usually offered to explain this lack. Agitation for change in the rates has reached such a point that judgments free of sectional bias and prejudice are not easy to make. In a hotly contested rate case in 1939 the late Joseph B. Eastman, for years Chairman of the Interstate Commerce Commission, stated that "It has become a political issue . . . it is not easy to decide the case without being influenced by emotional reactions, one way or the other, which should play no part in the decision." Certain commentators in the press reminded Mr. Eastman that any group is apt to resort to pressure tactics if it feels that a regulatory body has known the facts but refused to act upon them. It has been observed that divisions of opinion within the Commission itself, at times, have suggested that sectional interests may have had more weight than the dry facts in making up the members' minds.

A COMPLEX PROBLEM

It is not easy to say why one section of the country should enjoy freight rate advantages over others. The question is many sided and complex to those who have not studied it, and even more so to those who have. It is not even possible to say with certainty just how much difference in rate levels actually exists. Furthermore, no one knows how much the differences have retarded the growth of industry in Kentucky or the rest of the South.

Steps in Rate-Making.—Railroads are required to establish rates for every kind of article that might be offered for shipment between any two of nearly 100 thousand points—not far from 200 trillion individual rates. Such astronomical quantities are, of course, unmanageable, unless organized into a system simple enough to be interpreted by freight clerks of ordinary intelligence

and experience. The first step groups into a few classes the thousands of articles offered for shipment. Some of the characteristics used are value, weight per unit of volume, perishability, susceptibility to damage, number containable in a car, special care, handling, or equipment required, regularity of movement, whether set-up or knocked-down, and whether crated or uncrated. At one time there were many territorial classifications of freight but they have been reduced to three, ordinarily known as Official (or Eastern), Southern, and Western. They use eight, twelve, and ten classes respectively. There has been agitation for a single classification applicable to all the continental United States but the Interstate Commerce Commission has not forced its adoption.

The second step in preparing a system of rates fixes the ratios of these class rates to each other. What percentage of the first-class rate shall the other class rates be? These percentages are not the same for the three classifications, but they are uniform within each.

The third step is the assignment of actual rates to first-class freight from each point to all other points—a task of such infinite magnitude that it has never been attempted all at once, but has been accomplished piecemeal through the years by the carriers, working singly and in groups with the shipper or shippers, subject to the supervision of state regulatory agencies and especially that of the Interstate Commerce Commission. Two of the Commission's most important duties are consideration of individual rates and of the absolute level of the rate structure as a whole.

The most important factors used in determining a set of class rates between two points are the cost of performing the service, the pattern of actual and potential competition from other rail, water, and motor carriers, the value of the service to the shipper, the volume and regularity of shipment, and the bargaining ability of the shipper versus the needs of the carrier for revenue.

When distance is the primary consideration the rate increases with the length of the haul but not in proportion to it. This tapering principle, as it is called, combines a terminal handling charge with a line-haul expense that is obviously less per mile for a haul of 200 miles than for one of 100.

If a commodity moves in large volume at frequent intervals, if its movement is of prime importance to either the shippers or

the carriers, or if the class rate is too high to allow free movement, a fourth step in rate making is likely to be taken. This step takes the article out of the class rate group and gives it a special rate of its own, known as a commodity rate. Although such rates usually apply only to carload movements with a specified minimum weight limit, there are exceptions. Commodity rates have been granted so freely that they cover nearly all carload traffic of importance except in Eastern Territory. Class rates were estimated to provide only 17 per cent of rail revenues in the South in 1924. The growth of industry in the area since then has probably increased that percentage.

Exceptions.—Sometimes an alternative fourth step is taken if a carrier or carriers agree that the class rate is too high. The procedure is to grant an exception which may take the form of lower classification, less expensive packing requirements, lighter minimum carload weight, etc. Exceptions may be made to apply to a few points only or to an entire classification territory. They are freely used to add flexibility to the rate structure. If a shipment is proffered with which he is unfamiliar, a rate clerk is likely to look first to see if a commodity rate or an exception has been granted before looking in the classification book. So complicated is the structure that many rate experts employed by firms, trade associations, or boards of trade, effect substantial savings for their employers through detection of errors in freight bills.

RELATIVE RATE LEVELS

From this brief description of rate making, it is clear that glib statements about rate levels in the South being higher by a specified percentage than those in the East are unconvincing. Such claims take too literally, and rest too heavily upon, estimates of rate men that rates on Class I freight average 39 per cent higher in Southern than Eastern Territory.

“Kangaroo” Rates.—The complexity of the problem is shown by a statement in *Nation’s Business* (February, 1944) by A. J. Ribe: “. . . in the maze of railroad freight tariffs there is a published rate on kangaroos from Kankakee to Kalamazoo or Kokomo or anywhere else. Also in these same schedules there are rates on pig iron from Miami, bananas from Detroit, tobacco from Reno, grape-

fruit from Minneapolis, pineapples from St. Louis, and cotton from Spokane to any place in the United States."

Much of the clamor for nation-wide uniform freight classification and rates comes not from business men but from superficially informed persons impressed with the difference between these "paper" or "kangaroo" rates and "live" or effective rates. The Governor of Louisiana once compared the rates on shoes from Lake Charles, Louisiana, and Boston, to Chicago. No shoes are made in Lake Charles, but they are made in Buford, Georgia, Nashville, and New Orleans, from which rates to the North, including Chicago, are lower than the rates from Boston. Uniformity would reduce the "paper" rates and actually raise the effective rates. A witness before a Congressional Small Business Committee testified that the rate on stoves from Fort Lauderdale, Florida, to Pittsburgh, was higher than the rate from Pittsburgh to Fort Lauderdale. The busy traffic departments of the carriers answer "What of it? Seriously propose stove production in Fort Lauderdale and we'll give you a rate second to none." The skeptic replies that the existing rate is a fact; the revised rate only a promise.

It is virtually impossible to generalize about commodity rates, because they are constructed on so many different bases and levels and are of such varying importance. However, it is possible to compare regional differences in commodity rate levels by the use of rates on particular commodities. The Board of Investigation and Research of the Transportation Act of 1940 found strong evidence that Southern commodity rates are higher than Eastern rates; the difference is less than that affecting first-class rates, though exceptions exist. On a few commodities, rate levels in the South are even lower than in Eastern Territory. This is true of brick and clay products, fertilizer and fertilizer materials, and lime. Calculation of averages is complicated by the fact that commodity rates differ even within the rate territories.

Averages Not Too Reliable.—An average of rate levels for all types of freight traffic is most difficult of all to compute because of differences in the average length of haul in the different regions. However, William F. Kennedy of the Louisville and Nashville Railroad made such an attempt. It was modified and reworked by Ford K. Edwards of the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission. The method used

was ingenious. After correction for average length of haul the actual freight revenues received in the other regions were compared with what they would have been had Eastern rate scales applied within their territories. When the computed revenues at Eastern rates were equated to 100, actual Southern revenues were found to equal 105.5. Edwards made some further refinements and concluded that the average rate level in the South is three to five per cent higher than the Eastern level. Both estimates admittedly involve certain assumptions that might be questioned and the use of some imperfect data, but they are the best presently available.

Class rates on traffic crossing regional boundary lines are likely to be a blend of the rates in the respective regions with a bias in the direction of the higher regional level. This is true even though only a relatively short portion of the haul is in that territory. Again there are exceptions to this general rule. There is no consistent basis for interterritorial commodity rates and generalizations are impossible.

The Cost Fallacy.—Differences in traffic density per mile of line and differences in the nature of the traffic, affecting as they do the cost of transportation service, have usually been given as the reason for higher rate levels in the South. Only recently has this assumption of higher railroad costs in the South been attacked with convincing and well-nigh irrefutable evidence. The interest aroused by the Southern Governors' Rate Case, among other things, caused the Interstate Commerce Commission to initiate a sweeping investigation of all class rates east of the Rocky Mountains. The Bureau of Transport Economics and Statistics under Dr. Edwards made an elaborate attempt to determine regional differences in cost and showed that costs were actually lower in the South than in the East. Though the study has been attacked, most of the criticisms have dealt with absolute costs and not relative costs whereas only the latter justify differences in rate levels.

THE PROBLEM OF REVISION

It is doubtful whether equitable freight rates will be accorded the South through piecemeal changes. There is need for a sweeping readjustment which would recognize that there is no longer

any logical basis for long-standing discriminatory rate differentials. The Board of Investigation and Research in a 1943 Report on Interterritorial Freight Rates recommended that (1) a uniform freight classification be established for the United States, permitting exceptions where clearly justified, and (2) that class-rate scales be uniform in structure except where transportation costs and the revenue needs of the carriers will not permit. The Board saw no impropriety whatsoever in a declaration by the Congress committing itself to such a policy and directing the Interstate Commerce Commission to proceed so to administer the Interstate Commerce Act. The Board would not force uniformity of commodity levels but would leave discretion with the Commission. Southern commodity rates have not been attacked so there can be no quarrel with the latter recommendation if the former is accepted. Both appear reasonable and practical.

Freight Rates and Kentucky Industry.—The theory of the location of industry is one of the fields in which economists are least sure of themselves. Many factors responsible for location can be listed, yet successful industries may defy analysis in terms of them. Nothing succeeds like success, and success is often cumulative. Transportation is one of the location factors, all-important in some cases and negligible in others. How important it has been in retarding the development of Kentucky industry can never be known.

Exaggeration of the evil effects of a rate structure is easy, and there has been far too much of it. The concentration of Kentucky industry along the Ohio River where Eastern Territory rates are in effect offers a tempting generalization that all Kentucky might be proportionally industrialized if it were not for the freight rates. The falsity of the conclusion is obvious on second thought. Entirely aside from the advantages of river transport and abundant supplies of fresh water (a neglected factor in location theory) there is the necessity of breaking up and reclassifying southbound and northbound trains, as most roads do not operate in both territories. Cincinnati will keep its lead over, say, Hamilton or Dayton just as Louisville will keep its lead over, say, Bowling Green or Lexington.

Nevertheless, if there has been retardation of industrial development, if there has been diversion of industry from the state

(and there undoubtedly have been both), some of the damage is irretrievable, but that is no reason for acquiescence in the *status quo*. New and relatively small-scale industry is more likely than old, large-scale industry to locate in the state, so it is all the more important that the rate squabble be ended. Both the fact and the fiction of rate differentials must be destroyed. According to the Board of Investigation and Research it is the small shipper and the new industry which is at a disadvantage: "The larger shippers and well-established industries are more likely to obtain favorable rate adjustments through negotiations with the railroads. This is a natural consequence of the fact that they have the traffic to offer, and are the shippers and industries which the railroads, acting in their own self-interest, are most likely to heed. If favorable rates cannot be obtained through negotiation with the carriers and there is resort to litigation before the Interstate Commerce Commission, the larger shippers and established industries again appear to have the advantage. Formal complaints will ordinarily be prosecuted only by those who are already established in business, and who can show that they are adversely affected by the existing rate adjustment. Smaller shippers and new industries may not obtain relief from burdensome rates, either because of the difficulty, expense, and slowness of litigation, or because of the difficulty of making satisfactory proof that the rates complained of are in violation of the law."

Not a Panacea.—Though uniform rate classifications and scales are highly desirable, their advocates are likely to be disappointed by the results obtained. First, it must be remembered that Ohio River points and those on the Chesapeake and Ohio Railroad from Ashland to and including Lexington already are, for most purposes, in Eastern Territory. This is true also of points on and east of the same road's line from Ashland to Elkhorn City. Secondly, the large amount of Kentucky freight that moves on commodity rates will be unaffected. Coal and tobacco, for example, enjoy very favorable rates. In fact, the rates on coal from both fields to the Great Lakes are so little higher than the rates on Ohio, Pennsylvania, and Illinois coal to the same market that the mine operators in those states feel that distance is not given enough weight in Commission decisions. Those who deplore Kentucky's (and the South's) export of raw material may discover that lower freight

rates encourage the exportation of raw materials to areas of lower fabrication costs. Incidentally, this export-of-raw-materials argument proves illusory upon examination. Does anyone wish to stop the production of a large percentage of Kentucky coal merely because it leaves the state? That is why it is produced. Aside from coal there is no distressing outflow of raw materials. Livestock goes to market but so it does from Wyoming. Fabrication of all Kentucky's tobacco would require that Carolina mills and tobacco both be sent to Kentucky—not a pleasant prospect for Carolina to approve! Thirdly, it must not be overlooked that rates which make it easier for southern products to enter northern markets make it easier for northern products to enter southern markets. Freight rates can give a sort of tariff protection to young industry that may be welcome in winning the home market.

TRUCKING REGULATIONS

Kentucky's laws regulating the operation of trucks upon the highways have given rise to much acrimonious debate among the interested parties. Advocates of change see the laws as barriers to commerce and hobbles on economic progress. They point out that the restrictions are, in some respects, the severest in the nation. Defenders of the laws call them the safeguard of lightly surfaced and crooked highways that would be pounded to pieces by traffic beyond their capacity to bear. They emphasize the liberality with which special permits are issued to haul, over designated highways, loads in excess of the legal limits. They see no occasion for changing a system that leaves discretionary power in the hands of the body responsible for constructing and preserving the state's highways. It is not necessarily vicious that the railroads should have provided some of the most effective opposition to higher truck weight limits. True, the railroads are an organized pressure group, but so are the truckers. The multitude of passenger car owners is relatively unorganized and inarticulate, but has more to lose than any other group if an unwise highway use policy is adopted, for it paid more to create the highway system.

THE LAW

However, examination of the statute does reveal some illogical provisions. The gross weight limit of nine tons applies equally to

four-wheeled trucks and eight-wheeled semi-trailers (full trailers are not permitted). The load limit of 600 pounds per inch of tire width avoids the danger of overloaded four-wheeled trucks, but there is no limitation of total weight on one axle, although highway engineers are less concerned with total weight (except on bridges) than with its distribution. Truck lengths are limited to 26½ feet and semi-trailers to 30 feet, but there is no limit to bus lengths and no limit to bus weights, other than the over-all limitation of 15 tons for any vehicle of any type. Truck speeds are limited to 30 miles an hour for trucks in excess of 5,000 pounds gross weight and 40 miles an hour for trucks weighing less. This provision makes consistent law violators of most truck drivers, whereas buses are subject only to the general speed limit of 45 miles per hour—a limit they continually violate with impunity. There is no quarrel with vehicle width limits; 96 inches is standard throughout the country except in one state. But the height limit of 11½ feet is one foot short of the maximum in most states.

Wartime Relaxation.—These limitations were relaxed by the more generous provisions of 1942 enacted for the duration of the National Emergency. The most important changes increased permissible length of semi-trailers to 33 feet, and gross weight to 14 tons for vehicles operated over National Emergency Highways. It should be remembered also that the highway department at all times has the authority to issue “. . . permits for the operation of motor trucks, tractors, and semi-trailers and trailers, whose gross weight, . . . height, width, or length exceeds the limits . . . or which in other respects fail to comply with the requirements. . . . Permits may be issued . . . for stated periods, special purposes, and unusual conditions. . . .” A fee is charged and surety bond may be required for indemnification for damages to roads or bridges. However, special permits cannot be issued in many cases where the pavement is strong enough to carry the load because of the presence of weak bridges. Material for strengthening or reconstructing most of these bridges may not be available until after the war.

RELIEF

It is natural for trucking interests to chafe at the restraints of a system requiring special permits, even though it be administered

Chapter X

GOVERNMENT: THE PEOPLE'S BUSINESS

By JAMES W. MARTIN

The effective use of state and local government presents three kinds of problems: first, problems of governmental policy, or of making the State do what the people want it to; second, problems of organizing and managing its operations; and, finally, problems of keeping management—or administration—in line with policy. Some of Kentucky's important issues of public policy are: formulation and maintenance of an up-to-date constitution; public encouragement of economic activity; amount and distribution of taxes; use of public money for the different activities of government; and extent to which the State, counties, cities, and school and other districts go in debt. Problems of organization and management include: making administration effective, maintaining courts which impartially administer justice, keeping the state and local governments properly related to each other, having efficient public employees, and following wise financial practices. In keeping the administration of public functions, such as welfare, education, and highway management, in tune with policies established by the Legislature, numerous methods are employed, and many others deserve attention from the citizens of Kentucky.

PROBLEMS OF GOVERNMENTAL POLICY

MODERNIZING THE CONSTITUTION

As in other American states, the fundamentals of Kentucky government are embodied in a written constitution. Kentucky's basic law is more nearly what such a document should be than are the constitutions of certain other states. However, the present document was adopted more than 50 years ago. Even if it had been perfect then, the remarkable changes which have occurred in the

with prompt, fair, and impartial service. They feel that a form of transport which provides a flexible and economical service should not be prevented by artificial restrictions from attaining its normal stature. There is much to be said for their point of view. Nevertheless, if the evidence presented earlier in this discussion on the condition of Kentucky's highways is valid, it would be unwise to open the roads to unrestricted use by vehicles of all types, weights, and speeds. When a primary highway system consists of roads that vary from four-lane concrete to crooked crushed-rock, gravel, or light bituminous surfaces it is unreasonable to ask that traffic suitable to the best be allowed on the worst. Few experienced drivers relish the prospect of encountering "highway trains" on a narrow, slippery, double switch-back curve. Properly designed and constructed highways with higher-type surfacing seem to be the ultimate key to liberalized height, length, load, and speed limits for Kentucky's trucks.

CONCLUSIONS AND RECOMMENDATIONS

Kentucky's transportation facilities, compared with those of other states, are neither the best nor the worst. There is no reason why they cannot be made to do their job in such a way as to foster rather than hinder the state's progress. Pipe lines and railroads are constructed and operated only when conditions offer the hope of profit. If they are inadequate they are least subject to modification through public policy. However, equitable freight rates can be had by a change of administrative or legislative policy. Kentuckians must continue to press for such a change until they get it.

Ports and terminals for water-borne commerce may be constructed at public expense if it is the public will, but aside from that, waterways cannot be put where they are not. Improvement of internal waterways has been and probably will continue to be a federal rather than a state activity. The air traffic picture is not so clear. Active encouragement may bring air service to smaller centers, and a brisk intrastate traffic may develop; but it is questionable whether interstate lines will be much influenced by local clamor.

The highway system above all is the people's artery of commerce. Within limits they can make it what they want it to be,

if they are willing to pay the price. As soon as conditions permit there should be strong and continued pressure for extensive expansion of high-type surfacing and for strengthening or replacement of weak bridges. A by-product of such surfacing would be lower expenditures for highway repair. There are three obvious sources of funds—higher passenger vehicle licenses, higher gasoline taxes, and borrowing. The advantages to be gained by contracting for long stretches of surfacing at one operation are substantial enough to justify the temporary use of all three methods and probably permanent use of the first, as Kentucky's fee system is definitely out of line with more progressive practices in other states. When this task has been accomplished, the way will be clear for modification of present limits on trucking.

Chapter X

GOVERNMENT: THE PEOPLE'S BUSINESS

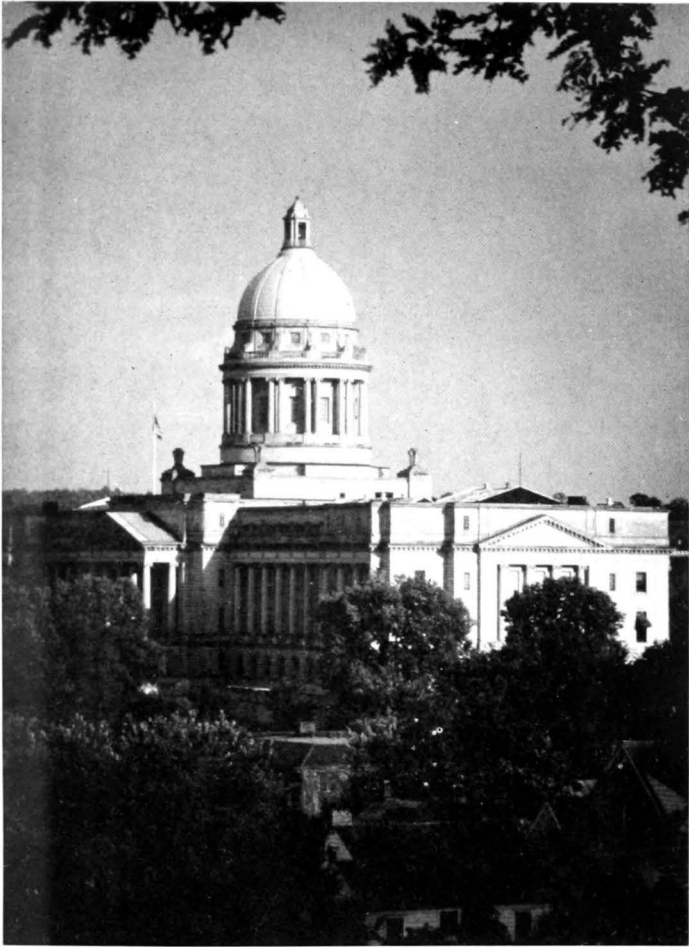
By JAMES W. MARTIN

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So far as the revenue is now derived from sales taxes it rests mainly on . . . amusements . . .

way people live would have made it partly obsolete. For example, the constitution-makers sought to prevent the unwise spending of public money. Their effort to accomplish this desirable purpose is reflected in several provisions, one of them prohibiting compensation of more than \$5,000 a year for official services to state or local government. The lapse of time has made it clear, however, that other constitutional specifications for county government machinery now result in more waste than could reasonably occur through overpayment of public servants. Furthermore, the value of money has changed, so that a \$5,000 salary in 1890 would mean about \$11,125 in 1944. Whether wise or unwise in the first place, certainly by 1944 the limitation was out of date.

There are various methods of keeping constitutions modern. Many people think that the Court of Appeals (Kentucky's "supreme court") can be trusted to interpret the basic law in modern terms. Some citizens fear that Kentuckians might prove too radical in governing themselves, and they believe that constitutional limitations are necessary to insure conservative government. Other citizens think needed adjustments can be made by amendments to the constitution. Amendments are possible, but are difficult to adopt—due both to constitutional machinery and to voting habits. A third way of dealing with the situation is, from time to time, to assemble a constitutional convention. The present procedure, however, makes this process extremely difficult. A convention proposal must be approved by two successive General Assemblies and then submitted to the people for a popular vote. Thomas Jefferson recommended a constitutional convention at least every 20 years.

One way to help toward a modern constitution, if the State could begin at the beginning, would be to adopt in the first instance a constitution which omits provisions that quickly get out of date. Such a document would not include ordinary legislation. Details about the structure of state and local government, debts, or taxes, according to this view, could be treated by the lawmakers from time to time in the light of existing conditions, and would not be in the constitution. The constitution should become simply an outline of the plan of government and perhaps embody safeguards for personal and public rights. Kentucky, so it is urged, might be more happily situated if its Constitution, like that of

Britain, were imbedded in traditions and passed as a customary pattern of behavior from each generation to the next. The main point is that operating details are matters for current legislation and not for the fundamental law of the land.

POPULAR CONTROL

To have democracy in government the people of a state, county, or city must have direct means of exercising control. Democratic government is simply government which is responsive to majority sentiment and which protects minority rights.

In Kentucky there is no provision under ordinary circumstances for direct popular decisions on governmental problems. In a number of other states the people themselves may initiate governmental action and may approve or disapprove individual policies by popular referendum. This does not imply, of course, that Kentucky lacks democratic government. It means rather that democracy in this State must depend upon other methods than direct voting to secure governmental responsiveness to the public will.

In Kentucky, democratic control of both state and local government is sought chiefly through popular election of public officials, especially of those who determine policy. In the state government, policy officials include the Governor and the members of the General Assembly. In city government, they usually are the Mayor and the members of the commission or the board of aldermen. In county government, they include the members of the fiscal court, particularly the county judge. Kentuckians also elect many non-policy officials for both state and local government.

Choice by the people in state elections of a lieutenant governor, an auditor, a superintendent of public instruction, a commissioner of agriculture, a state treasurer, a secretary of state, an attorney general, a clerk of the Court of Appeals, and even other officials, diverts attention from the principal policy officials, that is, the Governor and the legislators. Specific tests have shown quite clearly that intelligent Kentucky voters cast their ballots ignorantly for certain so-called minor officials, who are administrators and not lawmakers. Moreover, popular election of administrative officers prevents the development of full efficiency in management.

