THE GERMAN IN EARLY PENNSYLVANIA AGRICULTURE

by

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Germans and Swiss-German pioneers who emigrated to the new world haven of William Penn brought both farming methods and religious and cultural values with them which sharply contrasted with those of settlers from the British Isles. These newcomers from the continent established themselves on the rich southeastern Pennsylvania farmland from the Susquehanna to the Lehigh. Through efficient husbandry, frugality, and dedication to hard work they not only became more productive than other American agrarians, but contributed in large share to the establishment of this area of Pennsylvania as a major grain exporter to other parts of America and to Europe and generously supplied the Continental Army in the struggle for independence.

Yet through a variety of factors the importance of the area as a supplier of foodstuffs and the significance of the Pennsylvania-German in American agriculture declined from approximately the beginning of the nineteenth century onward. Although the so-called Pennsylvania Dutch country has remained a model farming community, the major site of grain production began at that time a shift towards the extensive and fertile plains to the west and the once exemplary agricultural methods of these family farms were overshadowed by improved agricultural implements developed in the industrial revolution. Nevertheless, credit goes to the Pennsylvania-German farmer for establishing the beginnings

of efficient agricultural techniques in America and for helping to provide the commercial groundwork on which much of the future development of the middle Atlantic states was to rest.

German immigration to Pennsylvania was spurred on by religious fervor. Beginning in 1683, the sects, mainly Mennonites, German Quakers, Schwenkfelders, and Dunkers, persecuted so often in their homeland, sought a new life for themselves in Penn's noble experiment. They tended to settle in counties outside of Philadelphia. Subsequent immigration from southwestern Germany was on a larger scale and was basically due to the hardships of German agrarian life under conditions of almost constant political turmoil. The devastation of southwestern Germany by a veritable unending succession of wars in the 18th century readily gave rise to such a mass exodus.[1] Stimulated by reports of the vast quantities of farmland which could be tilled without interference from the heavy hand of local nobility or marauding soldiers, they made the journey down the Rhine over Holland onward to Pennsylvania, some to New York and others to Maryland. Adherents to the Lutheran, Reformed, and Roman Catholic churches, stemming mainly from the Palatine, Wuerttemberg, Switzerland, and adjacent areas, accounted for the major part of this increased immigration after 1728, one which continued for most of the century.

The earlier German immigrants usually possessed enough means to pay for their own passage; after 1728 the proportion of indentured servants arriving increased markedly.[2] The terms by which these Germans paid for their ocean voyage illustrated their views of economics which often differed from those of other national groups. A Swedish observer described the practice at Philadelphia: "The English and Irish commonly sell themselves for four years, but the Germans frequently agree with the captain before they set out, to pay him a certain sum of money, for a certain number of persons; as soon as they arrive in America, they go about and try to get a man who will pay the passage for them. In return

they give according to the circumstances one, or several of their children to serve a certain number of years, at last they make their bargain with the highest bidder."[3]

More extraordinary was the practice of some German immigrants who, although having enough money for the voyage, rather sold themselves into servitude for a period in order to gain knowledge of the land and its language.[4]

Those entering the port of Philadelphia usually settled in the back country where open land was readily available and considerably more reasonable; some continued southwestward extending finally into the Shenandoah Valley of Virginia. They were basically agrarians rather than frontiersmen and preferred to move into areas already inhabited to some degree and to buy land which had been initially cultivated by Scotch-Irish or Irish pioneers who, though, through inferior farming techniques, depleted the soil and did not replenish it.

J. Hector St. John Crevecoeur commented in his *Letters from an American Farmer* on the superior forms of the German and the poor ones particularly of the Irish who "...seem... to labor under a greater degree of ignorance in husbandry than others; perhaps it is that their industry had less scope, and was less exercised at home."[5] The displacement of English-speaking farmers from the fruitful limestone lands of southeastern Pennsylvania by Germans is astonishing. Once the Scotch-Irish had settlements throughout the region, even in Lancaster County, generally believed to have been pioneered exclusively by Germans. This area, then, became the American homeland of the Pennsylvania-Germans as a consequence of displacement, resulting from their more rational system of settling and farming.

The farmers who had been able to make the Palatinate and other parts of the Rhineland agriculturally productive despite prolonged warfare and neo-feudal restrictions prospered quickly, and news of their prosperity tempted others to risk the ocean voyage to join them. Fortified with religion and peasant values regarding the use of land, and living

under the relatively favorable economic and climatic conditions of Pennsylvania, the German inhabitants undertook the establisment of a community based upon the agricultural traditions they brought with them across the Atlantic.