One problem always present concerns the extent to which political organizations are under popular rather than special-interest control. Seemingly, loyalty to party, or in some single-party states loyalty to factions, accompanies the democratic process. But there is grave danger that, through campaign contributions or other means, special economic or other groups will gain undue control over political parties or factions. The inclusion of a large number of candidates' names on state and local ballots is one of the main factors which contribute to so-called "machine politics" in the Bluegrass State. Confusion from this source in the mind of the voter gives special interests the same kind of advantage as do public indifference toward, and ignorance of, the way the government's business is handled.

Another distinct problem concerns primaries and general elections. Kentucky has ceased to depend upon conventions to nominate candidates for state or local offices; but primary elections have not been a perfect substitute, especially because of the extremely long ballot. The general election is held under essentially the same conditions. The recently enacted election law represents a forward step toward preventing election frauds, but complaints of primary and election irregularities are still heard. Kentucky is fortunate in having no such restrictive qualifications for suffrage as are imposed by poll taxes and other devices, but the constitutional prohibition of absentee voting under conditions such as prevail in wartime denies numerous citizens the right to vote. To improve popular control of government the factors offering the greatest possibilities include the elimination of the extremely long ballot (this has already been done to some extent, for example, in second-class cities with city managers); the enactment and rigid enforcement of clean primary and election laws; the addition of procedures for securing more popular participation in primaries and general elections; and, above all, the diffusion of knowledge about government and about the individual citizen's responsibility for its performance.

In this connection it should be emphasized that members of legislatures and governors are responsive to public sentiment. The individual who keeps himself informed can do much to improve government by keeping his legislators advised of his wishes on important public matters. If even a considerable minority of the

good citizens of Kentucky kept their representatives in the General Assembly continually aware of their sentiments regarding bills of all kinds, the quality of legislation would improve. This means of improving government, especially local government, is an addition to the possibilities already discussed—not a substitute for them.

REGULATION AND PROMOTION OF ECONOMIC ACTIVITY

The most widely known regulation of economic activity is the supervision of public service corporations. The state government controls electric power companies to assure reasonable rates and uniform and satisfactory service. Similarly, the state or the local government regulates water, railroad, gas, bus, and truck-for-hire rates and services. There are also many other types of regulation. One important means of influencing economic activity is through the enforcement of standards for certain occupations. The requirement of certification for physicians, dentists, lawyers, teachers, and prescription druggists is well known. State or local government also seeks to insure certain standards for barbers, beauticians, bakers, meat carvers, and numerous other callings directly involving the public health or welfare. State regulation of the alcoholic beverage business is well recognized, and there is similar control to assure sound banking and security practices.

More general in their implications are long-range planning activities to promote a sound agricultural, mineral, and manufacturing economy. Through agricultural extension and various other services, Kentucky, with federal aid, has performed this function for farming. In broad economic planning the Commonwealth made some headway when it established the State Planning Board more than a decade ago. However, the work of state planning in behalf of a well-rounded scheme of economic development has been somewhat sketchy.

Another way of helping to plan and promote economic development is to support research and to effect the wide diffusion of knowledge of its results among the people. In this, too, Kentucky has been less active than have many other states. In fact, until the last decade or two the state and local governments provided practically nothing to support investigation necessary for economic development of the Commonwealth. Through the University of Ken-

tucky, the State Highway Department, the Department of Revenue, and other agencies, the Commonwealth has recently undertaken a modest research program looking toward unified development of agriculture, commerce, and industry, as well as of government. Kentucky still lags behind numerous other states in this respect.

Unlike some neighboring states, Kentucky has not launched any program for direct promotion of economic activity. Such plans are vigorously opposed even in states which have adopted them.

SIZE AND DISTRIBUTION OF THE TAX LOAD

Until after the early 1930's, the property tax yielded an overwhelming proportion of all revenues in Kentucky. This percentage was well above that for the average state. Critics of state and local taxation were practically unanimous in the view that it was too large a proportion of the total.

The Trend Away from Property Taxes.—Changes in 1934 and especially in 1936 initiated a trend toward reduced dependence on property taxation. In the country as a whole, state and local government revenue from property taxes declined less than 10 per cent from 1932 to 1941; in Kentucky there was a drop of 29 per cent. By 1941, property taxes yielded 40.5 per cent of total revenue in all states and but 31.0 per cent in Kentucky. Meantime, the aggregate of state and local revenue (exclusive of federal aid) advanced 30.6 per cent in the nation. During the same period, Kentucky's revenue load advanced but 27.2 per cent. In other words, while total public revenue was going up less rapidly than in other states, the amount derived from property taxation was declining about three times as fast.

Not only were the amount and the relative proportion of property taxes reduced, but the distribution of the tax load among various classes of people changed. The net effect of changes from the early to the late thirties was to lessen the load on those whose incomes depended upon the use in their business of large amounts of property, and also on relatively poor as compared with well-to-do taxpayers. The first change was brought about by reducing total property tax levies and by adding revenue measures that rested largely on non-property-owners; notably, a general retail sales tax which in 1936 was replaced by special sales, income, and increased inheritance taxes. The second change was introduced

mainly by raising inheritance tax rates and by imposing corporate and individual income taxes. As Governor Johnson put the issue in his *Kentucky Government, 1939-1943*:

"In 1936, the General Assembly adopted the foundation of the present tax system. For the first time, to a significant extent, this legislation required the prosperous citizen to contribute more in proportion to his income than the poverty-stricken individual. Nearly 16 per cent of the total non-highway tax revenue came from these progressive taxes in 1936-37. Last year nearly 29 per cent came from such taxes. So far as the revenue is now derived from sales taxes it rests mainly on such luxuries as alcoholic beverages, cigarettes, and amusements, and not on bread and butter, as was the case under the 1934 act."

Improvements in Tax Administration.—During the late thirties and early forties the Commonwealth made marked improvements in tax administration. This eliminated many discriminations against some taxpayers who had previously suffered as a result of inadequate enforcement. Beginning in 1936 and continuing until the war was well under way, the Kentucky Department of Revenue introduced a modern businesslike plan and operated it through the use of carefully recruited and instructed personnel. Some of the ground gained, however, was lost through movement of personnel to military services and to other wartime employment. This loss was rendered more acute because of the low salaries paid in the state service.

Property tax administration in Kentucky, however, is inefficient as compared with practices in certain other states. Property is undervalued and assessments are unequal in relation to the market value of the property appraised. Furthermore, there are opportunities for marked improvement in collections, even though a larger proportion of the total tax levy is actually collected in Kentucky than in the average state.

Proposals for Further Change.—In public discussion two major tax changes are proposed. In the first place, many people have been interested in repeal or reduction of the progressive taxes on incomes and inheritances. In 1943, a small but powerful group of people organized and conducted a vigorous campaign for repeal of the corporate and individual income tax. A smaller and less outspoken group has been interested in reducing inheritance tax

rates, but rarely has it been suggested that this measure should be repealed.

The causes of these movements appear to fall mainly in three groups. First, certain people with large incomes and representatives of large estates have interested themselves in shifting the tax load to less prosperous individuals. Although this idea has not been publicly urged with frankness, it appears to have caused much of the opposition to income taxation and a larger proportion of the objections to the inheritance tax. Next, it is argued that certain businesses along the Ohio River are handicapped in competition because Kentucky collects an income tax and states to the northward impose sales taxes instead. Sales and income taxes directly affect different economic groups; hence, for some individuals and some corporations Illinois, Indiana, and Ohio offer a competitive tax advantage over Kentucky at the border line. The situation is fairly uniform along the river from Ashland to Cairo; but at one or two points, due largely, it appears, to anti-income tax agitation, an extraordinary antipathy to the State's revenue plan has emerged. Finally, some people are opposed to income taxation simply because they do not enjoy preparing and filing returns. The tax, moreover, seems to them burdensome partly because it must be paid in one or three installments rather than gradually through the year.

In the second place, some interested individuals and agencies seek improvements in property tax administration. Although Kentucky now relies upon property taxes for a much smaller proportion of all state and local revenues than does the average state, these levies still produce more revenue than any other single source. As there is no great technical difficulty, the question is exclusively whether or not Kentucky people desire continued unequal enforcement or a modernization such as many states have already effected.

The Commissioner of Revenue and other persons have proposed removal of some rigid tax-limitation provisions of the Constitution. In many counties, for example, the people are unable to tax themselves for support of such activities as agricultural extension, health, and welfare units. Such tax-policy problems as this one are in essence merely special cases of keeping the Constitution modernized.

RELATIVE SUPPORT OF PUBLIC SERVICES

Spending for governmental purposes may be judged from one angle by the way the money is divided among different objects of expenditure: operation (running expenses); capital outlay (increases in government property); debt service (payments of interest and principal); and transfers to trust funds (teachers' pension fund or unemployment compensation reserve fund). From another viewpoint, it is important to consider the division of expenditures among various governmental services such as highway construction and maintenance, education, health, and welfare.

In Kentucky, operating expenses of the state government in 1942 accounted for a higher percentage of total expenditures than in the average state. Capital outlays were nearly twice as great a proportion of the total as in the average state. Debt service charges were a much lower proportion of the total in Kentucky than in all states. Transfer of current revenues to trust funds occurred in about the same proportion in Kentucky as in other states.

A state which has heavy debt charges can provide less direct service to its people than one with a relatively low debt. Both interest and principal payments in Kentucky are very low. Thus, the State of Kentucky gets for each total dollar expended a good deal more actual property or education or highway building than does the average state.

In considering distribution of money between the main governmental functions, direct operation, state aid to local governments, and capital outlays may be thrown together for each function. When so lumped, Kentucky's state expenditures in 1942 out of each total dollar exceeded those of the average state for correction, general overhead, public roads, and development of natural resources. On the other hand, for each dollar spent, provisions for policing, public health (including hospitals), public welfare, and public education were less in Kentucky than in the average state.

Although figures as to distribution of expenditures by cities, counties, school districts, and other units of local government in Kentucky are not comparable with those for other states, some differences between public expenditures in Kentucky and in the average of all states are clear. Thus, in Kentucky, combined state and local expenditures for police and fire protection and for other

public safety services are low as compared with the total. Those for education and welfare are *very* low. On the other hand, those for highways are distinctly high.

This distribution reflects certain peculiar conditions. Because the Commonwealth is mainly rural, it might be expected that spending for recreation, welfare, and public safety would be low in Kentucky. High costs of road building result at least partly from the state's rough surface and from its late start in highway construction. The relationship between health expenditures and total expenditures in Kentucky is little different from that in the average state. For support of public education, on the other hand, the people of Kentucky spend little more than two-thirds as high a percentage of all revenue as do the citizens of the average state. The same is true also in spending for public welfare. State highway expenditures represent almost a 50 per cent greater proportion of the total in Kentucky than in the average state (although this excess is partly canceled by lower local expenditures). Many advocates of better public roads favor perpetuation of these comparatively high expenditures. They skillfully embodied their plea in a constitutional amendment subject to popular vote at the 1945 general election. Possibly the chief public finance controversy of the immediate future may center on whether education and welfare, especially public aids for these purposes, or road expenditures shall be stressed.

PUBLIC DEBT POLICY

Traditionally, Kentuckians have looked upon public debt with disfavor, and their Constitution limits the extent to which the state and the local governments may borrow money. For the state government and the county governments, restriction is severe. The State may borrow no more than 500 thousand dollars; but through the warrant and the so-called "holding company" device the legislature has found methods of avoiding this restriction. (For almost 30 years, beginning about 1907, the State Treasurer, if he lacked money to pay an audited claim against the Commonwealth, authorized interest until payment could actually be made. Such warrants, which ultimately reached a total of about 25 million dollars, circulated much as bonds might have. The "holding company" device is a plan whereby a state agency leases, say, a build-

ing at a rental sufficiently high to pay for it in a specified time.) The county government limitation is direct in the sense that borrowing is limited to a specified proportion of assessed valuation. It is also indirect in that tax rates are severely restricted.

Debt difficulties in the Commonwealth, encountered largely because of the restrictions, have been greater than in the average state, especially for the state government and for the counties. The state problem arose from the issuance of a disorderly interest-bearing warrant debt. County government troubles developed mainly from unwise forms of local borrowing and from the decline in assessed valuations of property. The latter was brought about mainly by financing public improvements when business was brisk, but partly from the restrictions on local taxation incident to the classification plan adopted in 1917 which reduced local tax rates on some classes of property and removed them altogether from others.

To overcome disorderly former borrowing practices, Kentucky has recently adopted a state and a county debt plan which may avoid most similar problems in the future. The Commonwealth has, by law, eliminated warrant debts for itself. By consistent technical aid to counties it has solved most of the acute difficulties in these units. This has been done through aid in refunding, expert technical advice, and centralization under a state official of the management of certain county sinking funds accumulated to pay debt when it falls due. All this has been worked out with the co-operation of local officials and of creditors.

The aggregate state and local debt load in Kentucky is not exceptionally high. In relation to resources, it is well below average. On a per capita basis, in fact, it was in 1940 the lowest of any state.

Thus, there are two conflicting possibilities as to the State's future borrowing policy. The one currently in the ascendancy and perhaps essential to sound financing under the present Constitution is rigid restriction of dependence on public borrowing. This policy represents a conservative view. The second possibility is a program of greater flexibility which would permit freedom to incur debt under emergency circumstances. Many advocates of removing constitutional rigidities favor the current policy of conservatism. The main point of difference is whether the present constitutional rigidities, combined with statutory ruses to get around the funda-

mental law, should be replaced with a long-range policy of flexibility. Apparently, the people of Kentucky would pursue a moderate program of public borrowing in any event.

PROBLEMS OF GOVERNMENTAL STRUCTURE AND MANAGEMENT

The problems discussed thus far concern matters of policy. Solutions depend primarily upon what the people of Kentucky want. As to problems of management the basis of judgment is different. Aside from the general principle that administration must be in keeping with policy standards, the measure of success is the efficiency attained. Efficiency in this sense means adequacy, availability, and ease of securing established government services as well as economy in their performance. Particularly interesting is the fact that, measured by attainments throughout the country, Kentucky appears to have achieved relatively greater success in the field of administration than in that of policy-making.

REORGANIZATION OF STATE GOVERNMENT

Although there is reason for keeping the Constitution modern, there is much greater reason for seeing that the organization and management of state and local government are up to date. This need arises from two principal facts. In the first place, changing social conditions bring about radical alterations in the services this State is called upon to perform. Ten years ago Kentucky was practically without any so-called social security program. In 1944 that program was a 10-million-dollar undertaking. In the second place, needs for change are discovered as a result of advances in governmental techniques. For instance, handling any problem that requires contact with large numbers of people has been revolutionized by the development of mechanical addressing equipment.

The modern movement to reorganize state government was precipitated in Illinois about 1917. Five years later, the General Assembly of Kentucky established the so-called Efficiency Commission, which recommended a plan of reorganization for Kentucky state and local government. The Legislature took practically no action, but discussion continued. Ten years later a second effort took form. The 1934 General Assembly actually passed a fruitless

so-called general administrative reorganization act and a genuine financial control law. Then, as an outgrowth of the gubernatorial campaign of 1935 and of certain other forces, the General Assembly of 1936 provided a comprehensive reorganization.

The Reorganization in 1936.—The 1936 legislation concerned both the executive and the legislative branches of the government. As to the former, the plan was based on a number of ideas about administrative efficiency: that the whole state administration, as far as the Constitution permitted, should be responsive and responsible to the Governor, and that, therefore, heads of administrative departments other than those provided by the Constitution should serve at his pleasure; that all functions performed under the direction of the Governor should be organized in a few relatively large, unified departments; that consistent long-range effort should be made to improve personnel standards; and that the entire state government should be managed under exacting but flexible financial control exercised under the Governor's direction. The legislation was designed to make it possible for administrators under executive direction to achieve a high degree of efficiency.

Two fundamental changes in the work of the General Assembly were envisaged in the so-called Reorganization Bill. In the first place, the act provided a legislative council, composed mainly of legislators, but also, at first, of some administrative officials. This agency was expected to conduct investigations and prepare evidence which the General Assembly would use when considering legislative policy. In the second place, it was expected that the council would make certain that legislation was drafted in good technical form. The latter function was later transferred to another agency, but the idea persisted. The success of these legislative reforms has depended almost entirely upon the adequacy of facilities for investigation. A part of the time the Legislative Council has had trained workers who have conducted sustained investigations. Some of the time it has been without a full-time staff and has had practically no technical aid.

Success Dependent on Staffing.—Thus, as to both management and legislation, the success of the statutory provisions enacted in 1936 and subsequently has depended upon a competent staff. Those departments of administration which have acted vigorously

to modernize their work have had outstanding success. Those which have assumed that the legislation was self-executing have improved their status little or not at all. To the extent that the Legislative Council and the Statutes Revision Commission have had technically competent investigators they have been efficient aides to the General Assembly; when the Council has lacked such personnel it has contributed little to legislative efficiency.

THE STRUCTURE AND MANAGEMENT OF LOCAL GOVERNMENT

Organization and management of local government are difficult because there are so many units and because the Constitution is so rigid. There are six classes of cities; there are 120 counties, all fitting into the same mold in some respects, and differing (by legal specification) in others. Moreover, the Constitution requires such a variety of county officials and tradition has so defined their functions that it is difficult, if not impossible, for any one county to achieve a unified policy. The county judge, the county attorney, the sheriff, the magistrates, and other officials are each independently elected; and each feels himself responsible exclusively to the electorate. It is not surprising that each such official makes his own interpretation of the people's wishes. Some of the counties of Kentucky, due apparently to strong personal leadership, have permitted a large measure of administrative responsibility actually to be vested in one officer—frequently the county judge. In other counties each magistrate, and to a considerable extent each other official, insists upon independent action regarding purely administrative matters. Counties with the former type of administration have been much more successful in managing their affairs than those with the latter type. Another problem which has increased the difficulties is the maintenance of many counties so small that they cannot raise adequate revenues to render necessary public services.

Probably the greatest weakness in local government is public apathy toward the wastes involved. The solid farmers, merchants, and professional people, as distinguished from individuals active in political matters, have shown constant and discouraging indifference to the behavior of their own agencies for community public services.

In consequence of exceptional popular interest, certain second- and fourth-class cities have adopted city-manager government. A

few of these reorganized city governments have rendered fine service; but, after an initial period of vigorous action, they have relapsed into the partisan control formerly experienced.

The 1943 report of the local finance officer of Kentucky depicts a vision of "advancing county self-government." It calls for unified administrative control for action purposes by the authority of the fiscal court under the county judge's one-man direction.

There are several solutions for the management problems of local government. They are not alternatives but partly or entirely complementary in nature. They include reduction of the number of local governments, a process which has gone forward fairly rapidly in the case of school districts; provision of adequate revenue for dealing with functions assigned; integration of responsibility for local management; and, most important of all, the use of every available means of stirring popular interest in public affairs.

THE JUDICIARY

Kentucky courts include the magistrates' and police courts, the courts presided over by the county judge, the circuit courts, and the Court of Appeals. The magistrates' and police courts have only original jurisdiction—that is, they try only new cases. The Court of Appeals with minor exceptions has only appellate jurisdiction—that is, authority to review cases which a circuit court has originally tried. The other courts have both original and appellate jurisdiction.

One of the most fundamental judicial problems in Kentucky is the fact that local officials must "carry water on three shoulders." For example, magistrates are members of the fiscal court with legislative authority, and are also judges. Sometimes, moreover, as already has been pointed out, they serve as administrative officials. In spite of these responsibilities and of the authority vested in them, they are not required to meet any standards of education or experience.

The work of the county judge is even more difficult, because he cannot avoid serving in all three capacities: judicial, legislative, and executive. Fortunately, political tradition generally demands that the county judge be an able person; so the inadequacies of the situation are somewhat less apparent than in the case of magistrates. The circuit court is the principal trial court in important

civil and criminal cases. In Kentucky, it is not subject to major deficiencies other than those shared by similar courts in other states in which common law traditions are persistent.

The greatest problem confronting the Court of Appeals arises from the number and variety of cases which it hears. Several solutions have been proposed. One already adopted calls for several commissioners to assist the court in preparing opinions and in other matters. A second and more fundamental suggestion is that the court decline to review cases which present no new problem. Although possible without legislation, such a procedure could be formalized by a law that would determine the classes of cases that the court could decline to examine.

One other problem affects the entire judicial machinery of the Commonwealth. All judges are chosen by popular vote. Many critics believe that disposition of litigation would be improved if judges were appointed as in the federal judicial service. Judges would thus be relieved of concern with election returns and could give more faithful attention to court duties. Also, the bench would be subjected to less of the partisan and economic pressure often said to affect judicial opinion. Against this point of view, other persons argue without too much support from experience, that lifetime appointments would tend toward greater conservatism and would thereby defeat one means of modernizing the State's Constitution as well as its statutes. Compromise arrangements between election and appointment for life have also been suggested.

INTERGOVERNMENTAL RELATIONSHIPS

The Constitution of Kentucky established an extreme separation of state from local government. To cite only one example, the State is forbidden to impose taxes to raise money for expenditure by localities. Although this has been modified, it is still a line of separation not typically found in the constitutions of other states. In the modern world such a plan of separation has not been practical, and ways have had to be devised to "get around it." For example, the agricultural extension and health service programs in local communities involve joint agencies maintained co-operatively by the State and the local governments. The highway-financing plan represents in part an exception made possible

by an amendment to the Constitution, and in part a scheme of making state funds available under joint state and local auspices. The plan for state supervision of local government finances under the Department of Revenue was carefully written to avoid constitutional restrictions.

Short of outright amendments to the Constitution, the policies mentioned are helpful in state-county relationships, but thus far (with minor exceptions) machinery for state-municipal administrative relationships is lacking. Certain local governments are able to co-operate *with each other*, however, in providing particular services. The Jefferson County-Louisville health unit, the Fayette County-Lexington health unit, and the Crittenden-Livingston County agricultural extension agent have been examples of the voluntary co-operative arrangements between local governments.

Perhaps from the state-local angle the major unsolved problem is that of integrating the policies of agencies responsible for local government contacts. The Department of Education, the State Director of Agricultural Extension, the Commissioner of Health, and the Commissioner of Revenue may each adopt policies inconsistent with those followed by other supervisory agencies, and all these policies may be inconsistent with the viewpoint adopted by the Auditor of Public Accounts. In such an instance, the work of all state departments responsible for state-local relationships is inevitably impaired.

GOVERNMENTAL PERSONNEL

The people who operate state and local government determine in large measure the quality of the service rendered. In general, owing largely to constitutional restrictions, but also largely to the apathy of citizens, county government personnel is chosen and functions without much reference to standards of adequate performance. Some exceptions are found; for instance, the agricultural extension and county health services, by reason of state supervision, require trained persons in responsible positions. Some county court clerks employ experienced deputies. So it is with certain other public officials. Too often, however, when an official's term expires, the work passes to a person with little or no accumulated wisdom for carrying on. Appointive personnel, so far as it exists at all, is named almost wholly on personal or partisan

rather than efficiency considerations. City governments have shown some improvement. Indeed, for a considerable period cities made marked forward strides in staffing local government services. In recent years, however, Kentucky cities have not advanced as much as might have been expected from developments between 1925 and 1937.

State government personnel standards, although largely lacking until recently, have become established. The advances stem partly from partisan political considerations. For example, as one "spoils politician" expressed it some years ago, the financial function of the state government "must be kept as clean as a hound's tooth." In other words, political leadership has come to recognize, not only in Kentucky but elsewhere, that partisan success depends heavily on raising adequate revenue and maintaining skillful budgetary control over the State's business. In the second place, personnel improvements in Kentucky state government have resulted from the Governmental Reorganization Act of 1936, particularly from the sections authorizing a merit system and providing the Governor with technical facilities for personnel management.

Frequently a valuable employee of the Commonwealth seeks a position elsewhere because, in his opinion, he cannot hope for a generous salary (owing largely to the \$5,000 constitutional limitation which pushes down the entire salary scale) nor can he feel assured that his tenure is secure. A feeling on the part of technically efficient employees that they could look forward to indefinite tenure as a reward for good work would greatly strengthen the "holding power" of public service employment, even at low salaries. Therefore, devising a plan to protect the tenure of workers is one personnel problem which many citizens emphasize. The usual recommendation of those who desire this development is that a personnel agency be charged by law with reinstating personnel discharged for any reason other than "good cause." Another plan is suggested by the experience of the Commonwealth itself. Under the amendments to the United States Social Security Act passed in 1939, it was provided that each state, in order to get federal aid, must establish an acceptable personnel plan for the management of "social security agencies." In compliance with that plan, the Governor of Kentucky in 1940 set up the Merit Council as an adjunct of the Division of Personnel. That council adopted

a policy, with the approval of the agencies concerned and of the Governor and the Social Security Board, under which any discharged employee of a social security agency would enjoy the right of a public hearing before the council. The results of the hearing would be certified to the employing agency and the employee, but the former would retain its right to exercise discretion. This plan, initiated in 1940, operated three years before a hearing was requested, and there have been in all only three such hearings. Apparently, therefore, the prospect of a public hearing is in itself sufficient to deter department heads from arbitrarily discharging workers.

FINANCIAL MANAGEMENT

In the administration of public finances the state government of Kentucky has made marked progress in recent years. The main feature of machinery for financial control is provision for the budget and for adequate accounting. A budget plan may be separate from the system of recording; but it depends fundamentally on accounting to provide the necessary statistics for financial planning to afford a basis for an adequate pre-audit of revenues and expenditures—that is, a check on expenditures before they are made—and to lay the factual foundation for current control over financial activities.

Budgeting.—The budget process includes the formulation, approval, and administration of a *complete* financial plan. As Governor Johnson said, "Budgeting in present Kentucky practice means (1) planning programs for welfare activities, for conservation, for education, and so on; (2) ascertaining cost of the program; then (3) submitting to the Legislature proposed means of financing the work. It includes (4) revision of work programs required by the General Assembly and *includes* (5) *particularly carrying out the plans thus made and approved.*" The state's modern accounting, pre-audit, and budget control plan, together with the administration policy of avoiding unnecessary public expenditures, resulted in the non-expenditure of appropriated money averaging \$1,600,000 a year between 1939 and 1943.

At the local level also there has been progress in financial control. A number of cities had installed reasonably modern accounting and control mechanisms prior to any widespread improve-

ment in other local units or in the state government. Pursuant to legislation adopted in 1934, school accounts were largely modernized. Budgetary planning in each school district has gradually improved; and management has developed, but less rapidly. In county financial administration the most extensive, if somewhat inadequate, program grew out of the budget legislation of 1934 and particularly of the County Debt Act of 1938. The planning aspect has been more successful than has actual control, but both have progressed. This advance was furthered by an accounting plan which the State Department of Revenue worked out in 1940.

Buying.—An important part of fiscal management is purchasing. In the state government, purchasing machinery has been improved; but it has been subject to at least two major limitations. In the first place, not all of the developed machinery for carrying on the work has been consistently used. In the second place, the purchasing division of the State Department of Finance has been inadequately staffed. Notwithstanding these limitations the plan has saved a large amount of money that would have been spent under the former practices of hit-or-miss purchasing.

Development of economical local purchasing practices has been slow. In many cities and counties the buying function is scattered among several officers, so that it cannot be efficiently administered. Even in school districts, the secretaries of school boards and the superintendents both formerly did buying. In second-class city school districts until 1934 there was a business manager co-ordinate with the superintendent—an arrangement which can work effectively with close co-operation, but which is essentially awkward. These uneconomical school practices have been largely or entirely abandoned in recent years.

Assessment.—Tax administration at the state level is a credit to the Commonwealth with the single limitation that little has been done to improve local property tax assessment. Fundamentally, public indifference or actual aversion to good assessment from fear of possible higher taxes causes this neglected problem. The tradition of local self-government slows down state department leadership.

Audits and Financial Reports.—Good business management, as in private affairs, requires that accounts be audited to see that

finances have been properly managed. In Kentucky there are three types of post-audit—that is, audit after the close of the fiscal year. They are: (a) audits of city accounts, and occasionally of any other public accounts, by certified public accountants employed especially for the purpose; (b) audits of school board accounts by the finance division of the State Department of Education; and (c) audits of all state and county departments and officials by the State Auditor of Public Accounts. There is no obvious reason why the auditing should be done by two state departments. There is more justification for having both public and private audits. The former are less expensive and the latter more complete. The preparation and distribution of audit reports, however, is inadequate in both cases. Audit reports of the State Department of Education and of the Auditor of Public Accounts in some cases do not fully reflect the facts, and most of the reports prepared by private accountants are written in technical language.

In local governments, especially, the reporting of fiscal affairs has been inadequate. Few Kentucky cities circulate financial reports. One of the better reports is that of Lexington, which combines a budget statement with a report of the auditor for the preceding year, the latter having been adopted as the official administrative report of the city manager. This document enables the citizen with sufficient patience and skill to secure a comprehensive view of the city's finances. However, it lacks both an adequate budget summary and a city manager's budget message designed to supply a full, common-sense explanation of the financial plan. In the main, public financial reports of local government units other than large cities are not circulated among citizens.

Financial reporting by the State has improved remarkably in recent years. The Department of Finance publishes operating data by funds monthly, quarterly, and biennially. Also, the Department of Revenue publishes monthly a well-prepared summary of tax collection data, and other information about its work. Annually the latter issues a brief, attractive report which not only shows the year's operations but also discusses revenue policy problems confronted by the Department and the General Assembly. Since 1940 this annual report has taken a high place among the documents of state tax departments. Even more fundamental for citizen understanding are the frequent statements by the Governor,



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Kentucky seems to have achieved relatively greater success in administration . . .



... for the support of public education . . .

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and particularly the quadrennial report on Kentucky government which has been issued for the past eight years. These reports are attractively prepared, carefully summarized, and well illustrated.

KEEPING ADMINISTRATION IN TUNE WITH POLICY-MAKING

The Governor, who is elected popularly, is responsible to the people as well as to the General Assembly in administering the business of the State. Moreover, actual management is handled by departments, divisions, and commissions; and there is always a possibility that it may be done in a manner not consistent with legislation. For this, the Constitution provides three remedies: court review, legislative action, and repudiation at the polls. To facilitate remedial action, several means have been developed for informing the General Assembly, the Governor, and the people about the administrative process. Some of the most important of these are the administrative report, budget reports and hearings, audits, the temporary legislative committee, the interim legislative committee, the grand jury investigation, and special outside investigations. Of these, reports, audits, and the Legislative Council have been mentioned above; but their part in keeping administration in line with policy-making requires explanation.

THE ADMINISTRATIVE REPORT

The General Assembly of Kentucky has ordinarily directed each department of government to file either with the Governor or with the legislature itself a periodic report of its activities. This is also a common practice in other states. Although such reports are comparatively ineffective means of either legislative or popular control, they can become useful tools for increasing awareness and inducing popular appraisal of governmental services. The usual report merely tabulates information and leaves the legislature or the citizen the task of providing interpretation. Fortunately, in Kentucky, administrators are beginning to explain their work in simple text and with interesting tables, charts, maps, and other devices.

Official administrative reports are likely to paint accurately the most favorable side of the reporter's performance, but they do

furnish one means of democratic control over government operation. A major shortcoming in Kentucky lies in the poor distribution of such documents among the people. It is obviously useless to mail public reports to persons who do not use them. It is unfortunate, on the other hand, that people who would be interested in such documents fail to find out about their existence.

It is required by law that certain financial reports of county governments must be published, yet large cities are the only local units in Kentucky to use administrative reports in maintaining popular control.

BUDGETARY REPORTING AND HEARINGS

Each spending agency of the state government reports biennially to the Department of Finance (for the information of the Governor) an estimate of the appropriations its program will require for the ensuing two years, together with an outline of the work that is proposed. In recent years the Governor has sought the advice of the Legislative Council on budgetary matters. Meeting with the council, he or his representative holds hearings in which the principal administrators are called upon to justify their budget recommendations in detail. Because these administrators are cross-examined by legislators as well as by the Governor, the budget hearing is an opportunity for this joint legislative committee, and (through the press) for the public, to formulate views on financial policy. After these hearings and such advice as the council may offer, the Governor formulates the executive budget document, and subsequently presents it to the General Assembly.

Whether this procedure is efficient depends upon the adequacy of the hearing, the Governor's political leadership, and the extent to which the Governor and other members of the council reach agreement. Under this procedure, there is evidence of improvement in the effectiveness of legislative control in Kentucky. It has seemed unsatisfactory on one or two occasions, but in each case for reasons outside the procedure itself. When there is a change of party the budget hearing as a means of exercising efficient control may inevitably be weakened. Few local governments effectively use the budget hearing.

THE AUDIT

Through the budget, implemented by the accounts, the pre-audit, and supervision of purchasing, the Governor controls the Commonwealth's financial administration. The post-audit gives the people and the General Assembly an independent check on the care with which the financial control plan was actually followed. The Auditor of Public Accounts, who is the agent of the General Assembly for this purpose, is independently elected and, aside from party relationships, owes the Governor and other members of the administration nothing. After the present plan became effective in 1940, it operated with limited success. The shortage of trained accounting personnel, which became acute during the war, has impeded larger achievement. Staffing the office of the auditor is probably the most difficult issue now confronted by the Commonwealth in connection with this independent check on the work of administrative officials. Another problem which appears to have emerged is the auditor's desire to influence administrative policy rather than to serve exclusively as the legislature's skilled investigator and reporter. It is to be hoped that the Auditor of Public Accounts may increasingly take pride, as a private firm might, in a good job of auditing rather than in policy achievements.

As to local audits as a means of control, what has been said regarding the State applies largely to counties and school districts. Many cities have no audits at all.

LEGISLATIVE COMMITTEES

In the state and local governments of Kentucky, it is usual for proposed legislation affecting administrative activity to be referred to a regular or a special committee. Sometimes also legislative bodies provide temporary investigating committees. The most fundamental limitation of the device for obtaining information on immediate problems is the legislature's failure in most instances to give the public adequate information, and the consequent lack of unified public opinion regarding the relevant subject matter.

The General Assembly has, in a number of instances, provided legislative committees to serve between sessions. One of the best known of these was the so-called Efficiency Commission which reported in 1924. In other years there have been interim House committees or interim Senate committees; and since 1936 the Leg-

islative Council of Kentucky, a joint committee of the House and Senate, has had continued existence. In practice the council has been inactive much of the time. For the first year or two of its existence this body maintained an investigating staff and met occasionally to consider matters of policy. The council was then an effective agency of the legislature. More recently, however, the council has not maintained a staff, except sometimes for a short period prior to the biennial legislative session. At such times it has been relatively impotent as a force for well-considered legislation.

In local government practice, interim committees are quite useful. Ordinarily they are appointed as special agencies to investigate specific problems; but in some instances they concern themselves with the entire administration of the local government. They serve a useful purpose even without a staff when their tasks are clearly and narrowly defined.

THE GRAND JURY INVESTIGATION

In Kentucky, grand jury investigations are used to crystallize public opinion about particular cases of maladministration. For example, the management of the Kentucky Houses of Reform at Greendale has been subjected to grand jury investigation in Fayette County on a number of occasions. The reports of grand juries have not been confined to presenting indictments but have extended to general favorable and unfavorable criticisms of public administration practice without reference to whether crimes or misdemeanors have been committed.

This is an unusual governmental practice, rarely followed in most other states. It involves use of the grand jury for purposes totally at variance with its normal function. There seems little doubt, however, that grand jury reports have been useful in focusing public attention upon administrative inadequacies, in some instances leading to policy modifications. The chief problem raised by this use of the grand jury is the diversion of attention from usual functions of investigating criminal behavior and reporting bills of indictment if the law appears to have been violated.

SPECIAL OUTSIDE INVESTIGATIONS

Arrangements have been made on some occasions for special investigations and reports on particular administrative activities. The state government in 1934, for example, through executive action supported by a special appropriation, secured the services of a firm of public administration experts to make a special audit and investigation of the state administration. The report provided the basis for important legislation.

The city of Lexington several years ago secured a thorough-going study by a Cincinnati engineer of local property valuations. The city of Louisville, through executive initiative, has recently had a comprehensive investigation of school management and some study of other administrative functions. Some of the counties have sought and obtained special administrative studies to assist them in handling public finances.

All these types of outside examination and reports on them, like the work of private public accountants, frequently constitute a means of popular control over management of the public's business. An important problem related to such studies is that of assuring that the investigation is kept on a distinctly practical footing and of preventing service expenditures for the study not in line with the advantage to be attained.

CONTROL IN GENERAL

Although in Kentucky practice there is no separation of public policy-making from public administration, the two functions are distinct phases of the state and local government. The legislature and the Governor are largely concerned with the former; the executive branch, including the Governor, with the latter. Thus, there is a degree of separation between people who perform these two aspects of governmental activity. The previous discussion has sought to show how governmental resources in sample policy-making areas have developed; how such resources in typical and important administrative directions have achieved their present status; and how, by selected means, the people and the agencies primarily responsible for policy may check on those departments concerned essentially with operation. All this analysis has emphasized

problems currently encountered and the solutions, if any, which have been proposed.

Far the most important problem incident to control of government performance is that of securing public interest. In practice, government administrators take much more trouble to inform the public than the people take to learn what they need to know in order to exercise necessary control. Advances in means of securing information are gratifying, at least as to state government; popular use of existing information, on the whole, is extremely limited.

Chapter XI

EDUCATION IN KENTUCKY

BY MAURICE F. SEAY

Kentucky's concern for education is stronger now than ever before, and Kentuckians are recognizing educational facilities as a basic resource. There are, however, many inadequacies in these facilities, apparent even to the casual observer. Serious inadequacies exist in educational leadership, in availability of elementary and secondary educational opportunities, in curricula, in financial support at all levels of education, in education outside of school and college, and in evaluation and planning.

HISTORY OF EDUCATION IN KENTUCKY

ONE CENTURY TO MAKE A MANDATE

Public education is a function of the State, but the people of Kentucky have been slow to acknowledge it as such. The original settlers and several generations of their descendants thought of public education only for children of the poor and for orphans, as a charity for which the State had only slight responsibility. Neither the first Constitution, adopted in 1792, nor the second, adopted in 1799, mentioned public education. No governor spoke of education in his annual message to the legislature for twenty-five years after Kentucky became a state.

Acceptance of public responsibility for education started at the top—higher education was given recognition and support, then secondary and finally elementary education. Higher education received its start with a grant of land from the state of Virginia to the county of Kentucky “for the purpose of a publick school or seminary of learning.” This grant was used for the establishment, in 1783, of Transylvania Seminary, now Transylvania College.

Secondary education in a limited form was provided fifteen years later (1798) by the state legislature, which assigned public

lands for the establishment of county academies. Their inaccessibility and their entrance requirements and the charging of fees kept these public academies from flourishing. Private academies, established primarily for children whose parents could afford to pay tuition, were more successful financially but reached even fewer youth.

Elementary education received almost no attention from the State until 1830, when permissive legislation made possible the division of counties into school districts and the establishment of schools by means of local taxation. Few counties, however, took advantage of this law.

Both elementary and secondary education gained impetus when, in 1836, Kentucky received part of the accumulated surplus in the United States Treasury. One million dollars was set up by the Kentucky legislature as a "state common school fund," and an act was passed in 1838 to establish a system of common schools. The people were slow, however, to accept the provisions of the law. It was not until 1848 that a state tax was levied for the support of the public schools. The Constitution adopted two years later included an article devoted to education. The concept of education as a state function was slowly emerging as the people's idea.

Slow Growth at All Levels.—There followed a period in which new schools were established, for the Negro population as well as for the white. They included elementary graded schools, high schools, two normal schools (now Eastern State Teachers College and Western State Teachers College), and the University of Kentucky.

The University of Kentucky had its beginning as the Agricultural and Mechanical College, established in 1865 on funds authorized by the Morrill Land-Grant Act. For a time the college was a part of Kentucky University, which had been formed by merging a denominational institution of that name with Transylvania College. The arrangement proved unsatisfactory and the Agricultural and Mechanical College was moved to a separate campus donated by the city of Lexington and Fayette County. Incorporated and controlled by the State, this college became the University of Kentucky.

The present Constitution of Kentucky, adopted in 1891, carries the following mandate: "The General Assembly shall, by ap-



... the establishment, in 1783, of Transylvania Seminary

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The University of Kentucky had its beginning as the Agricultural and Mechanical College.

propriate legislation, provide for an efficient system of common schools throughout the state." Through this mandate education today is acknowledged as a responsibility of the State and is accepted as a state function. But this provision of the Constitution did not herald the immediate solution of all educational problems in the state. While the people have never questioned the wisdom of entrusting education to the State, neither have they insisted that the legislators fully carry out the constitutional mandate to provide for an efficient system of common schools.

Kentucky experienced an educational crisis in the depression years from 1929 to 1934; collapse of the school system was imminent. It was averted only by the willingness of teachers and administrators to serve at greatly reduced salaries, and by increased state support with special assistance from the federal government.

ONE DECADE: THE MANDATE TAKES EFFECT

In 1932, "because of the urgent need of a general revision of the common school laws of Kentucky and a reorganization of the state's program of public education," the General Assembly created the Kentucky Educational Commission. After two years of research, the commission prepared a new school code which the legislature adopted. Schools were thus provided with a sound basis of organization and administration and the movement to improve them was accelerated. Some of the accomplishments have been free textbooks, consolidation of schools, enactment of teacher retirement and tenure laws, increased state support, and co-ordination of the programs of the various teacher-education institutions.

The Kentucky Education Association sponsored the legislation for the new code. This organization, to which nearly all of the teachers and other educators in the state belong, was established more than eighty years ago. Always working militantly to stimulate interest in education and to procure an efficient school system, the K.E.A. illustrates the successful use of voluntary non-political and non-governmental organizations in behalf of the public interest. The educational leadership of the K.E.A. also secured an amendment, in 1941, to the 1891 Constitution, permitting the establishment of an equalization fund. Previously, the Constitution had required that each county should have a proportion of the state school fund according to its number of children of school

age. The amendment in 1941 provided for the distribution of 10 per cent of the school fund on some basis other than the pupil-census. This enabled the legislature to provide an equalization fund—so named because it increases slightly the income of a poor district with a large number of children, making educational opportunities there more nearly equal to those in wealthier districts.

THE SIZE OF THE TASK

Problems of education in Kentucky can be understood only in relation to characteristics of the state and its people. Great variety, with widely separated extremes, prevails, not only in geographic features, but also in population, in property assessment, and in educational levels.

Population.—Education in Kentucky must be planned for a population which grows persistently despite fluctuations caused by the crises of depression and war. It must respond also to differences in the density of settlement, which are especially significant in financial problems. Jefferson, Kenton, and Campbell counties had in 1940 more than 450 persons per square mile, while Trigg, Menifee, and Livingston counties had fewer than 30 persons per square mile. There is need of additional money for transportation of children to schools in thinly populated areas if educational facilities are to equal those of more thickly populated areas.

When schools are supported in part from local sources, the educational burden of a county can be indicated to some extent by the proportion of children to adults. A county which has only 250 children to each thousand adults can have, with no greater effort, much better facilities than are provided in a county of equal wealth, but with 400 children to each thousand adults. The burden is heavier in some areas of Kentucky than in others, and it is greatest in the large southeastern section.

The citizens of Kentucky recognized, by a constitutional amendment in 1941, the problem of financing education in counties with many children and little wealth. Unfortunately, this amendment limits the equalization fund to 10 per cent of the state common appropriation. Much more is needed for equalization.

Wealth.—There are wide extremes within the state in assessments for local taxation; in 1941 Woodford County had a property

assessment of \$11,074 per pupil, while Clinton County had an assessment of \$328 per pupil. The small independent districts of Anchorage and Gatliff had, respectively, assessments of \$8,473 and \$137 per pupil. Among the cities, Fort Thomas had an assessment per pupil of \$9,135, while Jackson had \$1,015. It is impossible to overcome such differences with 10 per cent of the school fund. The State could help to eliminate inequalities by assuming the cost of school transportation, which is a special burden to rural districts with limited wealth.

Educational Levels.—The amount of school experience Kentuckians receive is closely related to the distribution of wealth in the state. In three counties, Ballard, Campbell, and Kenton, fewer than 10 per cent of the population twenty-five or more years old had less than a fifth-grade education. In nine other counties, Breathitt, Clay, Cumberland, Knott, Leslie, Martin, McCreary, Powell, and Wayne (all in southern or southeastern Kentucky), 35 per cent or more had less than a fifth-grade education. These two groups of counties represent the extremes for the state. The percentage of this age group having a fourth-grade education or less is relatively small in the Bluegrass region and relatively high in Eastern Kentucky. For all counties of the state, the median per cent of persons twenty-five years old or older who did not go beyond the fourth grade was 23.1.

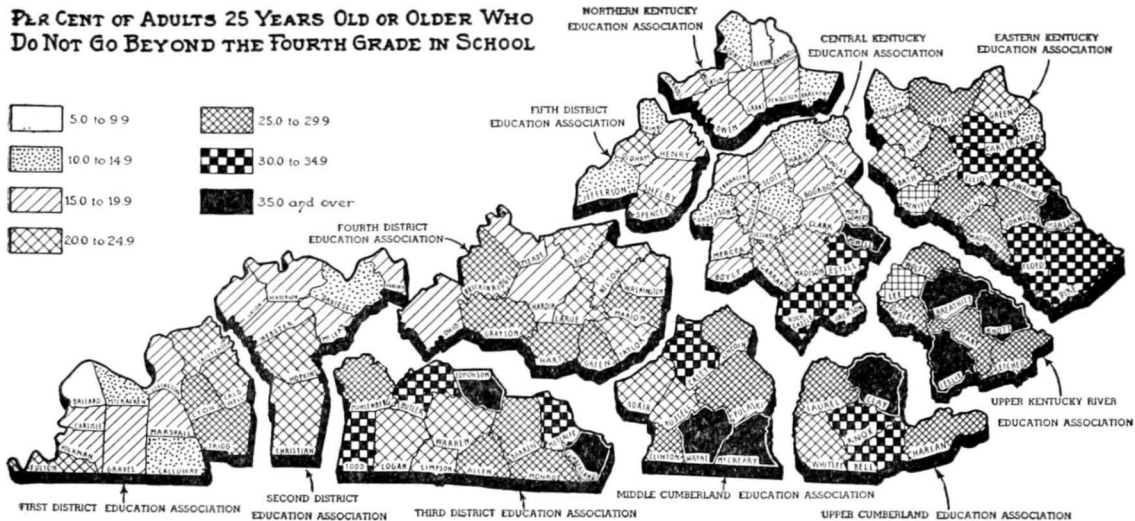
PROBLEMS OF LEADERSHIP

LEADERSHIP AT THE STATE LEVEL

The basic laws of the State and of the Nation designate education as a state function. But education in Kentucky, as in all other states, began with local interest, support, and control. When this State at length acknowledged its obligation for the education of all its citizens, it delegated many powers and duties to school communities, hoping to preserve the local initiative which had for so many years been responsible for education. During the past twenty-five years, however, there has been a trend toward centralization of control in the state government.

The State Board of Education.—In keeping with the tendency to gather in many local powers, the legislature in 1934 created a

PER CENT OF ADULTS 25 YEARS OLD OR OLDER WHO DO NOT GO BEYOND THE FOURTH GRADE IN SCHOOL



new State Board of Education, with added responsibilities, to replace the ex officio board of three members. The present board is composed of the Superintendent of Public Instruction and seven lay members appointed by the Governor for four-year terms. The terms of the appointive members are so arranged that two members are appointed each year, except that every fourth year, when the Superintendent of Public Instruction is elected, only one member is appointed. The state board is vested with the management and control of the common schools of Kentucky, public higher education for Negroes, and public vocational education and vocational rehabilitation.

In spite of efforts to free the State Board of Education from political interference, it is possible for a governor, during his four-year term of office, to appoint a majority of the members. Any governor could, if he desired, gain control of the board within two years' time. A condition even more dangerous to the security of membership on the State Board of Education is a provision of the state Reorganization Act, passed in 1936, which permits the Governor to remove any appointive board member without assigning cause or reason.

Numerous plans have been advocated to safeguard the tenure and freedom of members of state boards of education. The Educational Policies Commission of the National Education Association has suggested that a state board of education be composed of nine members, appointed for nine-year terms so arranged that one vacancy occurs each year. According to this plan no governor would be able to appoint a majority of the board during one term of office. Another suggestion frequently made by educators is that members of a state board of education be elected on a non-partisan ballot from districts created for the purpose. Whatever plan is devised, certain principles should be observed. The State Board of Education should be free to act upon its own judgment in determining the educational policies of the state. Members should be free from fear of removal from office. They should be chosen on merit and should be removed only for specified causes.