The exact number of Germans in early Pennsylvania can probably not be determined. In 1743 the governor of the province, Thomas, estimated that three-fifths of the population of 200,000 were German.[6] A conservative assessment for the year 1776 puts the Germans at 110,000 of a total of 341,000 and in 1789 at one-third of all inhabitants, i.e. about 145,000.[7] Travelers in the southeastern region in the latter part of the century typically reported that "everywhere we observe German farms, small houses, and large barns cows and oxen."[8] On the road to Lancaster an observer commented that "everybody I met I addressed in German and they all answered me in the same language."[9] Lancaster, with a population of about four thousand, was the largest inland city within the United States of those days; in 1783 not more than fifty English-speaking families lived there, the rest were German. Duke de la Rouchefoucault Liancourt visited Reading in 1795 and observed that the inhabitants of the town and surrounding sections were either all German or of German descent.

The manner in which these Pennsylvanians conducted agriculture, by and large different from methods employed by English, Irish, and Scotch-Irish settlers, drew the attention and praise of numerous people. Dr. Benjamin Rush, a noted Philadelphia physician and signer of the Declaration of Independence, in a deliberate parallel to the Roman historian Tacitus' *De Moribus Germanorum,* a work which praised the life-style of the German tribes, wrote *An Account of the Manners of the German Inhabitants of Pennsylvania* in 1789. He became convinced that the wealth of the state resulted in good part from the labors of the Pennsylvania-Germans. Consequently, he aimed at presenting their mode of life and work as worthy of emulation so that others could "... learn ... to prize knowledge and industry in agriculture and manu-

factures, as the basis of domestic happiness and material prosperity."[10]

Rush drew special attention to their farming practices in order to demonstrate differences from most of the other farmers of Pennsylvania. They were praised for settling on good land and cultivating grass which increased the value of their farms.[11] Their land was cleared completely which resulted in the conservation of human energy in plowing, harrowing, and reaping. Among the Scotch-Irish trees were simply girdled.[12]

When the German settled, his first efforts went into building a large, well-planned barn which housed his animals, sheltered their feed, and made manure collection easy. In contrast to his English-speaking compatriot, he usually kept fever animals, fed them better, and had them in barns for the winter. It has been noted how use of these large and functional barns spread: "The original barns and stables of rough logs were early replaced by stone structures in the German settlements; in other localities they persisted until the end of the 18th century. The so-called Swisser barns introduced by the Germans were finally adopted as models by the English and Scotch-Irish farmers and became a familiar feature of the landscape in southeastern Pennsylvania."[13]

The German farmer's sturdy horses, extraordinary in size and weight, served him well as did his Conestoga wagon, which was first developed in Lancaster County. An observer traveling through the Commonwealth in 1783 and 1784 remarked: "Hauling is done to better advantage in Pennsylvania than in most of the other provinces. During the war Pennsylvania alone supplied almost the whole of the American army with wagons and horses... The Pennsylvanians regard size and strength of breed more than beauty, and their horses are the strongest and best in America."[14] Until 1840 when railroad development commenced, they remained the dominant means of transporting goods from inland to the urban markets. In addition, Pennsylvanians seemed further indebted to these early German inhabitants for an important part of

their knowledge in horticulture. The meticulous gardens each farmer's wife cultivated made a variety of vegetables available to Philadelphians who before had known only turnips and cabbages.

Evidence indicates they lived quite frugally with respect to diet, furniture, and apparel. The first generation resided in a log cabin so that all efforts could be directed towards the cultivation of the farm and not until the eldest son inherited it, did the building of the stone house, a much admired feature of the Pennsylvania countryside even today, begin. The farmers typically sold their most valuable grain and ate the less profitable, seldom hired workers for they were considered too much of a burden through most of the year, and favored paying cash and staying out of debt.

Whereas the English system of heating relied upon open fireplaces, the Germans located iron stoves centrally in their homes. This gave more heat, economized on wood, and saved their horses the effort of pulling heavy loads in winter, an activity which would weaken the animals for spring plowing.

The exacting care afforded the development of their farms probably resulted from their practice of patrimonial property. Each successive generation undertook long-term improvements with the knowledge that these holdings would remain virtually permanently in the family.

Their work habits were also to be praised for, in contrast to the prevailing custom among English-speaking groups, women as well as men performed tasks in the fields at harvest time. To fear God and to love work was their motto and they diligently pursued this credo.