The Superintendent of Public Instruction.—The Superintendent of Public Instruction is head of the State Department of Education, which administers the program of the state board. The Constitution provides that he shall be chosen by popular election, and

shall serve for four years, but may not be elected for the succeeding four years. These restrictions are as antiquated, when judged by principles of public administration, as a companion requirement that the superintendent swear that he has not "fought a duel."

The duties of this office have changed greatly in a half century. When the Constitution was adopted in 1891, total enrollment in elementary and secondary schools in Kentucky was approximately 320 thousand pupils and the number of teachers was approximately six thousand. Since then, enrollment has doubled and the number of teachers has trebled. Old constitutional restrictions now severely handicap the state in securing leadership for the educational system. The problem is intensified by a legislative act which limits the superintendent's annual salary to four thousand dollars. Seventeen local superintendents in Kentucky receive larger salaries than the State Superintendent. The average salary of the forty-eight state superintendents is a little more than six thousand dollars, or 50 per cent more than Kentucky pays its chief school officer. Even if the salary were to be increased by the legislature, it would still be limited to the five thousand dollars set by the Constitution as maximum compensation for a state official.

Thus, Kentucky's leader of elementary and secondary education, of many forms of special education, and some phases of higher education, must enter political campaigns for party nomination and election; he is prevented by legislative act and by constitutional provision from receiving a salary commensurate with his duties; and he must secure a new position at the end of a four-year term. Kentucky children who remain in school for twelve years may have their educational program disturbed by three changes in the state superintendency. Almost inevitably the quality of their education suffers because the State does not make possible the highest quality of continued educational leadership in one of its most important educational positions.

Other Leadership in the State Department.—In 1935, the appropriation for operation of the State Department of Education (other than vocational education and rehabilitation) was eighty thousand dollars. Today, although the department has many new duties—such as the supervision of attendance records and the ad-

ministration of an equalization fund of one and a half million dollars—the appropriation for operation is only three per cent more than it was ten years ago. Hence, new tasks have crowded out important activities not specified by law, and they have prevented the assumption of other new functions which are badly needed. For example, no division of the state department is staffed to give leadership in research, school architectural planning, library service, physical education and recreation, or guidance. Furthermore, salaries of members of the staff are limited, as is that of the state superintendent, by constitutional restrictions.

State leadership is further handicapped by the inability of the state department to reorganize according to modern principles of administration. Again the trouble is a result of inadequate appropriation and legislative regulations. The department now has eight divisions, specified by law, each with a director responsible to the state superintendent. There should be fewer divisions and the functions of the divisions should be clearly defined. The citizens of Kentucky, through legislative appropriation in 1944, granted an increase of approximately 50 per cent in the amount of state funds for public elementary and secondary education; yet the school budgets, which are direct reflections of school programs, have to be approved by officials with low salaries and without permanent tenure, in a department inadequately supported and ineffectively organized.

In spite of these circumstances, Kentucky has been fortunate in securing good educational leadership. But the children of the Commonwealth should not be dependent upon the uncertainties permitted by existing constitutional and legislative restrictions. The citizens of the state have agreed to increases in centralization of power in their State Department of Education. But they have not insisted by legislative acts and constitutional revision that the facilities and personnel of the state department be increased and improved so that the department may discharge its new obligations.

LEADERSHIP AT THE LOCAL LEVEL

Boards of education, superintendents, principals, supervisors, and teachers assume most of the responsibilities delegated by the state to local school districts. Kentucky has 120 county and 139



Some of the accomplishments have been free textbooks

W. Brooks Hamilton



Bruce Poundstone

. . . adult education . . . of the Extension Service in Agriculture and Home Economics

independent local school districts. A county school district includes all parts of the county which are not within an independent district.

The Local Board.—Each local district has a board of education with five members, elected on a non-partisan ballot. Every board “may sue and be sued, make contracts, purchase, receive, hold and sell property . . . issue bonds for buildings and improvements . . . establish schools, and provide courses . . . appoint such officers, agents, and employees as it deems necessary and proper, prescribe their duties and fix their compensation and terms of office,” and “do all things necessary to accomplish the purposes for which it is created.”

The tremendous responsibility vested in these local boards indicates the desire of the state that its schools should be responsive to community needs. It implies also an obligation on the part of the communities and their chosen leaders to guarantee that their schools meet the needs of the state for the training of its citizenship. Unless the leaders of local communities discharge these important duties effectively, the legislature may remove local control and completely centralize the administration of education in the state department.

Education in a dynamic society must be responsive to the needs of the times, yet little has been done either in Kentucky or in the nation to help school board members to understand their duties. Honesty and good intentions are no longer sufficient indications of competency. The efficient board member today must be able to consider the educational program of his district in terms of the rapidly changing needs and demands of society. He must know how to select competent administrators, teachers, and other employees and how to delegate authority.

Training for Board Members.—That board members themselves recognize the need for better understanding of their duties and better methods of discharging them, is evidenced in many states by the organization of state school board associations. One of the major objectives of these organizations is the improvement of school board service, but such a task should not be left entirely to school board organizations. The State has a definite responsibility which should probably be discharged through its Department of Education. Some staff member of the department should be

delegated the task of initiating programs of training for school board members, in co-operation with superintendents and officials of local boards. In the conduct of such programs, the facilities of teacher-education institutions should be utilized.

Local Administration and Supervision.—The general plan of organization in Kentucky, which delegates large powers to localities, is good; but in some districts the quality of administrative leadership is poor. Insufficient staffs and low salaries are largely responsible for poor leadership. Eighty of the 120 county superintendents have no secretarial or stenographic help; 100 have no supervisors (other than principals) on their staffs. The average annual salary of the county superintendents is \$2,350, and that of independent district superintendents is only slightly higher. One-fourth of all the county superintendents receive \$150 per month or less; one-fourth of the superintendents of independent districts receive \$166 per month or less. The school superintendency in Kentucky is rapidly becoming like the position of a bookkeeper rather than that of a community educational statesman. The increase in the clerical work of the superintendent is illustrated by payroll deductions for the retirement fund and for federal taxes and by the bookkeeping necessary in the distribution of free textbooks. Local educational administration in Kentucky will remain inadequate until provisions are made for larger administrative and supervisory staffs and for much higher salaries than are now paid. The people of Kentucky have been told often of the need of higher salaries for teachers. This need has not been exaggerated, but Kentuckians should also understand the need of higher salaries for superintendents, and of larger budgets for administrative and supervisory staffs.

The Wartime Loss of Teachers.—In 1942-43 there were nearly 17 thousand teaching positions in the public elementary and secondary schools of Kentucky. Of this number, more than 12 thousand were in elementary schools, 15 hundred were in junior high schools, and two thousand were in three- or four-year senior high schools. To fill them, Kentucky had more than 26 thousand persons, with at least two years of college preparation, regularly certified to teach. These persons, however, were not attracted by the low salaries offered for their services in the schools. The cost of

living had greatly increased. Governmental agencies and private industry were competing for employees, offering in some cases more than five times the salaries teachers received. Thousands of well-trained teachers went to work in war plants and in governmental agencies. Selective Service made no provisions for deferment of teachers, many of whom entered the armed services. Approximately 37 hundred positions had to be filled by teachers whose expired certificates had been reinstated or by others holding emergency permits.

The next year the situation grew even worse; four thousand emergency permits were issued to persons who could not meet the legal requirements for regular certificates. Many of these were only high school graduates. More than one-fifth of Kentucky's children attended school under the instruction of these emergency teachers. Some schools were without teachers. Teachers' salaries, meager enough in peacetimes, failed to cover even minimum wartime living costs in many districts of Kentucky. The salaries failed to hold even the emergency teachers; 60 per cent of the persons with emergency permits for the 1942-43 school year did not apply for reinstatement of their permits the following year.

Teachers Are Still Underpaid.—Teachers' salaries in Kentucky have long been inadequate. Many of the increased services of the schools, such as transportation of pupils and improved physical plants, have actually been provided at the expense of teachers. Salaries in Kentucky were even lower in 1938 than in 1930, having decreased while the total services of the schools were being increased. The situation was no better in 1942. The median salary for elementary teachers in 1930 was \$794; in 1942 it was \$676. The median salary for high school teachers in 1930 was \$1,347; in 1942 it was \$1,139. The median salary for all teachers, elementary and high school, in 1930 was \$898; the median in 1942 was \$782. These were the middle salaries—half of the teachers were paid less than the median amount.

It is not surprising that discouraged teachers left their profession to enter occupations where living wages are paid. The only surprising thing is that some of them did remain! Partially recognizing the seriousness of the situation, the legislature in 1944 provided an increase of approximately 50 per cent in the state appropriation for public schools. The increase in state aid from

approximately 10 to 15 million dollars permits an increase of about \$250 a year for each teacher. This amount, added to the median salary of \$782, provides an average salary of approximately \$1,032 for Kentucky teachers. School districts will still be unable to compete with the federal government or private industries for employees on the basis of salaries alone. The increase in salary will encourage teachers who have remained in the profession, however, and will provide at least subsistence wages to those who desire to enter this essential service in a time of crisis. A casual comparison of the present salaries of Kentucky teachers with the salaries of teachers in neighboring states, or of persons in other occupations requiring much less education, shows that the State has made only a beginning in the solution of this problem.

The Importance of Learning While Teaching.—The issuance of emergency permits to persons unable to meet the minimum requirements for certification has increased the problem of in-service education, that is to say, teacher training for people already employed as teachers. The minimum requirement, in Kentucky, includes a two-year college program for a certificate to teach in elementary schools, and a four-year college program for a certificate to teach in secondary schools. Teachers now employed on emergency permits constitute approximately one-fourth of the total number of teachers in the state, but there is great inequality among localities. If this distribution prevailed in all districts, the situation would be serious enough, but not chaotic. Unfortunately, however, the distribution of emergency permits follows the usual pattern of inequality among the districts. In areas where the ratio of children to adults is highest but where the resources to support education are least, the percentage of teachers holding emergency permits is greatest. In some districts more than 50 per cent of the teachers hold such permits. It may be many years before teachers with inadequate training can be replaced with properly certified teachers. To prevent further loss of effectiveness in the schools, new and expanded programs of in-service education for teachers should be established. The colleges and universities and the State Department of Education must supply leadership to plan and supervise such programs.

Teacher-education institutions have an opportunity and an obligation to extend off-campus services to communities in their service

areas. In recognition of this, they are offering a new type of field service to teachers at work. Teachers are enrolled, not in prescribed courses such as psychology, algebra, political science, and administration, but in classes for discussion and study of school problems of their own selection. Instructors and teachers together try to find solutions to these problems, which may relate to child behavior, to delinquency, to poor reading or spelling, or to the special needs of the dull or the superior child. Thus the teachers become familiar with new methods and materials, with proper health standards, with the work of other agencies of the community, and with such supplementary tools of learning as the radio, the motion picture, and the traveling art gallery. They are also given opportunity to observe successful teaching in community schools.

An example of how colleges can be of service to teachers is found in Kentucky, where the College of Education of the University of Kentucky holds summer work-conferences for teachers in their own counties. These off-campus conferences have many special advantages. More teachers attend than could participate if the conferences were held on the University campus, because their transportation is greatly reduced, and their total expenses are less. Representatives of the various federal, state, and local agencies at work within the counties can help the teachers in planning their educational programs. In turn, these representatives learn of ways in which their agencies can help in solving local school problems. It is possible to use schools typical of those in the various counties as demonstration schools. Finally, the development of plans for making school programs more practical is greatly helped because the resources observed and used are, in fact, *local resources*.

THE COMMON SCHOOL IS STILL TOO UNCOMMON

Some Kentuckians may think that education is available to all the children in the state, but the facts show that public education for all children is still only a theory.

In 1943 Kentucky maintained more than six thousand elementary schools and nearly seven hundred high schools for the education of her 718 thousand children between the ages of six and

eighteen. Enrolled in these schools were nearly 562 thousand pupils, or 78 per cent of the children in this age group. The percentage of enrollment was slightly higher in the independent districts than in the county districts. The average daily attendance was 77 per cent of the total enrollment, but was greater for the independent than for the county districts.

THE PROBLEM OF TRANSPORTATION

Independent districts located in cities and towns usually either provide schools at easy walking distance for the children or furnish transportation. In many county districts, however, sparsity of population prohibits the maintenance of schools within easy walking distance for all of the children, and lack of hard-surfaced roads makes transportation impractical. In such areas the attendance drops during late fall and winter months. Unfortunately, there are still many counties in Kentucky in which no transportation is provided; and only a few counties provide adequate transportation for both elementary and high school pupils.

Kentucky still has a large number of small rural schools; in fact, there are one-teacher schools in 115 of the 120 counties. More than three thousand of the elementary schools in 1943 were one-teacher schools; 884 were two-teacher schools; 190 were three-teacher schools; and a few more than one thousand were schools with four or more teachers. Thus there were almost six times as many schools with from one to three teachers as there were with more than three teachers.

Small schools have received very little attention from those who seek to find ways of improving educational programs. There is a rather general assumption that small schools should be consolidated. Although consolidation is desirable in some instances, many rural areas in Kentucky can be served better by small neighborhood schools than by consolidated schools to which children must ride for long distances over bad roads. Kentuckians should learn that small schools can be very effective.

The inaccessibility of high schools in county districts is reflected in the high school enrollment figures for the year 1943. The county districts then enrolled in high school only 27 per cent of all youth from 14 to 17 years, while the independent districts enrolled in high school 69 per cent of the total group.

SCHOOL TERMS ARE TOO SHORT

There are not only great differences in the accessibility of schools in Kentucky, but there are also great differences in the length of school term provided. As a general rule, elementary schools in independent districts and in county districts which have adequate transportation facilities are operated for terms of nine or ten months. On the other hand, most one-teacher schools, especially those in remote areas without transportation facilities, are limited to a seven-month term. The educational facilities in these schools are generally below the standards necessary for an efficient program. Furthermore, the independent districts and the wealthier county districts are better able than the poorer districts to secure well-trained teachers with a rich educational background. The people of Kentucky need not be surprised when they hear reports from military authorities and from leaders of industry that many Kentuckians have serious educational deficiencies.

THE CONTENT OF EDUCATION

One of the biggest problems of education is keeping up with the times. Knowledge accumulates rapidly. Economic conditions, social organization, and ways of living in general are constantly changing and the question of what to teach must be answered differently each day. Children held to a curriculum made for their grandparents, or even for their parents, are losing the value of education for today's way of life. An uncompromising attitude toward change in the content of education is proof of a school's inadequacy.

One of the best ways to adjust the content of education in a local school is to keep neighborhood needs and resources always in focus before the eyes of teachers and pupils. Neighborhood resources are world resources, and as they are used in the solution of local problems, they help to solve world problems. The conservation, restoration, and proper utilization of local resources are matters of world significance. Accordingly, some schools in Kentucky are using the neighborhood as subject matter for teaching about problems of world importance. These schools have certain characteristics which point the way toward an improved content of learning at elementary and secondary levels.

CHARACTERISTICS OF THE NEIGHBORHOOD SCHOOL

It Knows the Neighborhood's Problems and Resources.—Securing information about a community is an educational experience. Teachers and pupils in a neighborhood school gather such information, and their continuous planning and evaluation insures its frequent use as well as the addition of new information.

Its Teachers Are Members of the Community.—Teachers who commute daily to their work must accept some responsibility for the fact that the programs of many schools are alien to neighborhood problems and interests. Few teachers who live outside the community can adequately direct programs of community education. To encourage the local residence of their teachers, some communities have provided teacherages; other communities have appealed to citizens to open their homes to teachers. Probably a better way of securing local residence of teachers in remote communities which offer few inducements would be to pay them larger salaries than they would receive in village or city schools. This would be worth trying in Kentucky.

Its Programs Are Flexible.—With a wide range of objectives, the school which is a community enterprise has a variety of activities, conducted under many different conditions and by various procedures. Flexibility of approach, perhaps more than any other single feature, characterizes a community school.

First, there is flexibility in the use of time. The school day, the school week, and the school year are extended. Where the program of education is focused upon community needs, schedules no longer are set from 8:00 to 3:00, from Monday through Friday, and from September to May. Instead, the schedule of activities conducted by the school may include a span of 16 hours for some days, of seven days for many weeks, and of 12 months for each year. Under these new schedules the work of teachers is staggered according to the need and in such a manner that the teaching loads are not excessive.

Second, space and equipment serve multiple purposes. Some of the schoolrooms, the libraries, and the shops are designed to be used by children during the day and by adults during part of the day and at night. Classrooms are usually equipped with tables and chairs instead of desks, and with bulletin boards, wall racks, and



... libraries with ... book-mobile delivery.

L. E. Nollau



W. Brooks Hamilton

... the spearhead of the public health program is the County Health Department.

motion-picture screens in addition to blackboards. Auditoriums serve either children or adults or both groups, for assemblies and motion-picture shows. Perhaps the television screen will join these facilities in the near future. Careful planning makes the buildings and equipment useful to children and adults for a daily program of 14 to 16 hours instead of the typical six to eight hours. In addition to the economical features, this multiple-purpose use of space and equipment has a practical influence in the development of a truly community-centered program.

Third, the staff is flexible in its point of view and educational methods. Many teachers lead adult classes; librarians serve all age groups, not in the library alone, but also in the classroom, the shop, and other community centers. The libraries contain not only books for loan but also pictures, games, tool boxes, slides, film strips, and films.

Its Program Is Well-Related to the Work of Other Community Agencies.—Programs designed to improve community conditions are based frequently upon an educational approach. The different agencies, all basically educational in their work, which serve a given community may have very different types of programs. One educational agency may promote a program which has the same general objective as that of other agencies in the community, with no effort to co-ordinate the various activities. Like the man who mounted his horse and dashed off in all directions, each agency begins its program without reference to the others. For example, the teaching of conservation is sometimes conducted simultaneously by the elementary school, the high school, the public library, and the agricultural extension service. The staffs of schools where resource education is successful in terms of results in community life, however, have taken the initiative in promoting plans for the co-ordination of the activities of these different agencies.

They have also developed successful techniques for using the activities of other educational agencies so that the contributions which can be made by such agencies as the Public Health Department, agricultural extension, and the scout organizations become a vital part of the school curriculum.

It Influences the Immediate Environment.—Schoolyards in general contain probably the most poorly cared-for soil in America. Frequently they are bare of trees and grass, cut by gullies, and

littered with debris. Yet children are expected to come regularly to these bleak and uninviting schools with eagerness for learning and with happiness in their opportunity. Teachers and pupils who are participating in an effective program of community education make the schoolyard a laboratory; the school environment encourages regular attendance and happiness and success in useful work; the school building and yard are a demonstration in the use and care of public and private property.

Its Teaching Materials Concern Local Problems.—Schools which are concerned about their obligation to help solve community problems often prepare instructional materials of their own to parallel the adopted textbooks and supplement the usual library collections. For many years educational institutions and other agencies have conducted and published research which, though technical, is related to the everyday problems of communities. Too few efforts have been made, however, to apply these findings of research to local problems.

Illustrative of the preparation and use of new instructional materials in an experiment being conducted by the University of Kentucky. In some rural sections of Kentucky diets are so poor as to be a public health problem. The Sloan Experiment in Applied Economics, conducted by the Bureau of School Service of the College of Education, is trying to improve diet practices in three Kentucky counties, Estill, Jackson, and McCreary. Children are being taught in their schools what food to eat, how to produce food at home, and how to preserve and store food for year-round use, and parents are being reached through the children. Staff members of the Bureau of School Service have written special textbooks for use in the rural schools of the three counties. The books are written in language the children can understand; on such subjects as chickens, milk goats, honey, sorghum, gardens, storage cellars, nut and fruit trees, and fish ponds. Experts from other colleges of the University assist in the preparation of these materials by supplying technical information.

One of the books prepared describes the soybean as an important vegetable. After studying this book the pupils and the

teacher of one school prepared charts about soybeans. Following the directions in the book, which has been prepared for such a community as theirs, they planned and raised a school garden. Vegetable-type soybeans were included in the garden. It was the first time they had ever been raised in that community. They were observed with great interest and the pupils harvested all the soybeans as seed for their parents.

It Gives a New Emphasis to Cultural Subjects.—Emphasis upon local resources and local problems by no means denies to children an opportunity to travel “in the realms of gold.” Rather, it gives a new focus to the cultural subjects of the curriculum. The history, the literature, the music, the art of a neighborhood or a region are resources almost as important as the soil itself, and they furnish points of departure for the study of national and of world cultures.

THE NEIGHBORHOOD SCHOOL AND VOCATIONAL EDUCATION

The purpose of vocational education is to help people to be successful and happy in their work. Since the Federal Vocational Education Act of 1917, sometimes called the Smith-Hughes Act, Kentucky has been developing a program of vocational education below the college level, as part of its system of public education. As the need, measured by numbers engaged in various activities, has been greatest in homemaking, agriculture, and the trades, these three phases were developed first.

Effects of War on Vocational Education.—As people turn again to peaceful pursuits, the vocational schools and departments are called upon to train and retrain men and women whose wartime work will no longer be necessary, but many of whom are unwilling or unable to return to their former places.

National defense courses were established in 1940. As war needs changed they became “war-training” courses. Vocational education in the future will be affected by at least four developments in the war-training program. The idea of vocational education for adults made greater headway than ever before in its twenty-seven years of development; the employment of men and women with practical experience to teach courses under the general supervision

of trained vocational teachers became an accepted practice; facilities for vocational teaching were expanded and were used more effectively; vocational departments and schools became service centers for their own communities. For example, canneries were established in many communities in Kentucky—approximately 150 in 1944—most of them located on school grounds and supervised by teachers of agriculture or home economics.

In the United States approximately one billion dollars has been invested in the public trade and industrial schools. In Kentucky approximately two and one-half million dollars, including 700 thousand dollars worth of equipment, are invested in the trade and industrial schools serving twelve areas. For war training 350 thousand dollars worth of equipment was added to the agricultural shops and community canneries, more than 380 thousand dollars worth was added to the trade schools, and another 350 thousand dollars worth, formerly owned by the National Youth Administration, was lent to the schools. That the schools in Kentucky can train a large number of people in various phases of vocational education is evidenced by the fact that after 1940 they trained 133 thousand people for specific jobs in war industries.

Before 1940, in most vocational schools and departments equipment was in use for only about one-third of the school day. In war training, many of the buildings were used on a two- or a three-shift basis, some of them twenty-four hours a day. This can be done also in peacetime whenever the need for training exceeds the capacity of the school plant for one shift. Twenty-five years ago, when the idea of evening schools was new in Kentucky, it was often difficult to induce boards of education to open school buildings at night for the instruction of adults.

Adult training, undertaken in school buildings under instructors who serve youth, can be successfully combined with the training of youth. This is desirable from several points of view. The teacher who can work successfully with adults gains the confidence of the youth; he also learns from adults new aspects of working at a vocation and living in a community.

FINANCING PUBLIC ELEMENTARY AND SECONDARY EDUCATION IN KENTUCKY

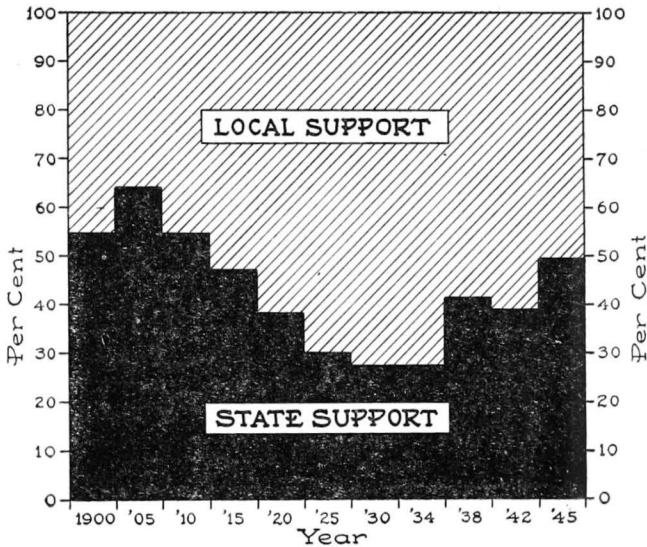
Public elementary and secondary schools in Kentucky receive almost all of their financial support from local taxation and from the state common school fund.

THE LOCAL TAX CEILING IS TOO LOW

The laws of the Commonwealth set maximum limits on the property tax for support of local schools. In county districts, the tax levy for school purposes, other than sinking funds, "shall be not more than seventy-five cents on each one hundred dollars of property subject to local taxation." The tax rate limit for independent districts varies from one dollar to one and one-half dollars, according to the class of the city included. It is difficult to understand why the State of Kentucky should permit one type of district to levy a tax twice as high as the limit established for another type of district. It is even more difficult to understand why the county districts should be restricted to the lowest rate. They are in greater need than are the city districts; they must either maintain expensive small attendance units or transport pupils to larger units. The people of Kentucky, if properly informed, would undoubtedly instruct the legislature to eliminate this injustice to the rural children of the state. A permissible tax levy for school purposes of one and one-half dollars per one hundred dollars of property for *all* school districts—rural as well as urban—is a reasonable request.

THE COMMON SCHOOL FUND

Kentucky increased its common school fund in 1944 by approximately 50 per cent. Even so, the State does not provide as large a share of school costs as it has formerly provided. In 1905 the State paid 62 per cent of the total cost of public elementary and secondary education in Kentucky; in 1944 the State's share of the total cost is approximately 48 per cent. Each year from 1905 to 1930 the State's share decreased. Since 1930 the State has again been assuming a larger share of the costs, but its proportion is still below that of forty years ago. This is true in spite of the



THE PERCENTAGE OF SCHOOL SUPPORT FROM STATE AND FROM LOCAL SOURCES, 1900 TO 1945, INCLUSIVE

fact that the property tax, upon which schools must depend almost entirely for local financial support, has become a far less adequate source of revenue than it was in 1905.

It must be clear to Kentuckians that as they demand improved schools the cost of education will increase. Many districts cannot provide enough additional revenue to be helpful; increased state support is necessary to insure acceptable programs of education for all communities of Kentucky.

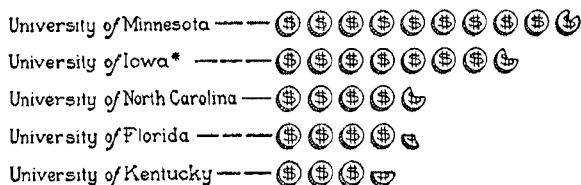
HIGHER EDUCATION

After the first World War, enrollments in the colleges and universities of this country increased 84 per cent. There is every reason to believe that another period of growth for higher education will follow World War II. A war of machines, directed by

highly trained technicians under the leadership of well-educated men, has demonstrated anew the importance of education. Men and women returning from military service and from war industry have a greater faith in the fundamental values of higher education than was had by any previous generation of Americans. The federal government has recognized these values by providing financial support for the college education of returning veterans.

Enrollment at the University of Kentucky increased very rapidly each year of the period between the World Wars; it doubled, then trebled, and finally quadrupled. The total enrollment of students

LEGISLATIVE APPROPRIATIONS
FOR UNIVERSITIES IN FIVE AGRICULTURAL STATES, 1943-44



* Iowa also supports a Land Grant College at Ames which received \$2,624,500 in 1943-44

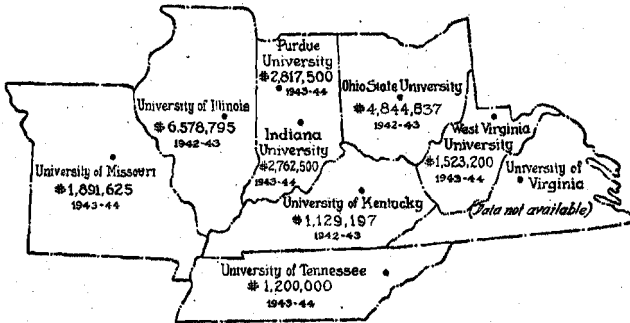
in institutions of higher learning in Kentucky followed the trend of enrollment at the University, increasing each year from 1918 to 1940—even during the depression of the 1930's. The increase of the total enrollment in all Kentucky institutions of higher education from 1935 to 1940 was more than 17 per cent. The trend was broken only by the war.

When fewer students attended college, and when Kentuckians argued about public versus private education, colleges and universities competed for enrollment. Much of this competition had ended when the second World War started, for by that time it was obvious that Kentucky's facilities in higher education were not adequate for the future. Private institutions of higher education in Kentucky will continue to play an important part in the state's total program of higher education. The great increase in

facilities at this level, however, which will be necessary in the years immediately ahead must be supplied from state funds. Increased state support for current expenses and for capital outlay will be needed by the four state teachers colleges, by the University, and by the Kentucky State College for Negroes.¹

THE UNIVERSITY OF KENTUCKY AND HER NEIGHBORS

The figures on the Map are State Appropriations



State Appropriation per Student Based on Comparable Enrollment *Data for 1941-42*

West Virginia	\$ 487
Illinois	487
Indiana	429
Purdue	408
Ohio State	380
Tennessee	337
Kentucky	313
Missouri	286

Total Annual Income from all Sources

Illinois	\$12,309,886 (1942-43)
Ohio State	11,903,592 (1942-43)
Purdue	9,409,418 (1942-43)
Indiana	7,543,000 (1943-44)
Missouri	5,000,000 (1943-44)
Tennessee	4,008,000 (1943-44)
West Virginia	3,192,480 (1943-44)
Kentucky	2,814,096 (1942-43)

* In addition to Ohio State University, Ohio supports four other Universities: Bowling Green, Kent, Miami, and Ohio University

¹ The four-year colleges in Kentucky are: Asbury, Berea, Centre, Eastern Kentucky State Teachers College, Georgetown, Morehead State Teachers College, Murray State Teachers College, Nazareth, Transylvania, Union, University of Kentucky, University of Louisville, Western Kentucky State Teachers College, Kentucky State College for Negroes, Municipal College for Negroes, Kentucky Wesleyan College, Ursuline College, Bowling Green College of Commerce, and Villa Madonna.

Kentucky has never given more than meager support to higher education. Its provision of capital outlay at the University of Kentucky is a case in point. During the entire eighty years of the University's history the total legislative appropriations for buildings have been only a little more than one and one-half million dollars. Most of the buildings of the University have been financed by federal funds, by savings from general appropriations, or by bond issues. It is unlikely that any state university in America has had less money appropriated directly by the state for its building program than the University of Kentucky.

State appropriations for the operating budget of the University of Kentucky also have been and still are very small. In fact, the amount provided for operating expenses in 1944-45, when the state was out of debt and had accumulated a surplus, was only \$1,170,950. This appropriation was smaller even than the \$1,190,462 appropriated for operating expenses in 1930-31, a depression year.¹

Total appropriations for the University in 1943-44 contrast unfavorably with those for the state universities of other agricultural states, comparable in population and wealth. The contrast between Kentucky and neighboring states is even more extreme. These facts clearly reveal the inadequacy of state financial support to the University of Kentucky, which serves the Commonwealth as its chief institution for collegiate education, for informal adult education, and for research.

EDUCATIONAL AGENCIES OTHER THAN SCHOOLS AND COLLEGES

The most urgent problems of education in Kentucky are those concerned with maintaining schools, but education is not confined to the classroom. In most communities there are other agencies with educational activities. They receive their support from varied sources and often function independently of one another; they have specialized interests, and their programs may or may not be closely affiliated with those of schools and colleges.

¹ The appropriations given here do not include funds for capital outlay, or for the Agricultural Experiment Station and allied agencies and for Agricultural Extension.

ADULT EDUCATION

The largest state-wide programs of adult education in Kentucky are those of the Agricultural Extension Service in Agriculture and Home Economics, represented by county agricultural agents in each of the 120 counties and by home demonstration agents in 64 counties. Carrying the results of research in the Agricultural Experiment Station and the teachings of the College of Agriculture and Home Economics to rural people throughout the state, these programs demonstrate improved practices on farms and in rural homes. The county agents, with the technical help of specialists at the State University, conduct their work through voluntary local leaders, of whom there were nearly 30 thousand in 1943. There is need in Kentucky for expansion of these programs, and particularly for an extension of the home demonstration work to counties in which there are at present no home agents.

Another important program of adult education is that conducted by the various divisions of Vocational Education. This is a phase of secondary education under the general supervision of the State Department of Education, Frankfort, and the College of Education at the University of Kentucky.

The University of Kentucky and other institutions of higher education, through their regular extension departments, sponsor many types of educational activities for adults. The emphasis today upon public forums, audio-visual aids, and other techniques for meeting the educational needs of adults should gain greater financial support for these departments of colleges and universities.

Seventy-three public libraries are located in sixty-five different counties of Kentucky. They play an important part in the total educational programs of their communities, serving adults as well as children. But 64 per cent of the adults of Kentucky have no access to local public libraries. The State Library at Frankfort, because it is so meagerly financed, is able to give only limited service. County libraries, with branch stations and book-mobile delivery, have been established in a few counties, and should be developed in many others.

Churches, through their church schools, make some contribution to the education of adults. It is doubtful, however, if they have fully sensed their great opportunity in this field. No statistics are available to indicate the scope and quality of adult education in

church schools, but certainly there is need for more and better programs.

Provisions for adult education in Kentucky are, therefore, scant and insufficient, unless it be in the education of farmers and their wives. In the future, Kentucky must realize that education is continuous throughout life. It cannot be stopped, but it can be directed and assisted. Certainly there is a place for the work of every agency interested in this field. The very large proportion of people 25 or more years old who did not complete eight grades of school is merely one evidence of the great need. Kentucky should have a planned, well-balanced, and adequately supported educational program for adults.

AGENCIES WITH SPECIALIZED INTERESTS FOR CHILDREN

Almost every community has agencies which sponsor activities with specialized interests for children. The church school, the Scout organizations, the Young Men's and Young Women's Christian Associations, and the 4-H Club are among the most important of such organizations. An example of the extent of their programs is found in the reports of the 4-H Clubs. In 1944 Kentucky had more than 100 thousand 4-H Club members, directed by community leaders working under the supervision of county agricultural and home demonstration agents. These and other organizations which work with children to accomplish specialized purposes are most effective when they co-ordinate their work closely with the school programs.

CONTINUOUS EVALUATION AND PLANNING

The quality of education in Kentucky will always be greatly influenced by the extent to which citizens check and recheck the system and plan continuously for its improvement. Occasional special studies such as that made by the Kentucky Educational Commission in 1934 are valuable, but they cannot replace continuous evaluation and planning.

One of the most serious handicaps to educational planning in Kentucky is the lack of an effective state-wide planning board. The educational program has maintained continuous planning groups, but their work is too isolated from other important public

services. Educators who wish to develop their programs in relation to these services should have the assistance of a state planning board. Kentucky is far behind other states in this respect. Education and other public services will be conducted without adequate planning and evaluation until such an organization is created.

In this chapter it has been shown that the people of Kentucky gradually accepted education as a state function. No one can foretell the future, but it can be predicted that unless Kentuckians continually consider their educational program in light of current needs and unless they make adjustments accordingly, they will lose to the national government their right to evaluate and to plan on a state basis. The federal government will take over the educational function by establishing new agencies which will be adequately financed and staffed. If Kentuckians value the privilege of controlling their educational system, if they wish to keep the many powers now delegated to local school systems, they will assume the accompanying responsibility of evaluation and planning. Educational changes will come and they will come swiftly. Who is to direct the nature of the changes?

Chapter XII

HEALTH AND WELFARE

BY IRWIN T. SANDERS

Crucial tests of Kentucky's progress are the indices of health and social welfare. Bank balances, railway mileage, coal tonnage, and capital invested in school buildings are also significant measures, but tell only part of the story. Is Kentucky a safe, healthy place in which to live? Do the people of the state feel secure in their jobs, or is lack of steady employment coupled with the blights of disease, poverty, mental illness, and crime? The energy of nearly three million people is the state's most important resource, and toward its conservation and proper utilization all public efforts, economic and otherwise, should be directed.

KENTUCKY'S EARLY LEADERSHIP

The builders of Kentucky led in more than the conquering of a wilderness; they pioneered also in various fields of health and social welfare. The doctors of Kentucky, for instance, live in the glow of a great medical tradition. Early in the nineteenth century, Transylvania University had one of the best medical schools in the nation and a famous medical library. In 1809, Dr. Ephraim McDowell, one of Kentucky's representatives in the national Hall of Fame, performed the first ovariectomy and, within a few years, Dr. Joshua Bradford, of Augusta, had world renown for skill in that new type of surgery. Dr. Samuel Brown, a fellow student of Dr. McDowell at Edinburgh, is credited with the first prophylactic use of cowpox vaccine. By 1802, before vaccination had been used even in New York or any eastern center, Dr. Brown had vaccinated more than 500 people in Lexington.

Kentuckians in the early days realized the importance of institutional care for certain groups of the population. The third state penitentiary (1798), the second state institution for the in-

sane (1824), and the first state school for the deaf (1823) to be provided anywhere in the nation were established at Frankfort, Lexington, and Danville, respectively. Kentucky was also one of the first states to open a school for the blind (Louisville, 1842). Sixteen years later the American Printing House for the Blind was established. Now, with congressional support, this is the largest enterprise of its kind in the world. Also founded early (1860, at Frankfort), the State Institution for the Feebleminded was the first in America to undertake industrial training for its wards.

But these eminent beginnings, so important to the wise and effective use of human resources, contrast sharply with Kentucky's position in certain areas of health and welfare today. There is need and opportunity now for a revival of the pioneer spirit that gave the Commonwealth such splendid leadership in these fields a century ago.

EVIDENCE OF PRESENT NEED

The situation at present is shown in several contradictions. Kentuckians are interested keenly in politics and government, but the administration of relief and justice are too often inefficient and inadequate. There are two institutions for delinquent children in Kentucky, but only one of them is among the nation's best. The state government is out of debt, but some of its institutions are out of date. Contrasts are found also in the field of health: Kentucky had the first full-time county health department in the nation; yet tuberculosis, which can be cured, takes great toll of the state's human resources. Although the people are mainly of one national and racial origin, Kentucky sends more men to prison for manslaughter than any other state. The actual number committed for murder and manslaughter combined is second highest in the nation. These facts are a story of human resources abused.

HEALTH

THE FACTS ABOUT HEALTH AND PHYSICAL WELL-BEING

A committee of doctors has said,¹ "Kentucky's problem is to render medical services more readily accessible, in terms both of

¹ Committee on Medical Economics, Kentucky State Medical Association. Figures prepared by those outside the medical profession corroborate the findings mentioned here.

distance and cost, to those in need of medical care." The same committee reported many areas, mainly those counties where incomes are lowest, in which medical care was inadequate because doctors did not find it financially feasible to practice there. Since 1910 the increase in number of doctors in Kentucky has fallen behind the increase of population. Moreover, most of these doctors are in the cities. In the late thirties there were 14.7 physicians for every ten thousand urban people, but only 5.8 for an equal number of rural people. Hospitals, too, are mainly in urban centers. The three largest cities, with but one-sixth of the state's population, have more than half the hospital beds. Among all the states, Kentucky ranks forty-sixth, with 2.02 beds per thousand people. The distribution of nurses is hardly any better. Eight counties had no registered nurse in 1938, 20 more had but one each, and in 13 of the 20 there was only the public health nurse. The coming of World War II made these conditions even more extreme.

In spite of these deficiencies, the death rate in Kentucky decreased 25 per cent between 1911 and 1938. The most important decreases were in deaths from typhoid, diphtheria, diarrhea, enteritis, and in deaths of babies in their first year. But rates of death from heart disease, cancer, and diabetes were rising during that period. Deaths of mothers at childbirth, per thousand live births, declined very slightly in the 27 years from 1911 to 1938. In this connection it must be noted that 40 per cent of the births in 25 counties of southeastern Kentucky are attended by midwives only, which shows the importance of a training program for midwives. Incidentally, Kentucky established in Clay County the first state-operated maternity hospital. The infant death rate fell between 1911 and 1938 from 87 to 63.2, an annual decline of about one death per thousand live births. The rate of deaths from tuberculosis also decreased from 224 per 100 thousand population in 1911, to 64 in 1943. But there are still about two thousand deaths per year from this disease. Fortunately, the General Assembly in 1944 appropriated one and one-half million dollars for the construction of five additional tuberculosis hospitals, to provide 850 more beds.

It was further reported by the Committee on Medical Economics that about 17 per cent of the persons treated by doctors in their

private practice are unable to pay for the service. The burden of their care is on the physicians, whose contribution to the welfare of Kentuckians is beyond reckoning. In spite of this, however, there were only three communities in which people too poor to pay received more or less satisfactory service.

In the face of these grave health problems there are two important gains Kentucky has made throughout the years. One is the growth of the State Department of Health. Another is the growth of more active interest among the doctors in better medical care as expressed individually and through the local and state medical associations.

PUBLIC HEALTH

When an epidemic breaks out or a water supply is contaminated, or when widespread food poisoning occurs, the spotlight turns to the men and women who track down these troubles and act quickly to prevent further distress. But there are less spectacular, day-by-day routines which must be faithfully observed if health is to improve. Visiting dairies, analyzing water samples, inspecting restaurants, examining school children, holding prenatal clinics, controlling venereal disease, conducting campaigns for immunization, conducting public health education by press and radio, collecting, tabulating, and interpreting vital statistics, safeguarding the health of industrial workers—these and many other activities are a year-round offensive in the war against disease and accidents on the home front.

This work is directed from the State Board of Health, with its special bureaus and divisions. Some of these are for specific maladies, such as venereal diseases, trachoma, and tuberculosis. Others are in the wider fields of bacteriology, communicable diseases, maternal and child health, public health nursing and industrial hygiene. Others deal with food and drugs, hotels, dental health, public health education, registration, sanitary engineering, and vital statistics. Also, there are consultants in pediatrics and surgery in children.

The County Health Department.—But the spearhead of the public health program is the County Health Department. Already 104 of the 120 counties in Kentucky have departments either alone or in co-operation with neighboring counties. Most of them have

at least the minimum staff of health officer, public health nurse, sanitarian, and clerk. Specialists from the state office render supervisory services to county health officials and help them hold clinics. The State Board is custodian of the federal and state appropriations for health, and it conducts the training program for persons in public health work.

The public health worker has three jobs: education, prevention, and limited treatment. Ignorance is the greatest enemy to good health. Hence, the health departments are constantly working to teach the public how to prevent illness or care for it when it strikes the home. Efforts to reduce deaths among babies and mothers are in large part educational, and they involve both visits by the public health nurse to homes and talks by the nurse to groups of interested women. The school, too, spreads health knowledge, especially if physical examinations of children are followed up.

The second phase of the public health official's work is the prevention of ill health. Often educational in nature, this also includes the posting of quarantine signs, the vaccination or immunization of people in danger zones, and elimination of possible sources of contagion. It involves the full-time activity of the sanitarian, as well as much work by other members of the staff.

The third part of a health officer's work is limited treatment. Some illnesses can be treated by public health officials without question; one of them is syphilis. In fact, law enforcement officials can require that venereally diseased individuals take regular treatments. The purpose behind such programs is primarily to prevent the spread of a disease. Then the public health officer does not engage in private practice. Limitation of time, energy, and facilities restrict him to such treatment as falls under the heading of preventive medicine.

PRIVATE PRACTITIONERS: GUARDIANS OF THE PEOPLE'S HEALTH

The medical profession has accepted the responsibility for the health of Kentucky's citizens. The State Department of Health, an arm of the Commonwealth, is also an arm of the Kentucky Medical Association, and is strongly subject to its influence. Hence, advances in public health will depend directly upon the support that doctors give to health legislation, requests for appropriations,

and the enlightenment of the public respecting health needs. Their support in the past has helped build the strong health organization that exists today. The general public is interested, but is usually content to follow the leadership of specialists in this highly technical field.

The problems in Kentucky's medical future are of two types. One involves the conquering of specific diseases, such as tuberculosis. Each disease, of course, presents its own difficulties. The need of tuberculous people is treatment in sanatoria, or places where they can be isolated; the need of those who are venereally diseased is regularity of treatment at a doctor's office or a public health clinic.

The second type of problem is more than technical; it involves also some social engineering, or the formulation of a plan whereby medical needs of the poor can be more adequately met, high standards of the medical profession rigidly maintained, and the public protected from a tax bill which would be an undue burden. This is a problem in which every medical man is concerned, but also one in which every Kentucky citizen is involved either as a beneficiary or as a taxpayer.

As shown above, the medical services of the state were not adequate, even before the war. Certainly, if Kentucky is to move forward as a progressive state some way will have to be found to insure better health to its citizens.

Medical Care for People with Small Incomes.—There are two groups of citizens to whom medical care is financially difficult: the man with a small but steady income who never has enough cash on hand to pay any large doctor or hospital bills, and the man whose income is never steady and never sufficient even for the minimum essentials of life. Some schemes of health insurance have been used in various places to take care of the first type of citizen. In them, he pays a weekly sum for which medical attention is received when necessary. Many large industrial plants have found this method satisfactory.

For the poverty-stricken person, other means of payment will have to be found. Physicians might continue to give their services free to such individuals. Most people, however, have come to the conclusion that a physician should not be called upon to do charity work any more than any other professional man. He

deserves payment for work done. More of the welfare funds provided by counties and by the State should be devoted to healing the sick, and some plan should be worked out for paying the doctors.

A Proposal by the Committee on Medical Economics.—With this in mind, the Committee on Medical Economics supported the proposal to establish a Bureau of Medical Service, operated under a Medical Guidance Board. This board would be appointed by the State Board of Health and would consist of the State Commissioners of Health, and Welfare, two members of the State Medical Association, and one member from the state at large, to be chosen by the four previously named. "This Bureau," they write, "shall be charged with the sole responsibility for the operation of any plan designed to secure adequate medical care for the indigent citizens of the State. The patient shall have free selection of his physician, who must be within his locality. All funds, State, federal, and local, shall be dispersed through this Bureau or its authorized representatives."

Social workers would be employed to determine a person's need for free service. Furthermore, the doctor's fees should be "held to a minimum and only paid for practice in the home and office at seventy per cent of the ordinary call of physicians in the community." Provision would also be made for hospitalization, this also being at seventy per cent of ward charges (without operating fees).

Some people object to such a proposal because they think it gives the public too little participation. Some point out that this plan fails to make use of the social work agencies already dealing with the underprivileged. Others object to the whole idea. Certainly, no plan would succeed without the endorsement and support of the majority of Kentucky's physicians. In a spirit of mutual understanding and with a long look into Kentucky's future, doctors and representatives of the public surely can arrive at some plan, in keeping with the American way of life, which will provide more adequate care for poverty-stricken citizens who become sick and, falling sick, are reduced to even greater poverty.

THE PHYSICALLY HANDICAPPED

People Who Cannot See.—The number of blind people in Kentucky (about 2,100) is only a few more than the number who die in one year from tuberculosis. In comparison with other groups receiving public aid, the number is small, but it must be remembered that Kentucky in 1930 was fourth highest among the states in the ratio of blind persons to total population.

In Kentucky there are a trachoma hospital at Richmond, a school and a printing house at Louisville, and a Social Security aid program. The hospital is operated co-operatively by the United States and state health services primarily to prevent blindness. The school, with 181 pupils in 1942, is supported by the State. It administers also a rather limited program of vocational training for adults who are blind. The printing house, a non-profit institution supported by federal funds and private contributions, prepares textbooks for free distribution to pupils in all state-supported schools for the blind throughout the nation, as well as books in Braille for adults, and "talking books." Under the national and state social security acts, the Division of Public Assistance in Kentucky's Department of Welfare was granting aid to 1,503 of Kentucky's needy blind, the average monthly grant being \$12.39, in February, 1944.