In addition to these practices, their agricultural endeavors were further distinguished in several important ways. A consistently high yield from the soil was attained by methods which went beyond simply clearing land of trees and roots. The most important was the extensive use of manure during an era which commonly saw a field merely overgrown by weeds to restore its fertility. Although all farmers knew the value of using manure, the only recognized fertilizer dur-

ing most of the colonial period, the Pennsylvania-German persisted in its collection, which was made easier since his animals housed in barns for several months of the year rather than always roaming the fields. Lands in Lancaster benefited especially since the area was also a beaf-fattening center. "The farmer who had a large barnyard full of manure to haul out, after harvest, was looked upon as a model, and consequently, a prosperous owner."[15]

Allowing fields to lie fallow for up to three years as part of a crop rotation scheme was, nevertheless, practiced as a means of restoring fertility, in part because of the inadequate amounts of manure available. Towards the end of the century the procedure of planting clover was introduced and readily adopted. Travelers through southeastern Pennsylvania detailed the crop rotation system employed by the German farmers; other national groups appeared to have been less concerned with conservation and when their land no longer yielded adequate quantities of wheat, the most profitable crop, corn was planted. When the fields were exhausted, they became abandoned. Even though scientific knowledge concerning the subject was scant, the German farmer clung to his reverence for the land he held in Germany and continued to utilize rotation systems his forefathers had begun, thereby tending to preserve the fertility of the soil rather than exploiting it.[16] A British observer gave a detailed description of practices used in Lancaster County where he found the most fruitful farms of the Commonwealth.[17] As the importance of rotation became more clearly understood, the Pennsylvania-Germans were quick to employ the latest methods. An agricultural expert with the federal government commented: "The Pennsylvania Germans have developed the most permanent and satisfactory system of agriculture in the United States from the standpoint of maintenance of soil fertility... The rotation of crops which they worked out many years ago is the standard rotation, with minor modifications, as far west as central Nebraska."[18]

The use of gypsum, calcium sulphate, as a fertilizer was

another measure taken to safeguard the productivity of fields. Whereas it is unknown whether the Germans initiated this procedure, there is evidence showing that they employed it extensively by the end of the century.

The tendency of Germans to settle on limestone lands sprang from a similar concern for the condition of the soil, for limestone was found to be an excellent fertilizer. F. J. Turner, the historian of the American frontier, commented: "The limestones areas in a geographical map of Pennsylvania would serve as a map of German settlements."[19] German farmers of Lancaster County were among the first to enjoy its beneficial effects. When visiting the county in 1754, Governor Pownall was delighted with the rich cultivation and remarked that each farm had a lime kiln in operation.[20]

Irrigation of fields contributed in major proportions also to their successes. The author of *American Husbandry* wrote in 1775 that "...in several parts of Pennsylvania, they are very well acquainted with the husbandry of watering meadow lands by conducting brooks over them; which they do in a very artificial manner... By this management... they mow three crops a year, whereas without water they would mow but once."[21] Governor Pownall commented on his journey through Lancaster County that "here it was first I saw the method of watering a whole range of pastures and meadows on a hillside, by little troughs cut in the side of the hill, along which the water from springs was conducted, so when the outlets of these troughs were stopped at the end the water ran over the sides and watered all the ground between that and the other trough next below it. I dare say this method may be in use in England, I never saw it there, but saw it here first."[22] This arrangement led to augmenting the amount of fertile land as well as aiding in the care of livestock.

The consumption of large quantities of milk and cheese underlines their ability as dairymen. The average farmer owned four or five cattle and although dairy production was

initially for home consumption, soon many products found their way to markets in Philadelphia and Baltimore. By mid-century production surpluses allowed even for export abroad. Orchards with apple and peach and sometimes cherry trees formed an integral part of each farm as did the well cared for family garden which at times was expanded into a successful commercial venture.

A major innovation, one important even today, was the the corn belt system, i.e. the practice of purchasing and fattening livestock in the hope of fetching a higher price for it. In the post revolutionary period hogs and cattle were first driven from the newly opened areas of the frontier west of the Susquehanna to the East Coast markets. The main route ran through the Harrisburg gap to Philadelphia. The German farmers with large barns and productive grain fields bought animals which had become lean through the overland journey, kept them for a period for fattening before marketing them. Not only was this highly profitable but also afforded the farmer additional manure for his fields.