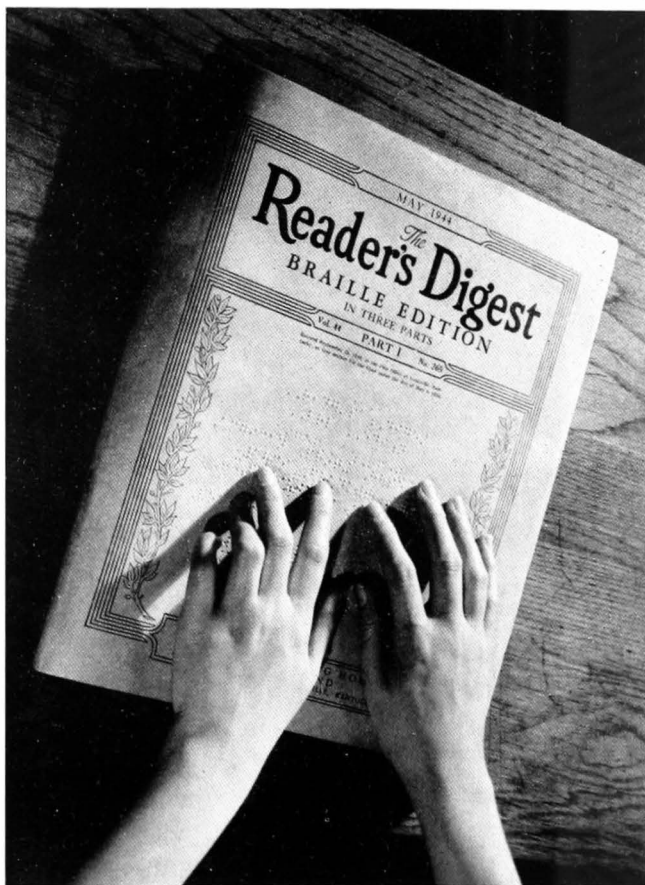
The problems of the blind people in Kentucky have not yet been adequately dealt with, but important steps have been taken in the right direction. More school systems need sight-saving classes, such as those found in Louisville, where children with defective vision receive special instruction and use books with larger type; more of the blind children need to be reached by the State School for the Blind; more of the adult blind need vocational training and especially the opportunity to earn a living in some task for which they are capable; and, finally, the grant-in-aid to the needy blind must be increased enough to meet their financial requirements.

People Who Cannot Hear.—For deaf children and youth there is the school at Danville, where tuition, board, books, and medical attention are provided by the State. It is a part of the public school system, and students who make at least fair progress may remain until they are 21 years of age, unless graduated sooner. The course of study, which includes a vocational program, is similar to that of the other public schools. Later observations about Ken-



Courtesy of Ormsby Village

One of the brighter spots in Kentucky's welfare picture is . . . Ormsby Village.



Courtesy of American Printing House for the Blind

*... the American Printing House for the Blind ... is the largest ...
in the World.*

tucky's institutions will apply in part to this school. The physical plant needs some improvement. More equipment is needed for vocational education. The staff, however, has a professional attitude toward its work, and student morale is good.

Crippled Children.—The progress Kentucky has made in care of crippled children is due in large measure to the initiative of the Rotary Club, which led in the formation of the Kentucky Society for Crippled Children in 1923. Public interest was aroused, and in 1924 the Kentucky Crippled Children's Commission was formed as an official agency of the State.

The activities of this commission include the discovery of children needing orthopedic care and the conduct of clinics throughout the state. These receive new cases and give follow-up care to cases already in the care of the commission. More frequent clinics are held in the urban centers, and traveling clinics visit other areas of the state. If a child needs further treatment, the parents and the county judge certify him to the commission, which provides treatment and braces, unless the parents can afford orthopedic care. If necessary, the child is hospitalized and given surgical and nursing care, and other therapeutic measures when available. After release from the hospital follow-up care is given to each child, in many cases through the clinics.

One reason for the success of this program is the support of the general public. The Kentucky Society for Crippled Children, with about 25 thousand members, handles the publicity, the money raising campaigns, and keeps the attention of the general public focused upon this need. Another factor is the Federal Social Security Act, which matches the state funds used for these purposes. With the impact of war, the professional staff was reduced, and transportation to the clinics became increasingly difficult, so that about 40 per cent fewer cases were being handled by the commission in 1943.

Other co-operating agencies are the Division of Special Education and Vocational Rehabilitation of the State Department of Education and various local boards of education which conduct classes in the hospitals. The Child Welfare Division of the State Department of Welfare helps children who are brought to the clinics as crippled but who need care other than that of a medical nature. Various private hospitals, such as the Shrine Hospital,

and the Crippled Children committees of numerous service clubs, the Professional Advisory Committee of the State Medical Society, and other organizations participate wholeheartedly in the program.

There are still many unserved children in need of this care. As with blind children, parental opposition is frequently encountered, the clinics are not sufficient in number to serve the state adequately, and there are definite staff limitations. The encouraging feature of this program is the manner in which a number of groups and agencies have teamed. In many ways, this is the type of pattern that should be followed in attacking other problems which are just as important, though perhaps less appealing, than the cause of the crippled child.

PEOPLE WHO ARE MENTALLY ILL OR DEFECTIVE

Hospitals Are Not Asylums.—The people of Kentucky still look upon their institutions for the mentally ill, not as hospitals, but as places of refuge and custody, which not only keep the insane inmate from hurting himself but also protect society. They are viewed as dumping grounds for broken minds and the aged. Many people speak of them with hushed breath; families feel disgraced if a member is locked behind their doors. It is even more tragic that friends and relatives too readily assume that the condition is incurable, and resign themselves to a permanent separation.

Fortunately, these attitudes are beginning to change. Occasionally people use the words hospital instead of asylum, patient rather than inmate, treatment rather than commitment. They are learning, though all too slowly, that many people with nervous difficulties can recover if given psychiatric care. In other words, as the public begins to understand, it looks upon mental illness as a problem of health and not of criminal court procedure. When so considered, the problem can be investigated and partly, if not entirely, solved.

The Facts Reveal an Important Problem.—Kentucky ranked forty-seventh among the states in 1922, sharing the bottom with Virginia, according to a composite index of state care of the mentally ill. By 1933 Kentucky had fallen to last place and Virginia had climbed six rungs up the ladder. This index has not been published in recent years but the single factors from which it was constructed show that, although conditions have improved in respect

to capital outlay per patient, Kentucky's relative position as a whole is still low.

One of the most serious needs is for space. The three mental hospitals in Kentucky in 1940 were caring for 45 per cent more patients than their facilities should be expected to serve. For the fiscal year ending June 30, 1943, this percentage of overcrowding had fallen to 31.5 as a result of the building program and a decrease in rate of admissions. Another serious need is for personnel. In 1940, even before physicians and nurses were called to the armed forces, Kentucky had only 17 physicians (including the three superintendents) and only eight graduate nurses for more than six thousand patients. Such an extreme lack of professional workers forces the institutions to operate more as asylums than hospitals. Kentucky ranked highest among the states in number of patients per employee. For every worker, no matter in what capacity, there were 10 patients. This was more than in any other state, and nearly twice the national average of 5.8. The war made this condition more extreme. By June 30, 1943, there was one physician for every 430 patients, and one graduate nurse for 1,074 patients. Those staff members who remained deserve special tribute for carrying on in the face of insurmountable odds.

Kentucky spent less per patient for maintenance (\$147) in 1940 than any other state, less than half the United States average (\$300). If the purpose were merely custody, Kentucky could claim pre-eminence. But the purpose is to make people well, and skimping on expenditures is false economy. Those hospitals are not best which provide least. It is clear that the people who are mentally ill in Kentucky receive too little scientific attention. It would do no good, however, to try to fix blame for this upon any individuals. The people of a state get the kind of institutions they demand and are willing to finance. This places the responsibility for improvement on the shoulders of the public.

Improving the Mental Hospitals.—The guiding principle of any policy should be the salvaging of as many broken minds as possible. It has been said that, with prompt attention, and satisfactory care and surroundings, one-half of all newly admitted patients could leave mental hospitals improved or cured, many of them within 18 months. This figure may be too high; certainly few, if any, of our state institutions effect such a large proportion of recoveries.

It is at this point, however, that public money could be invested most wisely. The cost of curing a person responsive to treatment would certainly be less than keeping that person as a ward of the state for ten or twenty years or longer. But such a gain is more than financial. It is measured in the coin of human happiness and social welfare.

The policy of *cure rather than custody* calls for what seems at first an expensive program, but it would pay dividends in the years to come. Every year about 1,500 patients enter Kentucky's mental hospitals for the first time. Many of them, if they receive no treatment, will remain there for life. A patient's upkeep for ten years estimated at the 1940 cost would be equal to almost \$1,500. The employment of a psychiatrist, at an annual salary of five thousand dollars, should he cure no more than five or six such individuals per year, would actually reduce costs to the state. The same would hold true of other professional staff members.

The number of people served by a state program depends not so much upon hospital capacity as it does upon the movement of patients into and out of the institutions. This movement depends upon successful treatment and the organization of a well-supervised system of parole and trial home visits. Treatment can be given only by qualified personnel, including physicians and graduate nurses with psychiatric training and experience, psychiatric social workers, and practical nurses and custodians who can deal intelligently with patients. An incapable, angry employee can offset in a minute, by an unwise word or gesture, hours of expensive therapeutic treatment. A healing atmosphere should exist not in the doctor's office alone; it should pervade the whole hospital. As a rule, the lower paid employees set the tone in a hospital. They should be carefully selected, properly trained and well paid. It is poor economy to do otherwise. More than this, the physicians in charge should have the latest equipment for their work. Kentucky has made a beginning here, but more operating capital is needed to keep the institutions abreast of the times in this respect.

Mental Illness Outside of Hospitals.—At least half of the people who are mentally diseased never go to a hospital. Their need should lead to provision for treatment through mental hygiene clinics. Many mental abnormalities can be corrected more easily

when found and treated in young people than when they are discovered years later.

When the public begins to think of insanity, or mental and nervous breakdown, as a form of illness requiring medical care, other developments will follow. High school courses in hygiene will include facts about mental health; industries will add psychiatrists to their medical staffs; city school systems will employ more clinical psychologists; physicians will take more training in psychiatry; and the average citizen will guard mental as well as physical health by preventive measures. The work of psychiatrists in the armed forces is convincing proof of services they are equipped to render.

Certain changes need to be made in methods of getting patients into hospitals. Admission has been based upon the affidavit or oath of two practicing physicians who, in all likelihood, have had little training or experience in dealing with mental cases. Partly as a result of this, over 12 per cent of those now in Kentucky's mental institutions do not belong there because they are mentally ill. A bill passed in 1944 by the General Assembly makes it possible for a mental institution to accept, for a thirty-day period, a patient who has not been legally declared insane. At the end of this time, a certified statement of the superintendent and the clinical director (or a staff physician) is admissible as evidence at the inquest to determine the person's sanity. In other words, under certain circumstances, the role of the specialist in mental illness is now being recognized.

There should also be some regulation of the practice of psychiatry. Elsewhere this field is considered a reputable branch of the medical profession, but no Kentucky law recognizes its existence. Any person can open a private institution for mental patients without submitting to any state board examination or even having to conform to minimum standards of training. However, Kentucky does have some private institutions of high quality.

As noted above, Kentucky long ago recognized its obligation to the citizen who is mentally ill; it was the second state to establish a state institution for the insane. Now, Kentucky can move forward in mental hygiene, or the prevention of mental disease, and at the same time, bring its existing institutions back into line

with the standards, not only of other states, but with the purposes set over one hundred years ago.

Mental Deficiency.—Many people fail to understand the difference between mental illness and mental deficiency. The former is a sickness; the latter, a condition of being mentally crippled. The mentally ill can often be restored to sanity and resume their places in the community. Mentally defective persons, on the other hand, do not have a normal intelligence nor a normal social adjustment. They usually lack the capacity for further development. They range in ability from the idiot, with an intellectual level of a two-year-old child or less, through the imbecile, with a mental age of from three to seven years, to the moron. The lowest grades require custody and nursing care, while the morons can be trained to do simple tasks and thus become partially self-supporting. For such defectives, Kentucky, like most states, has a special institution.

The Institute for the Feeble-minded at Frankfort in 1940 was crammed with 29 per cent more people than it had room for, or three times the average for such institutions in the nation. Even so, many defectives who need institutionalization are still at large, and others are sent to hospitals for the mentally ill, where they do not belong. The patient-employee ratio (6:7) was very close to the national average in 1940. The staff included two resident physicians, three graduate nurses, and one psychologist for a daily resident population of 742. Expenditure per patient in 1940 was \$243; the national average was \$298.

Changes Are Needed.—The problem of mental deficiency in Kentucky requires the provision of more institutional facilities; it calls for more rigid sorting of patients so that they will be put in the places where they can be helped the most. The program of training for those who can learn must be expanded in order that the patients may be made more self-sufficient socially and economically. One of the greatest needs is an out-patient system, under which the higher-grade morons would be placed in jobs under the close supervision, not only of certain responsible citizens, but also of the institution's personnel.

Since the present institutional facilities in Kentucky are insufficient, a wise policy for the present would seem to be the provision of farm colonies for many of the feeble-minded. Also desir-

able is a program of boarding out of those who require chiefly nursing care, thus making possible a better training program for those morons who can eventually be released under supervision. The money now being spent so foolishly under the archaic Pauper Idiot Law could be used for this supervised boarding out program. More attention must be given to the present system of commitment. Now, a community can send a person to an institution, because he is erratic, somewhat abnormal or an undesirable member. Because this is possible, the community often takes the easy way out. Few attempts are made to adjust the case outside of court. Before a case is ever brought to court, however, a competent psychologist or psychiatrist, in the employ of the state, should examine the individual to determine the urgency of an institutional commitment, and establish a priority rating. There is no need for a community to push off onto the state problems which it could solve at home. The principle of local responsibility deserves a renewed emphasis.

The Eight-Point Program.—An eight-point program announced in 1944, by Dr. A. M. Lyon, Director of the Division of Hospitals and Mental Hygiene of the State Department of Welfare, includes many forward-looking suggestions that would effectively solve many of the problems of mental illness and deficiency. In summary the proposals are:

That there be an educational program substituting the new goal of preventing mental illness for the old one of merely "building for and housing" the insane;

that the consideration of mental illness should be removed from the field of criminology and placed in the field of psychiatry;

that the professional staff be increased, and that the social service program be expanded to provide information in diagnosing, treating, and paroling patients;

that psychiatric and psychological service be furnished at the state penal and correctional institutions to aid in the rehabilitation of those who have become socially maladjusted;

that there be specialized training for backward school children;

that Kentucky's piecemeal mental hygiene laws be recodified to make the care of so-called "pauper-idiot" a part of the

state-wide mental hygiene program and, incidentally, to eliminate further use of the term "pauper-idiot";

segregation for special study and treatment of epileptic persons, who now constitute approximately ten per cent of all patients in Kentucky's mental institutions;

provision of a state institution to care for defective delinquents alone. They do not belong in a reform school or penal institution for they cannot be reformed, nor in the present institution for the feebleminded where they contaminate and corrupt those whose habits have never been anti-social.

WELFARE

OTHER PEOPLE NEEDING WELFARE SERVICES

Poverty and the Commonwealth.—Poverty is related to so many factors over which most individuals have little control that it is a constant problem. Ill health, the closing of a factory, industrial injury, aging, poor soil, and failure of crops—these and many more causes cannot be wholly eliminated. In modern society it is recognized that people who become severely affected by such factors must receive public assistance.

To meet these public obligations, and to continue the care of the mentally ill and the delinquent, the Kentucky Department of Welfare was created in 1936, taking the place of the Board of Charities and Corrections. It has six major divisions: Corrections, Child Welfare, Hospitals and Mental Hygiene, Probation and Parole, Public Assistance, and Staff Services. The director of each division was made responsible to the Commissioner, whom the Governor appoints, together with the members of the Board of Welfare. The importance of this department is indicated by its control of numerous state institutions and its supervision over distribution of the major relief funds.

Public Assistance.—The Division of Public Assistance arranges help for three types of needy persons; those who are blind (previously discussed), dependent children, and people who are 65 or over. The field workers of the agency investigate applications for aid and "certify" the individuals who are eligible. Old Age Assistance was first made possible in 1936, Aid to the Blind in December, 1942, and Aid to Dependent Children in January, 1943. The federal

government, through the Social Security Act, contributes money to these programs, on a fifty-fifty basis up to a specified maximum.

Many people feel that the proportion of the federal contribution should be greater than 50 per cent for states like Kentucky, which have relatively low per capita incomes. The public assistance grants in Kentucky compared in amount with the averages for similar grants in other states, as of February, 1944, in the following ways:

	KENTUCKY	OTHER STATES (AVERAGE)
To the needy blind (per person).....	\$12.39	\$28.18
To dependent children (per family).....	24.00	42.21
To the needy aged (per person).....	10.64	26.99

At the time to which these figures refer there were 1,503 needy blind, 9,645 dependent children, and 54,637 old people receiving assistance.

But financial problems are not the only ones faced by the Division of Public Assistance. Many of its staff lack adequate training and experience and are often handicapped by the poor office facilities which many counties provide. The field workers frequently have to use rooms that make it impossible for them to talk to clients in sufficient privacy.

Child Welfare.—The Child Welfare Division of the State Department of Welfare offers services to children who are dependent, abused, neglected, or in danger of becoming delinquent. It is also responsible by law for studying and investigating all adoption petitions filed in the state and for presenting recommendations on these petitions to the county courts. This division has charge of the Kentucky Children's Home, the only state-operated institution for dependent and neglected children.

As of July 1, 1944, only 37 counties in the state had child welfare workers available for services to children, although the Division of Public Assistance does have field workers throughout the state investigating applications for aid to dependent children under the Social Security Act. These field workers in no way replace the need for a trained resident child welfare worker in each of the 83 unserved counties. More emphasis is needed on helping children in their own homes and their own communities, so that fewer children will have to be placed in institutions away from their own people or in foster homes.

Some idea of the work of the Child Welfare Division is gained by observing the location of the 1,721 children under its supervision, as of July 1, 1944.

409 were in their own homes
222 were with relatives
771 were in foster homes
249 were in institutions
70 children were elsewhere
(jails, hospitals, maternity homes, etc.)

One of the problems in this field is the popularity of the denominational orphanage in Kentucky, which can be set up at will because no provision has been made for the licensing of child-care establishments. Present trends in child placing in social work are away from the use of institutions (except as a last resort) and toward the use of boarding or foster homes. Many people in charge of the small church orphanages hold children longer than is desirable. Surveys have shown that some of these establishments try to keep abreast of the times, but that in many others deplorable conditions exist, such as inadequate nutrition, poor schooling, and unnecessary severing of home ties.

In spite of these drawbacks, however, the denominational orphanage is meeting a most important need. As yet the state Child Welfare Division is not in position to give proper supervision to all children requiring such care. Its influence will increase as it sells its program to county officials, arranges to have more of its staff settled in communities where they can function as parts of those communities, and manages to reduce the turnover of its personnel. It could also render invaluable service to such an institution as Greendale, both in the investigation upon commitment and the follow-up care of boys and girls who have been released.

Other Types of Relief.—Other types of relief are handled either by the fiscal courts of the counties or by private agencies. In the former case, the magistrates usually decide how much to give to the needy people who do not qualify for old age assistance or aid to dependent children. Such contributions come from local funds raised by taxes. Obviously, in many counties the amount for relief is inadequate. There should be a state appropriation for general relief to be used in those cases of hardship where people do not come under categories now receiving benefits. Nor should

the county almshouses be looked to as a satisfactory solution. They should function as best as they can under present conditions but, when general relief funds are available, other provision should be made for their inmates. The almshouses then should be turned into institutions for the care of the destitute who are chronically ill. As matters now stand, there are funds, meager though they be, for the very young and the very old, but not for those who need assistance but are of intermediate age.

In addition to this expenditure of public money, there are in most towns private organizations, some of them nationally sponsored, promoting social welfare. The roll call of these private agencies in the state would be long indeed, as would the list of the services which they render. One of the unusual traits of the American way of life is the readiness of citizens to band together in organizations to alleviate some social ill or to take care of special groups in need. Generous contributions flow in to almost every such endeavor. As the programs become carefully worked out by experience and as the principles of good social work practice are brought into play, these organizations become permanent, indispensable features of community life.

In some towns these private groups are organized into a community chest, which raises their funds and otherwise supports their work. In those communities where such a chest exists most individuals can be sure that their contributions are used more wisely when given to the chest for distribution than when the individual himself seeks to donate to the needy directly. The extension of the community chest principle is seen during wartime in the work of the state War Chest. This organization co-ordinates the giving of citizens throughout the state, and prevents duplication of solicitations. The state chest idea will probably persist after the war, continuing to strengthen the work of privately supported welfare agencies.

PEOPLE WITHOUT JOBS

One of the basic insecurities of modern life, especially in cities but also in rural communities, is the fear of being without a job. Unemployment in the case of lower paid workers affects those who cannot put aside enough money to see them through periods between jobs. As far as industrial and commercial workers in

Kentucky go, this insecurity has been modified since 1936 by unemployment compensation, a feature of the Social Security Act, a federal law. The basic idea of this phase of the social security program is to build up a reserve fund, on the insurance principle, which can be distributed to eligible workers in periods of unemployment.

Anyone whose employment is covered by this law and who loses a job is entitled to compensation for twenty weeks. The amount depends upon the length of time he has been contributing and the amount of his earnings during that time. He is expected to seek work through the offices of the United States Employment Service. Once he does accept a job, even before the twenty weeks are up, his payments stop.

Welfare loads in many counties are high in times of slack work because large numbers of the people are not reached by unemployment compensation. They are, for the most part, either agricultural workers or domestic servants, for whom the plan does not provide. Consideration has been given to extending the benefits of the Social Security Act to these groups, and it will undoubtedly be done if a practical way of achieving this purpose can be invented.

One important attack on the problem of unemployment is that being made by business men throughout the state in the interest of postwar planning. After a thorough survey they are thinking through the problem and planning carefully for their own communities. In their attempts to provide jobs for men returning from war they are rendering an invaluable community service.

Nowhere do we see the interrelatedness of a state's welfare program and its economic life more clearly than we do in the study of unemployment. Where there are no jobs there is economic dependency; where there is economic dependency there is likely to be ill health, a greater probability of delinquency and crime, and numbers of children who miss out on their birthrights of education, good recreation, and the feeling of security.

ADULT AND JUVENILE DELINQUENTS

Ways of Looking at Crime.—There are two extreme attitudes people can take toward those who break laws. In the first place, they can invoke the principle of "an eye for an eye, and a tooth

for a tooth." This demands full retribution and considers a delinquent person to have forfeited forever his right to live in society. Another view, not as deep-seated and altogether too sentimental, sees the prisoner merely as a product of his environment, with society alone responsible for his condition. This view excuses the individual of personal responsibility.

As usual, the truth lies somewhere between these extremes. Individuals must be held accountable for what they do; in no other way could society continue to operate. On the other hand, retribution alone is no answer to the problem of crime. Rehabilitation on a scientific basis must be attempted. Many men and women involved in troubles with the law can be restored to society after a period of retraining. For such individuals, life in prison should be made like life in the community, insofar as possible, because the objective is to make them effective citizens. Each individual should be rebuilt physically, mentally, and socially. The social part is the hardest, because it involves teaching the individual that his actions must conform to the social values of the community. Whatever Kentucky does by way of penal reform will depend upon which of these attitudes the general public takes toward the lawbreaker.

Juvenile Delinquency.—Like fever, juvenile delinquency is a symptom, rather than a malady in itself. The basic approach to its control, therefore, is in the attack upon all related social problems. If the school systems are effective, if a community provides wholesome recreational activity, if churches and other organizations interested in youth reach the underprivileged as well as the privileged, if parents of dependent children receive assistance so that family units can benefit from the services of competent social workers, then juvenile delinquency will become less of a community problem.

But juvenile delinquents do exist and must be taken care of. People specially trained in the understanding of young people should act as juvenile court referees, but most Kentucky communities have no arrangements to make this possible. Large centers can provide their own juvenile courts and, in some rural areas, two or more counties could handle the problem in co-operation. One proposal along this line suggests that all cases of juvenile delinquency be under the jurisdiction of the circuit court

rather than the county court. This court, working in a larger area, could employ trained people to investigate charges and recommend the disposition of juvenile cases.

The Administration of Justice.—Laws and methods of administering justice do not usually keep pace with the complexity of modern life. Kentucky is no exception. Of course, there will probably always be a lag between court reform and economic and technical progress, but there must be constant vigilance to keep the lag as short as possible. One evil, far too common, exists in the case of those people too poor to give bond, who are kept in jail four, five, or six months before trial, only to be acquitted in the end.

Penal Institutions.—Fortunately, the state penitentiary, at Eddyville, where conditions of health, sanitation, and overcrowding have been acute, is being included in the state's current building program. The reformatory at LaGrange is one of the most modern in the United States, and is relatively new. Its chief further need is for a broader program of rehabilitation. There should be also one or more penal farms for misdemeanants to relieve the county jails, which are not satisfactory places of imprisonment. The county jails, incidentally, should be subject to the supervision of the State Department of Welfare.

In all of the penal institutions the prisoners should be classified more accurately so that they can be given the type of attention appropriate to their special requirements. Here the psychiatrist, the psychologist, the sociologist, and the psychiatric social worker all have important roles to play.

The Houses of Reform at Greendale receive periodic public attention. Nowhere is it denied that the physical plant is below standard and that staff services have been inadequate, even though recently improved. Most of the inmates are of lower than average intelligence, so the educational program reaches only a few. Most of them, however, are above average in manual skills and would profit greatly from training in trades.

One of the brighter spots in Kentucky's welfare picture is the school for delinquent and dependent children at Ormsby Village. This is not a state institution but is under the jurisdiction of the Board of Managers of the Louisville and Jefferson County Children's Home. A number of investigating groups have rightly

praised it as one of America's best institutions of this type. It is, therefore, unnecessary to journey outside the state to find a pattern for improvement at Greendale.

Probation and Parole.—Probation is the procedure by which a man convicted of crime is not sent to prison, but is allowed to remain outside on good behavior, under the jurisdiction of the court. Parole occurs after a prisoner has served part of his sentence, and is considered ready for trial release under supervision. One division of the State Department of Welfare deals exclusively with these problems.

Probation and parole are among the most effective means for helping a convicted man get another start in life. Just as a person convalescing from illness needs a period of physical recovery, so a convict in the eyes of the Law needs a period of retraining in social behavior. With the help of a sympathetic employer, understanding relatives, and an alert probation and parole officer, he can frequently adjust to the demands of the community. Kentucky's present probation and parole system has developed since 1937. Difficulties in administering such a program have arisen because the staff has been small and the personnel has had too little training. Only a well qualified person can guide men and women back into social usefulness after they have had a prison sentence or experienced the social disgrace of conviction. Kentucky needs better trained parole officers.

Another difficulty in such a program is in the selection of prisoners who will make good parole risks. Although there is a parole officer at each institution, each prison staff should include psychiatrists, psychologists, a full-time sociologist, and social workers who can investigate not only the individual's progress in the institutions but also the home conditions which will surround him once he is released. The present parole board has twelve members. These divide into panels which rotate among the institutions. Between July 1, 1937, and June 30, 1944, one-third of all cases considered for parole were recommended. The Division of Probation and Parole estimates that 80 per cent of all parolees are making satisfactory progress. Giving due credit to the incumbent members of the board, Kentucky needs a full-time pardon and parole board of three or five competent persons, politically disinterested,

and with no duties other than the careful study of all applications for parole.

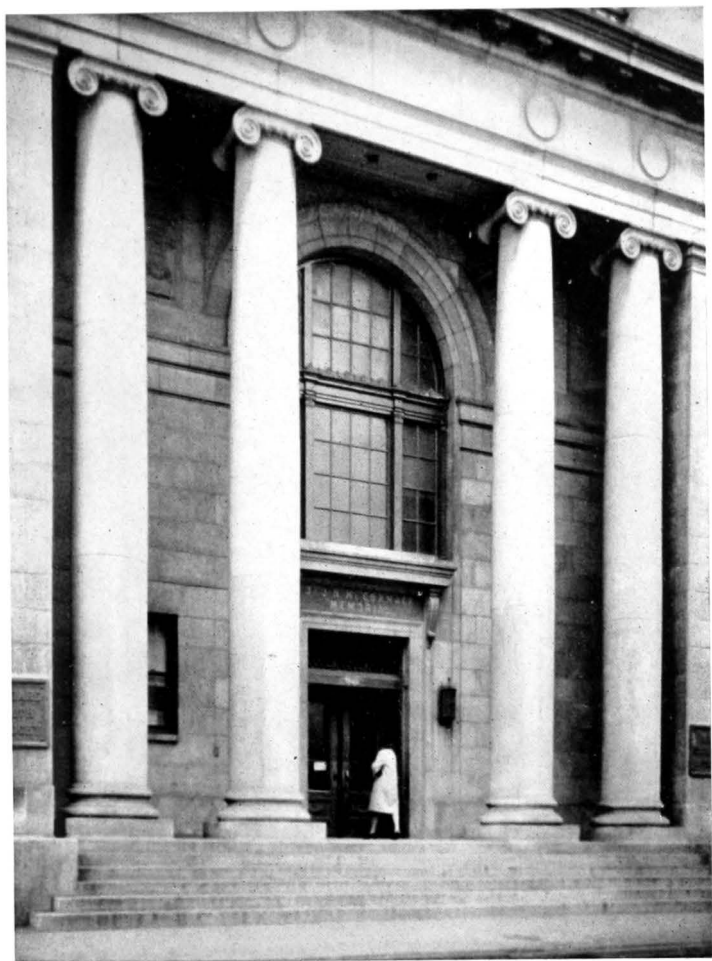
FUTURE PROTECTION OF HEALTH AND WELFARE

Three important principles must guide developments in the fields of health and welfare in Kentucky: The first is that organization for these services must be kept modern; the second is that up-to-date institutions must be maintained; the third is that the people who render these services must be trained and competent.

KEEPING THE ORGANIZATION MODERN

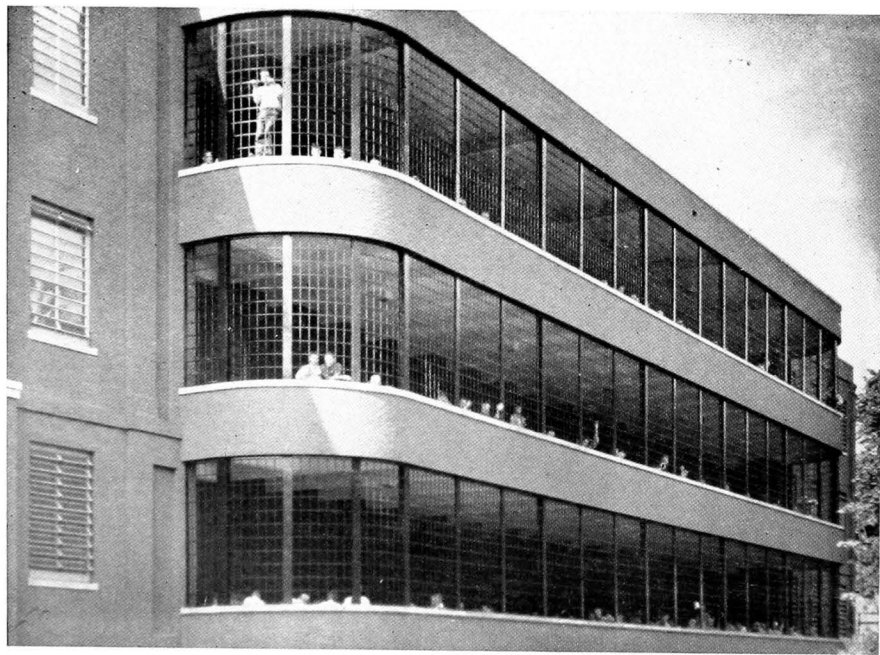
Organization gets out of date, sometimes even faster than machinery. It is often hard to change procedures, because there are always people who want to keep things as they are. Any large business which considered its organizational plan perfect over a period of time would quickly drop behind its competitors. Fortunately, with 48 states serving as social laboratories, new methods of organizing health and welfare services are constantly being worked out, and many of them will prove well adapted to Kentucky's needs. In judging any organization for health and welfare services the question, "What will we get in return for our money?" must replace, "How much is it going to cost?"

The greatest resistance to change comes at the county level rather than at the state level. The Department of Health has been very successful in establishing its 104 county units. The situation is different with the Department of Welfare. It promotes no county organization. The few county welfare departments which do exist are the result of local initiative and support. Their number grows slowly, but should be increased as rapidly as possible, looking forward to the day when all programs of welfare, certainly those of child welfare services, general relief and welfare of the aged could be co-ordinated under state supervision, thus insuring fewer gaps in social planning and also giving protection to qualified personnel regardless of the changes which occur in official county personnel. As things now stand in the county, the administration of relief rests fundamentally upon the county judge and the fiscal court. Technically, the granting of aid to individuals under the programs jointly financed by federal social security funds and state appropriations is in the hands of the state Division of



W. Brooks Hamilton

*The State Department of Health . . . is . . . an arm of the Kentucky
Medical Association . . .*



Mental hospitals are not asylums

W. Brooks Hamilton

Public Assistance. As shown above, these programs are Old Age Assistance, Aid to Dependent Children, and Aid to the Needy Blind. What happens to other cases of need rests wholly upon the discretion of the fiscal court, whose interests are primarily financial rather than rehabilitative. The courts may make grants that solve some immediate need, but do not restore an individual's self-respect, personal efficiency, or capacity for self-support.

The county judge, furthermore, is charged with the care of juvenile delinquents. A man can be elected county judge without any training in law, but even if he does have a law degree his formal law training has given him little preparation for counseling or handling juvenile cases. Nor is he likely to have the assistance of a trained investigator for getting at the real facts, many of which never come to light in a court hearing but can be discovered only in personal interviews by those with social work experience.

KEEPING INSTITUTIONS UP-TO-DATE

If Kentuckians could apply to their problems of welfare the same foresight, the same progressive spirit which has made America the greatest business and industrial nation on earth, they could get more value for their money and greatly reduce the amount of misery. Any business man wishing to operate his concern efficiently would try to do such things as the following:

- Provide an adequate physical plant, to be expanded when the need arose;
- install the latest and most efficient equipment;
- secure the most capable workers, not hesitating even to go out of the state for trained personnel, if necessary;
- delegate responsibility and hold responsible individuals accountable;
- provide enough working capital for the management;
- introduce new organization, equipment, or procedures just as soon as they had been proved superior.

Fortunately, an institutional building program is under way in Kentucky. If its purpose in the case of the mental institutions is merely to house patients rather than to hospitalize them, then it is following the out-of-date custodial approach. If the improve-

ments in the penal institutions are designed merely to segregate lawbreakers rather than to rehabilitate them, then the old-style prisons will be good enough. If the state schools for the blind and the deaf are obliged to get along with inadequate plants, their superintendents will have to curtail their training efforts accordingly. Part of the program for Kentucky's future must be a long-range building program which is regularly provided for, and does not depend upon some surplus left at the end of a fiscal year.

TRAINED PERSONNEL

Kentucky's greatest need in the welfare field is for properly qualified personnel. This is not to criticize the capability of those now engaged in welfare programs, but rather to wonder how they accomplish as much as they do with so little assistance. More and more, it is being realized that only specially trained persons are competent to handle most of the cases of dependency, delinquency, or mental illness. The older view has been that those who held the purse-strings, by virtue of their power to spend funds, knew best how to mend broken lives, set the young offender straight, or determine which people were in need of assistance. But now, busy officials, who no longer know most of the people requesting financial aid, are finding it helpful to depend upon investigation by a trained professional staff.

The most effective ways of building up properly qualified personnel in state agencies and institutions are three in number. First, there must be adequate compensation. Experience in business has shown that it is poor economy to get the cheapest labor to do a technical job. Wages and salaries must be large enough to attract the right kinds of persons. Second, training facilities should be provided, preferably within the state. Some agencies already have introduced short courses, in-service training under supervision, and in the case of student child welfare workers, scholarships are provided at recognized and approved graduate schools of social work. Other divisions should have provisions for educational leaves. The state needs not only trained social workers but also, because it is predominantly rural, many of these workers must have a background of rural life. Furthermore, standards which are set must be maintained when personnel is employed; nor should political affiliation and party loyalty be considered im-

portant job qualifications. Finally, workers should feel secure in their jobs. Under the state merit system a beginning has been made here. A change of administration in Frankfort or in a county should not be the cue for another mad scramble for positions. Is it fair to the boys and girls unfortunate enough to be in Greendale that this institution had twelve superintendents in twenty years? Inefficient personnel can be weeded out without destroying the continuity of an administrative program.

ELIMINATING SOCIAL WASTE

The health and welfare of Kentucky's citizens depend upon intelligent planning in terms of the principles just set forth. But they also call for the realization on the part of each Kentuckian that in the long run he will prosper as others prosper. His good health is dependent upon the good health of his neighbor and his welfare upon the satisfactions which fellow-Kentuckians enjoy.

Although this chapter has had to deal largely with the care of those who need special treatment or custody, the more significant aspect of the problem—prevention—is implied on every page. The facts and figures presented here should show the costliness of social waste and the necessity of avoiding this waste wherever possible. Just as the efficiency of a housewife or the management of a plant can be judged by what is thrown away, so the progress of Kentucky will be measured by the way it reduces its loss of human energy revealed in disease, dependency, and delinquency.

Chapter XIII

GOALS FOR KENTUCKY

BY HOWARD W. BEERS

All the resources considered in foregoing chapters are involved in current public discussion; they are of immediate importance to the welfare of Kentuckians, and their use presents certain problems that can be solved entirely or in part by the action of the people of Kentucky. It is not to be inferred that the problems of resource use in Kentucky have no relation to the larger currents of national and world affairs; the discussions here do not assert the independence or isolation of the state. They merely present the Kentucky end of the problem with emphasis upon what Kentuckians can accomplish by their own effort.

Not all Kentucky resources are included. In a larger book there might be consideration of folk literature and music, of merchants and their stores, of organized group strength as in the service club, the chamber of commerce, the farmers' organization, and the labor union. There might even be extended comment on special-feature activities such as the breeding of fox hounds or the racing of horses.

Comparisons have been made between Kentucky and other states because it is helpful to know whether Kentucky's position is above or below the average for the nation or for neighboring states. The comparisons have also shown certain trends, and they have measured progress in the use of some resources. The most important question raised by these comparisons, however, is, what is the present status of the Commonwealth in relation to the position it may reasonably plan to have in the future?

It must be recognized, of course, that Kentucky's coat is one of many colors. Manufacturing is localized in counties along the Ohio River; the most productive farms are in the Bluegrass, the Pennyroyal, and Purchase subregions; the coal is in two fields—eastern and western. Hence, behind each generalization about



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... one part of the problem is to increase the ... efficiency of output per man ...



W. Brooks Hamilton

*. . . the greatest opportunity to increase incomes . . . lies in the
improvement of agriculture.*

Kentucky's income, industrial opportunity, agricultural production, or other needs and resources, one must seek for possible exceptions or special applications to particular sections. Kentucky is neither northern nor southern, eastern nor western, but somewhere within it there are little replicas of all the regions. As a whole of many parts, Kentucky requires a diversity in planning that will match her natural variety.

In each chapter there is some attention to history, some to the current scene, and some to the future. Many suggestions and recommendations are presented; some with assurance, others with hesitation, because the problems involved are not well enough understood or because answers have not yet been clearly developed. These suggestions and recommendations are a set of unfinished designs for Kentucky's future.

FROM BIAS TO BALANCE IN ATTITUDES

FACTS AND OPINIONS ARE BOTH IMPORTANT

Some of the affairs of mankind can be arranged by reference only to facts, but most of them involve also the use of opinions. People usually agree better about facts than about opinions, which depend as much on experience and judgment as on information. Then, too, each man claims the right to his own opinion, although he may have ignored the obligation to be careful in forming it. In outlining goals for Kentucky, the authors have given opinions and made recommendations with which some persons will disagree. These opinions should carry weight, however, because they are advanced by men who have had training and experience and who have studied the available facts.

There are some differences of opinion even among the writers, and some conflicts of interpretation. That is to be expected, because many resources have different and competing uses, and choice is not a matter for mere arbitrary decision. Should Kentucky remain a rural state and improve the standards of rural life, or should it move toward industrialization? Should migration of people from the state be promoted or opposed? Should the costs of education and welfare programs be met at the expense of highways? Should historic shrines be preserved? Should there be

planned efforts to serve tourists? Should marginal lands be diverted to forest production? Should they be under private or public control? Should there be more attention to merit in the selection of public employees? How should the disposal of wastes from mine and factory be controlled? Should a stream be used for power or for fishing? In making designs for the future, choices are inevitable and opinions will differ.

BREAKING THE CRUST OF COMPLACENCY

Discussion of Kentucky's resources could be so quiet, so respectful of the *status quo*, as to be completely non-stimulating. Flattery is pleasant to give and delightful to receive, but its effects are too relaxing. Complacency is neither constructive nor forward looking, for self-satisfied people are not progressive. If what was good enough for fathers is good enough for sons, the situation is discouraging. Everywhere there is some complacency, smugness, and satisfaction with things as they are, but in Kentucky there has been too much of it. The object of this book, therefore, is to stimulate, not to relax, its readers. A review of the limitations and misuses of resources in the Commonwealth and of the unseized opportunities to make them more productive should be disturbing. It should destroy the false comfort of complacency; it should arouse the anger of Kentuckians—a constructive wrath which would issue in a purposeful selection of goals and in strong and steady progress toward them.

Kentuckians have anger in latent abundance, but its energy is often misdirected. It rises against the man who criticizes, although criticism is usually not insult. The angry man who responds to a critic by striking him had better use the energy of wrath to improve the condition that has been judged. When bridled and harnessed, anger becomes steady and powerful, and it builds new things better than the old. Its power for improvement is like that of a waterfall over which the crest of flood tumbles; if there are turbines and generators, the energy of falling water shoots through the electric wires of a whole region to drive its engines and light its homes. The anger of Kentuckians must be aroused and it must then be released as an even flow of human effort to make things better.

CONFLICTING LOYALTIES

Loyalty is a great virtue in the country neighborhood, and many things can be forgiven if only a person is loyal. It is easy to have this virtue in the small community because one can usually be loyal to family, friends, church, and school without conflicts. Most of the parts of a rural community respond to the same ideas; they are so similar to each other that ordinarily a person can be loyal to them all. But the problem is different in a large community where there are many people and groups, some of them at variance with each other, yet each demanding loyalty. How can one be faithful—all at one time—to his family, his labor union, his employer, his church, his government with all its laws, his political party, and perhaps to certain moral principles? Modern civilization confronts each person with a problem of conflicting loyalties. Some try to solve it by refusing loyalty to anything, responding only to whatever pressure is strongest at the moment. Others arbitrarily select some one thing or group to be loyal to, ignoring all other claims.

The best solution, however, is to consider the demands of each person or group, and to try to arrange them in some order of importance. Then it will be found that there are some principles and values with greater claims. Loyalty to some principle of right conduct may lead to disapproval of some action taken by an employer or a union or a politician. This disapproval is not disloyalty—it is loyalty to a higher value, a reminder to the employer or the union or the politician that all are called upon for the same loyalty. Such a solution is demonstrated in war when people and groups who might otherwise quarrel resolve their conflicts in adherence to a common cause. It is the only really satisfactory solution for a problem of conflicting loyalties.

But the man so loyal to his dead grandfather that he would shoot a neighbor in revenge for some real or fancied injury to the ancestor, or to a political party that he would "vote for a yellow dog," does not have his loyalties well arranged. The man so loyal to some special interest that he will maneuver to get legislation helpful to him, but harmful to the general welfare, does not have his loyalties lined up right.

One goal is the stimulation of loyalties aligned with what is the best in Kentucky. Loyalty to the past—to tradition merely

because it is tradition—is often misplaced. The achievements, not just the events, in history command this generation to build upon the solid foundations already laid. By the same principle Kentuckians must sweep away what now appear as false foundations. Loyalty to Kentucky must come to mean loyalty to the *best that can be developed*—not just anything and everything related to Kentucky.

The first and most fundamental goal, then, is an attitude of desire for improvement, an aroused public opinion that rejects complacency and that dedicates popular effort to higher values even than are provided by an illustrious past.

INCOME: A SUMMARY OF AVAILABLE RESOURCES AND THEIR USE¹

What Kentuckians have in the way of resources and what they do with them is shown to some extent by the incomes they receive. Income data are thus a summary of the quantity and quality of resources together with the effectiveness of their use. It is well known that the average income in Kentucky is less than the average for the whole nation: that is the essence of the problem. It is important, therefore, to determine whether the state is making progress in this respect.

The following paragraphs and the accompanying tables are not meant to be a research study of this problem, but illustrations of an approach that might be taken to it. The comparisons that will be made between Kentucky and the national average do not imply that the national average is an ideal, but merely that the nation, which has a higher average income than Kentucky, can be assumed to be somewhat better balanced in industrialization than this state. The use of dollar income figures does not imply that they are better than real income figures would be, if they were available by states. There is some question whether the cost of the same scale of living is greater in the city than in the country, in a state largely urban than in a state largely rural.

The comparable data go back only to 1929. They indicate that, in spite of the fact that the total income in the state increased between 1929 and 1941, the gain was no greater than that of the

¹ Written by Edgar Z. Palmer.

TOTAL INCOME PAYMENTS, KENTUCKY AND THE UNITED STATES 1929 AND 1941

TYPE OF INCOME AND PLACE	1929		1941	
	AMOUNT IN MILLIONS OF DOLLARS	PER CENT OF TOTAL	AMOUNT IN MILLIONS OF DOLLARS	RATIO TO 1929 (PER CENT)
All Incomes				
United States	82,538	100	91,621	111
Kentucky	966	100	1,075	111
Agriculture				
United States	6,458	8	7,240	112
Kentucky	176	18	163	93
Other Commodity Production				
United States	21,782	26	27,475	126
Kentucky	206	21	272	132
Distribution				
United States	16,969	21	17,538	103
Kentucky	219	23	208	95
Service Industries				
United States	16,013	19	15,066	94
Kentucky	153	16	158	103
Government				
United States	4,938	6	8,197	166
Kentucky	55	6	106	193
Other Industries				
United States	16,378	20	16,015	98
Kentucky	157	16	168	107
Labor Income				
United States	53,530	65	64,396	120
Kentucky	577	60	706	122
Profits				
United States	13,629	17	14,684	108
Kentucky	251	26	254	101
Investment Income				
United States	15,380	19	12,540	82
Kentucky	138	14	116	84

Income payments from Survey of Current Business 22:7:23, July, 1942.

nation. The state has not drawn any closer to the national standard. There is, however, a trend toward better balance among income sources. In every case for which, in 1929, the percentage received from an industry was less in Kentucky than in the United States, the state increased faster than the nation from 1929 to 1941. Examples are: "other commodity production" (which includes manufacturing), "service industries," and "other industries." In general, Kentuckians were low in labor income, and came up faster; they were likewise low in investment, and declined less

than the nation. On the other hand, in those cases for which Kentucky had more than a proportionate share in 1929, it increased less than the nation, or actually declined. Examples of this trend are: "agriculture," "distribution," and "profits" (which are largely from agriculture and small business). Thus a lack of balance tends to correct itself in time, but it would take more than forty years at the present rate to bring Kentucky's distribution of industries into line with that of the nation, if such a distribution, especially an increase of manufacturing, were to be selected as a goal.

Income figures may be used as a measure not only of progress but also of diagnosis. The per capita income payments in Kentucky are only 55 per cent of the national average. This is a tremendous differential: to what is it due? One cause has been mentioned above, namely the larger proportion of the less remunerative industries such as agriculture and distribution. The data show that this is not the only factor.

AVERAGE INCOME OR REMUNERATION PER CAPITA, KENTUCKY
AND THE UNITED STATES, 1939

OCCUPATION OR INDUSTRY	UNITED STATES	KENTUCKY	
	AVERAGE IN DOLLARS	AVERAGE IN DOLLARS	RATIO TO UNITED STATES
All Incomes	539	297	55
Salaries and Wages:			
The Total Labor Force.....	833	516	62
Experienced Employees:			
All Male	1,614	1,289	80
Managers, etc., non-farm.....	2,901	2,506	86
Professional	2,582	2,122	82
Clerical	1,784	1,537	86
Craftsmen, etc.	1,698	1,487	88
Operatives	1,355	1,088	82
Laborers, non-farm	1,012	816	81
Service Workers	972	749	77
All Female	893	710	80
Manufacturing:			
Salaried Officers	5,432	4,825	89
Salaried Workers	1,961	1,758	90
Wage Workers	1,153	986	86
Wholesaling	1,680	1,214	72
Retailing	1,129	960	85
Service Industries	1,101	851	77

Assembled from Survey of Current Business, 22:7:23, July, 1942, and Census of Population, Manufacturing, and Business.

In every industry, even in manufacturing, the Kentucky average wage and salary is low. Even if the balance of industries were completely readjusted, this factor would still keep Kentucky incomes down. The bias against Kentucky ranges from a little more than 10 per cent in the better jobs to about 20 per cent for common labor. It would be hard to find a more plausible reason for this differential than is provided by the idea of a relative labor abundance. If Kentucky has such a relative abundance, it can be overcome either by increasing migration, especially of workers who compete for income at the lower levels, or by increasing the number of jobs available. The increase in the number of jobs would have to be great enough to employ not only the present population, but also those who now leave Kentucky, and an increased stream of workers from states farther south. If an expansion of this magnitude does not occur, the average income of the state is unlikely to rise above 80 per cent of that of the nation.