When Johannes Schöpf, a physician with the Hessian troops, toured the country in the 1780's, he expressed a uniformly critical appraisal of the American scene. His praise, though, for the Pennsylvania-Germans was explicit: "From very insignificant beginnings the most of them have come to good circumstances, and many have grown rich. For here the poor man who is industrious finds opportunities enough for gain, and there is no excuse for the slothful. Where a German settles, there commonly are seen industry and economy, more than with others, all things equal — his house is better-built and warmer, his land is better fenced, he has a better garden, and his stabling is especially superior; everything about his farm shows order and good management in all that concerns the care of the land."[23]

A precise determination of the impact of these agricultural practices on the early American economy is not possible. Extant data on even the simplest measures are scarce and more often than not unreliable. However, the significant

role played by the Germans, as witnessed by many commentators, was unquestionably unique. The governor of the province in 1747, George Thomas, remarked, "They have, by their industry, been the principal instrument of raising the state to its present flourishing condition, beyond any of his Majesty's Colonies, in North America."[24] Dr. Schöpf wrote, "The Germans are known throughout America as an industrious people, ... and in all the provinces it is desired that their number increase, they being everywhere valued as good citizens, and I daresay that Pennsylvania is envied for the greater number of them settled there, since it is universally allowed that without them Pennsylvania would not be what it is."[25] Dr. Rush put the estimation of the economic accomplishments of the Pennsylvania-Germans as follows: "If it were possible, to determine the amount of all property brought into Pennsylvania, by the present German inhabitants of the state, and their ancestors, and then compare it with the present amount of their property, the contrast would form such a monument of human industry and economy, as has seldom been contemplated in any age or country."[26]

Ideally the figures for output per unit of input, expressed in the conventional terms of land, labor, and capital, would establish whether the methods of the Pennsylvania-Germans actually were more productive than those of other farmers. Unfortunately, no systematic records were kept and the best indices were noted by gentlemen with an interest in agriculture. Data on wheat production, the major crop and leading export commodity, is more complete than for any other product. Yields per acre fall typically in the range between 15 and 30 bushels for farms in the Pennsylvania-German region. Schöpf reported yields of 25-30 bushels near Reading and the Tulpehocken Valley, but only 10 to 15 on unmanured land in Bucks County. Although the nationality of farmers there was not indicated, the figures may be taken to apply general yields and much of Bucks County was not a Pennsylvania-German area. From 2 to 3 bushels of seed, reported the author of *American Husbandry,* farmers obtained yields

of 25 to 32 bushels on good land and 15 to 25 on inferior acreage in the wheat growing regions of the state. Estimates by scholars for average yields in the middle colonies have been put at 10-15 bushels, yet among the Germans the same study places the return considerably higher, from 20 to 30 bushels.[27]

Clearly the methods they employed succeeded in producing more per cultivated acre than those of other national groups. The possibility of attaining greater harvests took on major significance as new fertile land east of the Appalachians became harder to find and the price of wheat remained at a fairly high level. The quantity of wheat a farmer took to market apparently meant a substantial difference in the sum of cash he brought home. "Wheat thriving so well in Pennsylvania, makes them neglect maize; which is a much less valuable grain; this is a distinction which should always be made; it is not that maize is not a profitable crop in itself, but their lands will yield one which is much more beneficial. This will be better understood when I add that Indian corn yields 2s7d. a bushel, when wheat is at 7s.6d. both Pennsylvania currency; a difference that at once accounts for the preference in a country that will yield wheat."[28]

Knowledge about the volume of trade tends to support the judgments of contemporary observers concerning the importance of wheat to Pennsylvania. In 1765 Philadelphia exported 367,522 bushels of wheat and 18,714 tons of flour and bread. New York, the export center for a large grain producing area itself, exported 109,666 bushels of wheat and 5,519 tons of flour and bread. The exact contribution of the Pennsylvania-Germans to these exports is difficult to determine. A reasonable estimate based on some previously established facts would probably indicate fifty per cent or more since the German-speaking population was 110,000 out of a total of 341,000; it was concentrated primarily in the productive limestone regions; wheat yields there tended to be twice as high as elsewhere; the area had good transportation connections with Philadelphia.

If in the absence of other data we take such an estimate as an acceptable approximation and apply the figures on wheat yields which established the acreage of the Pennsylvania-Germans as being twice as productive as that of their neighbors, we arrive at the tentative conclusion that their cultivation practices alone were responsible for at least one quarter of the Philadelphia export. Alternatively stated, exports were one third more than they might have been had no Germans settled and farmed the lands of southeastern Pennsylvania.