An examination of other figures for 1939, not shown in the tables, indicates that the value of products from farms, manufacturing, and other industries is less per worker in Kentucky than in the nation. Manufacturing is 95 per cent as efficient financially as in the entire nation, retailing 92 per cent, service industries 77 per cent, wholesaling 67 per cent, and agriculture only 64 per cent. It would seem that one part of the problem is to increase the dollar efficiency of output per man, all along the line. This probably comes right back to the low wage levels, because lower wages mean that labor can be and is used in less efficient ways.

There is, then, a gradual correction taking place to reduce the unbalance in the distribution of industry in Kentucky. The state is handicapped, however, by a low income and wage level, due in part to a relative abundance of labor and in part to inefficiency in the use of her manpower.

THE ROUNDED VIEW: PROBLEMS AND OBJECTIVES

THE HERITAGE

One of the lessons of history is that some acts of progress are postponed too long. There was delay in the passage of land laws, there was delay in constitutional reform, there was delay in the development of education. Another lesson is that the wrangling

of sectional and other special interests retards the achievement of general welfare. Another is that politics can become an end in itself rather than a means to progress. Still another is that abundant natural resources are too often wasted. And still another is the lesson that improvement of life in Kentucky depends not only upon events in the nation and world, but also upon the efforts of Kentuckians.

But more important than any of these is the lesson that none of the historical handicaps to progress prevailed permanently. Land laws were passed, the constitution was improved, conflicting interests were reconciled, popular government was strengthened. The church and the school and the press grew in quality and in influence. Farms and mines and factories became productive. There was improvement in social and economic organization. Learning these things from history, this generation should move into the future without repeating the earlier errors of delay, contention, ignorance, false pride, and waste; it should move with intelligent, aggressive, and considered designing toward the goal of the greatest possible general welfare. The task of Kentuckians today is to prepare a greater heritage for their descendants than was received from their ancestors. By any lesser accomplishment they would betray the greatness of Kentucky's tradition.

THE PEOPLE

Kentucky is home to nearly three million people, and it *was* home to a million more who have left. Most of its residents live in the country, on farms and in small towns. In terms of the division between rural and urban residence, Kentucky's present rurality is equal to the nation's in 1880. Births outnumber deaths, and population increases rapidly. If it were not for out-migration (movement out of the state), population in Kentucky would be from one-third to one-half again its present size in a generation (30 years). With reference to the present use of resources, both physical and social, at least one-third of the state's area is thickly settled indeed. The needs of living Kentuckians—to say nothing of generations unborn—require that resources be made more productive. The great responsibility of the leaders of today is to arouse a general desire for better living, to promote the use of knowledge, and to devise ways for applying human effort to ma-



A woodlot and a pond should be part of every farmer's plan

W. Brooks Hamilton



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Kentuckians should tidy the nooks and crannies of a beautiful domain

terials so effectively that all mouths may be well fed, all bodies strengthened, and all minds trained.

Yet, the large out-migration disturbs many thoughtful Kentuckians. It cuts pride that one from every three or four persons born in the state has left it. Furthermore, migration from a rural community to the city is costly at the point of departure. During his childhood and youth, the family and community are making an investment in each person. The constant migration of youth in large numbers removes both principal and interest from reach of the investors, and is not compensated by a reciprocal contribution from the cities to which migrants go. But for those who move, there is no alternative unless opportunities at home equal those in other places. Income studies show an abundance of labor, especially in low-paying jobs, and in spite of the out-migration which has occurred. Certainly the task of increasing opportunities at home lies heavily on the leadership of Kentucky today.

An important aspect of the outward flow of people is the loss of leadership. As for this problem, Kentuckians have at least two things to do: One is to learn to want leadership, accept it—and pay for it; another is to support adequately the educational facilities that will develop it.

The urge to curb migration presents at least three goals for action: (1) Increase the productivity of human energy in Kentucky and provide for the use of some labor that now migrates from the state. (2) Train Kentucky youth to work with greater skill at home, or to compete successfully for jobs in the communities to which they go. (3) Support elementary schools, high schools, and colleges well enough that ambitious Kentucky youth who will be leaders wherever they go may have as good an education within the state as they would get by going elsewhere.

THE LAND

Agriculture is the leading industry in Kentucky. The greatest agricultural problem is the low income of farmers, a result of over-population and loss of soil fertility. Some people who have thought about the future of the South have taken views that classed them as either agrarian or industrial. It now appears that in Kentucky, agriculture will continue to engage more of the people than any other resource or group of industries. In this sense Ken-

tucky's future, like its past, will be agrarian. Hence, the greatest opportunity to increase incomes for the largest number of people lies in the improvement of agriculture. Slight increases for all people with low incomes would raise the state average much more than large increases in the incomes of those who now have the most. Herein lies the great challenge to farmers and agricultural workers.

The first need is to halt the loss of soil and to hold fertility. It is no accident that the old Greeks spoke of Mother Earth, for earth is indeed the supporter of life; nor is it an accident that the earth has been called holy, for earth has a place in the divine scheme of the universe. It is regrettable and to some extent accidental, however, that man has been so careless. He must learn to husband, not exploit, fertility. Only a few people seem to understand that the conservation of soil is imperative. Although the facts are clear, habits of waste are strong and of long standing. If Kentucky farmers do not change their habits of land-use faster in the future than they have in the past, their sons and grandsons and great-grandsons will fall to lower levels of living, and this generation will be blamed rather than its ancestors. The forefathers of present-day Kentuckians were extravagant, wasteful, careless—but at least they were unconscious of the harm they were doing. If people today are wasteful and careless, they are wanton, for they know better.

Many ways to improve Kentucky agriculture are known. Others are continually being developed by scientific experimentation and practical testing. The problem is to spread the news convincingly. The layout of many a Kentucky farm must be changed according to the requirements of modern conservation husbandry in a grass-livestock-tobacco economy. There must be provision for contour cultivation, terracing, long rotations, strip cropping, sodded waterways, diversion ditches, winter cover crops, proper fertilizing and seeding. The most important livestock will be sheep, dairy cattle, and beef cattle, and there will be specially developed breeding herds. Livestock must be fed, bred, and cared for more effectively if farm people are to make their labor most fruitful.

In the general structure of Kentucky's agriculture, it is important that certain items of progress occur. Landlords and tenants must put in better order the relationships between them; the in-

terests of each—and of the soil—must be safeguarded. Credit aids to farm ownership are necessary; improved marketing practices, such as the grading of some products, must also be developed; more efficient use of human labor must be arranged; the farmer's home must be improved, at least enough to make it compete in desirability with the townsman's home; agricultural research and education must be expanded.

Forests can and must be restored in the interest of conservation, income, and recreation. In some formerly timbered areas of Kentucky, the forest primeval has been reduced by two-thirds, and what remains is yearly threatened by fire. More local, state, and national forests should be developed; public fire protection for private tracts is needed, and especially it is important that farmers be convinced that timber is a marketable crop that can be harvested profitably at intervals. The growth of local wood-working industries holds great potentiality in Kentucky.

THE MINE AND THE WELL

Kentucky's output of coal is exceeded by only three states, although intensive mining has developed within a few short decades. Some sites are already abandoned, but there are other mines to open. In the foreseeable future, coal will continue to be an important part of Kentucky's economic life, affecting income, social organization, and even politics. Coal is such a complicated substance, containing the elements for manufacture of literally thousands of useful objects, that it is a twentieth century blessing to any society which is well supplied. It is Kentucky's good fortune to have her cellar full of coal.

Petroleum was found in Kentucky more than a century ago. Known supplies are important, but they may have reached their peak in yield. One of the exciting searches of the future will be exploration of the structural basins east and west of the Cincinnati Arch, Central Kentucky's dominant geologic feature. The discovery of more oil at any particular location can hardly be predicted; the discovery of more oil within certain regions in Kentucky would be a less risky forecast. Then, in the future, should supplies of liquid petroleum ever fail, Kentucky's storehouse is full of a great supply of oil shale, from which petroleum can be distilled.

The peak of production in natural gas is perhaps yet to be reached in Kentucky. From the gas well flows a source of heat and power that can be piped to any desired location. Continued production of natural gas will be important to industrial activity in Kentucky.

Rock asphalt; fluorite and other vein minerals; clay and building stone; limestone for agriculture, cement, rock wool, and other uses; sand and gravel—all are available in liberal supply as raw materials from which man's ingenuity and labor may devise the products of a modern civilization.

Hydroelectric power is a benevolent but sleeping giant in Kentucky. The transfer of energy from coal to steam and then to electricity is now the chief practice, but the energy of falling water could be used to supplement or even replace it should coal be deemed more necessary for other purposes. Of course, the backwaters flood farms and occasionally a town, and disturb the character of wildlife. By some, a dam will always be damned. By others, it will be viewed as a new release of energy for the public good. In the long run, energy that can be made available only through consumption of irreplaceable resources will be largely supplanted by energy that can be tapped without robbing nature's storehouse.

WILDLIFE RESOURCES

There is a widespread idea that most land not suited to agriculture is wasteland, but this view is mistaken. It is true that approximately half of Kentucky's land is not tillable, but it is not true that this vast area is without important uses. Foremost of the claimants to this acreage are the forest and its wildlife. The call to conservation of natural resources in America was first heard from friends of the forest, nature lovers and sportsmen. It is their voice again which reminds Kentuckians in this generation of one of the most important opportunities for development in the future—that of aiding nature in the restoration of plant and animal wealth. Wildlife is clearly a resource in the utilization of which Kentucky can rise to pre-eminence. The wise use of tillable land is the direct concern of the farmer; the wise use of non-tillable land is partly the farmer's problem, but equally the responsibility of the community and the general public.

Planning for wildlife development requires the establishment of a state biological survey for research, service, and promotion. At present there is not even an approximate inventory of Kentucky's wildlife resources, nor is there any scientific analysis of problems. There is an almost complete lack of unity in the conservation program. One need is for a study of stream use, which is complicated by unbalance among the competing claims of drainage, water-supply, sanitation, flood-control, navigation, power, and biological resources. Another need is for a survey of game, to determine, among other things, whether the scarcity of cover is already so serious as to jeopardize certain species.

Nature's face has been badly scarred in Kentucky—but her beauty can be renewed if man will turn surgeon. Bare and gullied hillsides can be reclaimed by plants and trees. Forestry, the propagation and protection of wild plants and wild animals, stream management, and general scenic grooming can be among the means of restoration.

Wildlife is well conserved in the public forest, the state park, and the game preserve, and more of these areas must be established. Fish of a hundred and fifty species, grouse, quail, wild turkey, deer, beaver, muskrat—and even bear—should again find suitable haunt in Kentucky. A woodlot and a pond should be part of every farmer's plan in areas where they are practicable. At the community level, county and municipal forests and parks should be widely established.

Kentuckians should tidy the nooks and crannies of a beautiful domain for their own sake, but in so doing they would develop a profitable business with tourists. Already large before the war, tourist trade can become a major Kentucky industry when people in the United States have resumed their peacetime mobility on a new and grander scale.

If work on programs of conservation could begin in many parts of the Commonwealth during the early postwar months, it would serve to restore not only the abundance of nature, but also the health and strength of men returning from battle.

MANUFACTURING

Raw materials from Kentucky are used in many manufacturing industries, but, like so much of Kentucky's labor, they migrate be-

fore use. It would be unrealistic to expect this outward flow of basic products to stop. It is sound and desirable, however, to plan for suitable manufacturing enterprises that would employ local labor and local raw materials when such manufacture can take place more efficiently here than elsewhere. The location of a factory is determined by matters, many of which are beyond the control of a community. The source of raw materials, the position of markets, and previously established locations of other manufacturing can hardly be changed. The resourcefulness of communities and their leaders, however, can alter many other conditions that affect factory location. A next step for Kentucky to take is the study of manufacturing possibilities in various communities. The history of manufacturing includes a record of casualties, and it would be shortsighted to proceed with random and ill-considered invitations to industry. But there are enough outstanding examples of successful local factories in Kentucky to demonstrate the feasibility of other developments. One concern in a little mountain town makes golf club handles; another—in another town—weaves specialty products; others make fine pottery from Kentucky clays. A complete list would reveal the presence of many such manufacturing developments.

One of the most promising suggestions is that of a smokeless fuel industry, manufacturing a new type of coke in plants built near the coal mines. Another important suggestion is that for the fabrication of plastic articles. Still another is for the development of local wood-working industries step-by-step with the restoration of timber resources. New, relatively small, local industries in a number of communities are a more reasonable expectation than the movement into Kentucky of old, larger industries already well established at other locations.

One important factor is the public attitude toward industry. Traditionally, Kentuckians are rural-minded; the laborer's lathe has not seemed to them as wholesome a symbol of production as the farmer's plow. Without diminishing their regard for agriculture, people in many communities must acquire equal respect for the factory. One reason for the slowness of industrial development in Kentucky has been an emotional resistance to it on the part of many community leaders. Attitudes can be changed, however, and if people in Kentucky want more manufacturing, they

can have it. Certainly they will *not* get more manufacturing while attitudes remain antagonistic. A genuine wish to raise incomes through increased manufacturing, and a sound but aggressive program of research and planning, are first objectives in the movement toward the growth of manufacturing in Kentucky.

TRANSPORTATION

Boats on the Ohio, and eventually on the Tennessee and Cumberland rivers, will bear some share of Kentucky's traffic. Pipelines will lead the gas and oil to the scenes of their use. Airborne carriers will crisscross the skies over Kentucky, and many communities will build ports to receive them. But the biggest jobs will fall still to the railroad and the highway.

The question of freight rates is more complicated than the feelings of those who have to pay them. It seems clear that in the past Kentucky has shared some of the high-rate handicap of other southern states, but gradual improvement has occurred until the instances of most severe discrimination have been largely corrected. There still are barriers, however, and pressure for their removal is appropriate. In the foreseeable future, Kentucky shippers may find their situation as tolerable as it would be in neighboring states to the north. The network of railroads in Kentucky has been laid, and there is not likely to be much increase in track mileage. For the larger cities, railroads still pose problems of suitable locations for depots, and the elimination of hazardous street crossings. For the one-fourth of Kentucky's counties not traversed by rail, the perfection of highways is all-important.

Although nearly every community has or is near an all-weather road, hardly more than one mile in five of Kentucky's road system has a high-type surface. This proportion must be increased, even though hills to climb or go around and rivers to cross result in high costs of construction and maintenance. The farmer needs roads to market his produce, the merchant and manufacturer need roads to get their supplies and deliver their wares, the citizen at large needs roads—wide, smooth, hard and straight—so he can drive in comfort and safety to do Kentucky's business and to see Kentucky's beauty. Higher passenger vehicle license fees, higher gasoline taxes, and borrowed money are three sources

of funds that would permit great improvement and would help to prepare Kentucky's roads for the trucks and cars of tomorrow.

GOVERNMENT

Popular interest is the nourishment of popular government. In this sense, the chief ailment of state and local government in Kentucky is malnutrition. Out-of-date rigidities and restrictions in the Constitution retard progress, because too few citizens know about them or are interested in their removal. Kentucky's constitution should be a broad charter; the special rules to make it effective should be formulated from time to time by the lawmakers to fit the current need. It is a wise thing to prevent the waste of public money, but this purpose is not well served in 1945 by the specific qualifications that limit salaries, local tax rates, and public indebtedness, even though these restrictions may have been acceptable in 1890. Abiding faith in constitutional government would be strengthened and not weakened in Kentucky by popular action to modernize the Constitution.

It is wise also to make certain that control of government will not pass from the people. But is it wise to require each specialized officer of state and local government to run for office? Certainly, the men who make the policies should be chosen directly by the people. But for others—say the chief officers of the school and the court—would not the energy used in "running" be better used in working on the job? Who would propose electing policemen or health nurses? Ballots in Kentucky should be shortened.

The study of each resource in Kentucky discloses need for long-range planning. In the interest of all the people, government should call upon the specialists in various fields to pool their knowledge and to formulate broad lines of development for a sound agricultural, mining, and manufacturing economy.

There is more heat than light in most discussions of taxation. Since the property tax has become less dominant in Kentucky, the crucial questions concern improvement in assessments and collections, revision of tax limitations on local governments, and continued advance in general tax administration.

In the spending of public funds there may be some competition between education, welfare, and highways—the three things for which Kentucky state and local governments spend well over

three-fourths of all their money. Lest the outcome be contrary to the public will, citizens must become informed and interested in the problem.

Long strides have been taken in desirable reorganization of the state government. Only short ones have been taken in local government. For effective and economical operation there are too many local units. This does not mean necessarily that all counties should merge, or that all schools should consolidate, but it does point to more collaboration among the units. More definite fixing of administrative authority in the county is also desirable.

There is question whether it is wise for one public servant to perform too many kinds of tasks. Would it not be better if managers managed and judges judged? The whole problem of government personnel is still unsolved, largely because of public apathy toward merit and competence. The prewar achievements of the state merit system are a commendable basis for postwar personnel improvements.

Reports, hearings, audits, and committees of various kinds have come into approved use, but the greatest problems of government in Kentucky stem from the citizens' indifference. With interest aroused, by the help of facts, and with the counsel of men who have studied such problems, the people of the Commonwealth and its local units will come to recognize and accept the answers to questions of governmental improvement.

EDUCATION

The educational resources of Kentucky have been put to great strain during the war. The continuation of educational services was made possible largely by the loyalty of teachers who remained at their posts in spite of more lucrative opportunities in industry and government service. Lines of progress toward equalization of common school facilities have become established, however, and the legislative provision of a 15 million dollar state school fund for 1944-45 was a long step forward. Children are abundant in Kentucky, and their need for education is one of the state's chief problems.

In an over-all review of educational needs, one of the most prominent requirements is for leadership. Personnel for the State Department of Education must be immune to political pressure,

yet it must be accountable to the public. Appointment, rather than election, of the state superintendent is essential for continuity of superior professional leadership. Training for local school board members should be undertaken; county superintendents should have more funds and more adequate staffs; teacher salaries still need upward adjustment. School terms must be lengthened.

The use of local materials in teaching is now recognized as the foundation of a good school curriculum. When citizens understand the importance of this idea, they will insist upon its application. They will want their school teachers to know and understand local resources and problems, they will want resident teachers, flexible programs that fit into the work of other community agencies, improvement of the local environment, and more effective emphasis upon both cultural arts and vocational preparation. To permit some of these adjustments, it will be necessary to remove the legal restrictions that now keep many localities from increasing their taxes for school support.

As provision for elementary and secondary schools is made more adequate, the plight of higher education in Kentucky becomes more apparent. For several years, the demands for college training in this state will be even greater than in many sister states, because a postwar increase will be superimposed upon the prewar trend, which was rapidly upward. Full growth of the institutions for higher learning in Kentucky had not yet been reached; similar institutions in other states had already become mature. There will be an unprecedented flow of youth into the colleges, and the educational system must not fail them. Laboratories, classrooms, dormitories, competent and scholarly faculties, will be needed as never before.

The need for education in the community outside of the classroom will also attain prominence. In particular, there must be expansion of adult education for farmers, laborers, and people in all other walks of life. In this development, the part that libraries can play must be recognized, and more libraries must be established. Whatever else may be decided about social security, education is now accepted as a "cradle-to-the-grave" necessity.

HEALTH

The most urgent health need in Kentucky now is the provision of doctors, nurses, and hospitals where the people need them. In some measure this problem will be solved as levels of income are raised. It would not be realistic, however, to expect a quick or complete solution. Group health insurance, either private or public, or both, is the only type of program yet proposed that holds promise of prompt correction. It is imperative that physicians and citizens agree soon upon sound procedures for the control of ill health, which is no less destructive than illiteracy. People need to be at least as alarmed over the ravages of disease as they are about any specific plan for organizing to control it.

The presence of public health units in 104 counties justifies pride in Kentucky's progress. Extension of this service to the other 16 counties should not be postponed. The provision of six districts with sanatoria is a gratifying step toward control of tuberculosis. In time it will be followed by other efforts that will greatly reduce the wastage of human life from this disease. The return of soldiers will increase the amount of public attention to mental illness. In caring for these men, Kentuckians should come to realize more clearly than before that many victims of mental illness can be restored to normal living, and that institutions for them are hospitals for patients in need of cure rather than asylums for inmates in custody.

Health is a goal for education, too. While immediate problems of restoring lost health are being met, the educational forces of the Commonwealth can work more strenuously for the maintenance of health. In the long run, prevention is a better goal than cure. Rural life especially has great resources for healthful living, and most Kentuckians are rural. The wartime emphasis upon home-production of essential foods and wise nutritional practices must not be relaxed. Healthy people can and must be taught how to remain well, for health is a resource to be cherished.

WELFARE

Is security a proper goal? This question may be asked in evaluating the various programs of public assistance. The idea of security is something like the idea of conservation; it is a floor and never a ceiling. It is a minimum goal or objective. The real

goal is full, well-rounded, complete living: a high standard of living in which there is opportunity for all to share. The too-frequent political discussions of social security completely miss the important points. In any society a person may be seriously handicapped through no fault of his own. In the old-fashioned days of life in the country, kinsfolk and neighbors closed around a case of emergency or permanent distress, providing a social strength to take the place of the individual strength that failed. Loss of health or earning power was compensated by strong family and neighborhood ties. What is called social security today is merely an extension to all society of what was once provided informally and automatically in the country neighborhood. It is really a negative rather than a positive value. It is like the doctor's treatment of illness, which is already a problem—not like preventive medicine, which improves health and keeps illness from happening. Whether one is conservative or liberal in politics really makes no difference so far, as this idea of social security is concerned. In a society which, at great cost, builds hospitals and employs doctors and caretakers to feed and cleanse imbeciles—who have no chance ever to live a normal life—certainly there is widespread approval of the social security idea. Questions will arise as to whose security shall be underwritten and how it shall be done, but social security as a goal is being generally accepted. Some will argue that security programs destroy individual initiative—but will sleeping on a board destroy one's efforts to find a comfortable bed? It must be kept in mind that "security" is a minimum and not a luxury provision.

Of course, help given to one who needs it usually makes the recipient grateful and establishes an obligation. A relief program may involve so much giving that it becomes very attractive as a patronage system, tempting the politicians to assume control. Some recipients may come to support only leaders who promise more. This is a problem that cannot be solved by eliminating relief or security programs. It is a problem in popular control over government. It involves setting up welfare programs on a basis of rules and regulations, operated with professional personnel.

In controlling delinquency, the goals of punishment and revenge are being replaced gradually by the goal of rehabilitation, which is more difficult to reach. One of Kentucky's most urgent needs

is better court and institutional procedure for the juvenile offender. The trend of progress is already encouraging, but there is a long road ahead. For all offenders, court procedure, institutional facilities, and systems of probation and parole are being improved; but these will be fully effective only as the public comes to understand the whole problem, and to view the criminal—especially the young one—as a recoverable resource.

THE DESIGNS

Designs for the future of Kentucky cannot be submitted in final form now or at any other time. Social planning is a task that the workers and leaders of each generation must pass to others who replace them. Arduously clearing and building, the pioneers began it all, and their successors labored with undiminished zeal. But the generation that takes this Commonwealth from war to peace must work as hard as the pioneers and with more attention to planning. In the twentieth century, man's affairs are many-threaded; they can be snarled and tangled, or woven artfully into fabrics of orderly design.

A complete review of all the resources in Kentucky would fill not one, but many books. Each resource is a problem, and thus an opportunity. Not all things can be done at once—especially if they are left to a few leaders. Many things can be done at once if the people of each community share in designing as well as in constructing the future. This is not to deny Kentucky's dependence on other states and nations. The world is a large family, and what happens in Hazard is not entirely apart from what happens even in Irkutsk. A stable world and a sound nation are required for fulfillment of life in Kentucky but for each person, social and economic designing begins at home.

No other moment in history has been so full of both portent and promise as this. The call to plan and work must be answered as effectively as the call to arms or the quality of life in Kentucky will surely cheapen. But the promise is stronger than the portent. Resources lie at every hand; they can be used with increasing wisdom and effectiveness toward the broad goal, the best possible living for the most people.

Kentucky in retrospect is proudly poor, romantic and great; in prospect—and by plan—Kentucky is comfortably well-to-do, still romantic, and ever greater.

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