Although wheat was the grand article of the Commonwealth, corn, flaxseed, beef, and pork were other major exports leaving the port of Philadelphia during the second half of the eighteenth century. Data on these items are too fragmentary to allow an estimate of the proportion produced on the farms of Pennsylvania-Germans or to calculate the effect of farming methods on their production. On the basis of what is known about the variety of products grown on those farms, it would seem that their contribution was highly significant.

The decline in the importance of southeastern Pennsylvania agriculture came about through a variety of factors. The most important was the opening up of new fertile wheat lands, first in western New York and later in parts of the old Northwest. As transportation systems improved, especially canals, the low cost and productivity of new lands could offset the cost of transportation to growing urban markets and export centers. In the older farming regions the spread of more systematic and intensive methods tended to increase the lower-crop yields of non-Germans. Agricultural societies and journals provided information on some of the very techniques, such as fertilization and irrigation, which had been almost exclusively practiced by them. The improved farming equipment created in the industrial revolution became more readily available to non-German groups.

In addition to the accelerated application by other farmers of more productive methods which nibbled away at

his lead, he was faced with the fact that the geographic limits of his new homeland ordained his playing a proportionally smaller role in the future as American agriculture expanded westward. Due to the Napoleonic wars, immigration was cut off for a time in the early nineteenth century; when Germans once again arrived, they, the newcomers, as well as the surplus population of southeast Pennsylvania itself, became integrated into the westward movements or into growing urban centers.

Those who remained behind continued to practice sound farming, but cultural survival dictated isolation from the mainstream of economic life as well as evoking a certain amount of resistance to practices which originated outside the group and which were at odds with its basic values. Some of the more rigid sects froze time and were of course more successful in preserving their identity. Yet even upholding the concept of the family farm, which was nowhere more of an ideal than among the Pennsylvania-Germans, meant bucking major trends of the time. Those who moved out into the larger world, and especially those who were successful in it, did so on its terms. Those who stayed behind were geographically limited to a few counties and became restricted in their mobility. Isolated by oceans and events from their original source of influence in Central Europe which might have aided the transition to a more modern society, they remained bound to an inbred and fundamentally peasant culture which often appeared inadequate in coping with the changing world.

The gradual erosion of the group's identity is, of course, not unexpected. However, the extent to which a retention of separate language and of distinctive customs has flourished is surprising. In large part the preservation of Pennsylvania-German culture can be attributed to specific agricultural practices and to an agrarian orientation which continued to provide the economic foundation for their survival well into the twentieth century.

Conclusions

The Pennsylvania-German farmer was a major figure in the early economic history of the middle Atlantic region. During a time when its financial life rested on the trade in agricultural commodities, his products constituted a large share, probably more than half, of that brought to market. Although part of this total was sold to the growing urban centers of Pennsylvania, by far the larger portion found its way to New England, the West Indies, and Europe.

The trade in farm products resulted in Philadelphia becoming America's largest city and commercial center, a status it retained until the easier access of New York to the growing West put that city ahead. The favorable economic conditions in early Pennsylvania also contributed to making it the nation's most populous state. Despite the fact that the Pennsylvania-Germans took little part in non-agricultural activities or political life, the yields of their farms fostered a decidedly advantageous economic climate during the latter part of the 18th and early part of the 19th centuries.

High agricultural productivity depends on the existence of favorable natural conditions but is not sustainable without decades of careful attention to the soil. These farmers excelled in preserving and in augmenting the capacity of their lands when other fields were being irreversibly removed from the list of prime areas of cultivation through the lack of careful planning.

These Germans brought their agricultural methods to North America at the right juncture in history. The existence of seemingly limitless land and the scarcity of labor had encouraged the adoption of wasteful practices which appalled most European observers. These poor techniques developed their own momentum and persisted even though conditions increasingly demanded more careful cultivation. Not until well into the 19th century did farmers in the East become concerned enough about falling yields to initiate efforts for soil conservation.

The German immigrants almost seemed to have anticipated the trend of events by ignoring depleting land habits and by farming in the same careful manner they had in Europe. Fertilization, crop rotation, the care of livestock, irrigation, and a deeply ingrained frugality were the central elements of their success.

Underlying such methods was the peasant culture they brought with them, bolstered by the belief that their labor, and not the richness of the land, would make them prosperous. .In the course of time conditions required change, but for a substantial period the utilization of age-old customs proved right.

NOTES

[1]See Karl Frederick Geiser, *Redemptions and Indentured Servants in the Colony and Commonwealth of Pennsylvania* (New Haven, Conn., 1901), p. 9.

Oscar Kuhns, *The German and Swiss Settlements of Colonial Pennsylvania: A Study of the So-Called Pennsylvania Dutch* (New York, 1901), p. 83ff.

Frank Ried Diffenderfer, "The German Immigration into Pennsylvania Through the Port of Philadelphia," *Pennsylvania-German Society Proceedings* (Lancaster, Penn., 1900), Vol. X.

[2]Karl Frederick Geiser, *op. cit.*, p. 27.

[3]Per Kalm, *Travels in North America 1748-1750,* J. R. Forster, trans,. Vol. I, p. 388.

[4]Ibid.

See author anonymous, ed. Harry J. Carman, *American Husbandry* (Port Washington, N.Y., 1964), p. 121. This was originally published in London in 1775.

[5]Hector St. John De Crèvecoeur, *Letters From an American Farmer (London and New York,* 1951), p. 62. This work was originally published in London in 1782.

See Oscar Kuhns, *op. cit.*, p. 82.

[6]Benjamin Rush, *An Account of the Manners of the German Inhabitants of Pennsylvania,* ed. I, Daniel Rupp (Philadelphia, 1875), p. 5. This work was written in 1789.

[7]Albert Bernhardt Faust, *The German Element in the United States* (New York, 1927), Vol. I, p. 285.

Benjamin Rush, *op. cit.*, p. 54.

Johannes Schöpf, *Travels in the Confederation 1783-1784,* trans. and ed. Alfred J. Morrison (Philadelphia, 1911), Vol. I, p. 102. This work originally appeared in Erlangen, Germany, in 1788.

[8]La Rochefoucault Liancourt, *Travels Through the United States of North America,* trans. H. Neuman (London, 1799), Vol. I, p. 46.

[9]Schöpf, *op. cit.,* Vol. II, p. 9.

[10]Benjamin Rush, *op. cit.,* p. 59.

[11]In addition to timothy grass, Pennsylvania-German farmers grew Lancaster County Red Clover which was introduced in 1773, frequently advertised in German language newspapers, and widely accepted by 1800. See Leo A. Bressler, "Agriculture Among the Germans in Pennsylvania During the Eighteenth Century," *Pennsylvania History* (Gettysburg, Penna., 1955), Vol. XXII, 2, p. 119.

Amos Long, *The Pennsylvania German Family Farm* (Breiningsville, Penna., 1972), p. 364.

[12]See Ralph Wood *et al., The Pennsylvania Germans* (Princeton, N. J., 1942), p. 34.

[13]Percy Wells Bidwell and John I. Falconer, *History of Agriculture in the Northern United States 1620-1860* (Washington, D.C., 1925), p. 122.

[14]Johannes Schöpf, *op. cit.,* Vol. I, p. 204.

[15]Levi Huber, "Two Hundred Years of Farming in Lancaster County," *Lancaster County Historical Society Papers* (Lancaster, Penna., 1931), Vol. XXXV, No. 5, p. 98.

[16]See John F. Gagliardo, "Germans and Agriculture in Colonial Pennsylvania," *Pennsylvania Magazine of History and Biography* (Philadelphia, 1959), Vol. LXXXIII, 2, pp. 202-205.

[17]Ibid., pp. 203-204.

[18]See John A. Hawgood, *The Tragedy of German-America* (New York, 1970), p. 33.

[19]F. J. Turner, "German Immigration in the Colonial Period," *Studies of American Immigration* (Chicago, 1901), No. XI.

[20]Thomas Pownall, *Topographical Description of Pennsylvania* (Philadelphia, 1775), p. 28.

See also Samuel Eliot Morison, Henry Steele Commager, and William E. Leuchtenburg, *The Growth of the American Republic* (New York, London, Toronto, 1969), p. 272.

[21]Ed. Harry J. Carman, *op. cit.,* p. 90.

[22]See Oscar Kuhns, *op. cit.,* p. 90.

[23]Johannes Schöpf, *op. cit.,* p. 103.

[24]See Benjamin Rush, *op. cit.,* p. 5.

[25]Johannes Schöpf, *op. cit.,* p. 103.

[26]Ibid., p. 55.

[27]Bidwell and Falconer, *op. cit.,* p. 101.

[28]Ed. Harry J. Carman, *op. cit.,* p. 116. When comparing the prices of wheat and corn it should be noted that yields per acre were roughly the same for the two gains, although usually slightly higher for corn.