This geographic study of the southern third of the Ukraine (New Russia) between 1780 and 1837 shows that the Russian government succeeded in conquering the region from Turkey and settling its lands with loyal subjects, but failed to pursue policies which would have facilitated the area's economic development. By conquering and settling New Russia, the government secured the southern boundary of its grain surplus producing regions from foreign attack and obtained a foothold on the Black Sea coast. The failure to promote development effectively, however, not only retarded the region's economic growth but also left it unprepared to meet foreign competition in world markets during the 1840s.

The government's success is indicated by victories over the Turkish army and navy, the establishment of naval bases, two of which became important commercial ports (Odessa and Taganrog), the removal or neutralization of potentially hostile indigenous peoples, and fairly rapid population growth.

The failure in economic development was not truly apparent until the late 1830s and early 1840s. In the first three decades of the nineteenth century the region established a significant foreign trade in grain and wool and employed about half of its total area for agriculture. The people, however, continued to use the extensive, low yield systems of agriculture originally developed by the Tatars and Cossacks and the government failed to improve the vitally important overland transportation system. By the late 1830s, increasing traffic caused a critical transportation problem and in the mid 1840s foreign competition created difficulties for the region's low quality exports.

The government attempted to solve these difficulties by investing money in canals that were never completed, importing steamboats that were seldom used to carry goods, making plans for railroads that were not to be built until the 1860s, encouraging the interbreeding of Merino and native sheep, and building roads in the mountainous part of the Crimea. These well-intentioned measures failed to attack the central problems of improving the quality of exported grains and wool and improving the efficiency and the speed of the overland transportation system. They indicate that the government wished to foster change, but did not know how to do so because it did not understand the region's true requirements.
The Conquest, Settlement and Initial Development of New Russia
(the Southern Third of the Ukraine): 1780-1837

A Dissertation Presented to the Faculty of the Graduate School of Yale University in Candidacy for the Degree of Doctor of Philosophy in Russian Studies and Geography

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1964
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The purpose of this dissertation is to present the most significant problems faced in the conquest, settlement and initial development of New Russia (the southern third of the Ukraine) from about 1780 to 1837 and to analyze and evaluate the major solutions and responses to these problems adopted by the people and the government. Chapter I begins the dissertation with a brief description of New Russia and a history of its conquest and administrative organization and then explains why the conquest of the region was important to the Russia of Catherine the Great. Chapter II follows with a description of the physical environment both as it is known today and as it was understood during the late eighteenth and early nineteenth centuries.

The main body of the dissertation is organized to reflect the major goals of the Russian government, which were: first, to conquer the region and incorporate it into the Russian Empire; second, to fill its land with people who owed unquestioned loyalty to the Tsars; and, third, to develop New Russia's economy so that it could make a significant contribution to the well-being of the Empire. The first goal was attained by 1791, although the possibility of a Turkish attack on New Russia continued to exist until Bessarabia was organized as a separate government in 1818. The second was accomplished by 1817. In the following two decades the Russian government was able to give priority to economic development. Development, of course, has continued to the present time, but its initial stage was over by the late 1830s when Odessa was exporting wheat to the significant value of 9 million silver rubles and when probably half of the total area of New Russia was being used for some form of agriculture.

Chapter III discusses the conquest of New Russia in terms of five major
problems: providing logistical support and rear area security for the Army; securing foodstuffs from the lands of New Russia; establishing Russian naval bases on the Black Sea coast; protecting the region from the ravages of the bubonic plague and malaria; and, controlling the indigenous peoples. Chapter IV presents four major problems involved in settling New Russia: inducing settlers to move to the region; making adjustments to the physical environment; learning to survive diseases; and, developing a system of low-cost grain farming. Chapter V focuses on three problems faced in developing the economy of New Russia between 1817 and 1837: expanding the numbers of livestock (particularly sheep) to produce large quantities of wool and tallow; improving the transportation system; and, increasing exports to foreign countries.

The final chapter evaluates and criticizes the responses adopted by the government and people to these problems. It argues that measured in terms of the goals of the Russian government, these responses were adequate since they did in fact make New Russia an inalienable part of the Russian Empire, filled the land with people and developed an export trade which was earning significant amounts of foreign exchange by the late 1830s. However, in some cases alternative responses were available which might have better satisfied the goals of the Russian government, and the most critical problem in the years 1817-1837, the inadequacy of the overland transportation system, was neither properly understood nor solved. The central conclusion of the dissertation is that the Russian government did not comprehend the needs of New Russia after 1817 and therefore allocated the resources available for investment incorrectly.

The area of New Russia was occupied by four different groups of people in the middle of the eighteenth century. A thin line of fortified
Russian settlements existed in the north. Just south of them lay the lands of the Zaporozhian Cossacks. The Russian settlers emphasized grain farming, while the Cossacks followed a mixed economy of livestock raising, some grain farming, fishing and trade, which was in many respects similar to the way of life of their nomadic, sheep raising neighbors to the south, the Nogay Tatars, who owed allegiance to the Khan of the Crimea and through him to Turkey. The Khan lived in the mountainous portion of the Crimea, and here his immediate subjects, the Crimean Tatars, supported themselves primarily by irrigated agriculture.

This pattern changed significantly as a result of Russia's victories over Turkey in the Russo-Turkish Wars of 1769-1774 and 1787-1791 and the annexation of the Crimea in 1783. While Russian settlers moved south, the Nogay Tatars departed either to Turkish lands on the west or to the valley of the Kuban river; the Zaporozhian Cossacks were incorporated into new settlements and their organization abolished; those Crimean Tatars who did not emigrate became Russian subjects; and, the Russian government built new ports and naval bases on the Black Sea coast. The land-use system reflected these changes as the Russians replaced the nomadism of the Nogay Tatars and the mixed economy of the Cossacks with extensive grain farming.

The second half of the eighteenth century was thus a period when one pattern of human activity gave way to another, a change which corresponded to Whittlesey's concept of stages in human occupancy of an area, the transition from the stage of the Cossack and Tatar way of life to that of Russian dominance occurring as a result of "shifts in political boundaries." The


2. Ibid, p. 165.
year 1780 was selected as a convenient starting point because it comes in the middle of this change when elements of both the old and the new were still present and when the problems of adjusting to the physical environment were most evident. The transition from one stage to another also illustrated Whittlesey's theory that "human occupancy of an area...carries within itself the seeds of its own transformation." These seeds were techniques of using the land first developed by the Tatars and Cossacks, and then adopted by the Russian settlers, who applied them to new goals. With the passage of time, the stage of Russian dominance also began to show "seeds of its own transformation." The Russians settled the land, increased and altered the nature of the export trade and overburdened the transportation system and in so doing created new problems and needs that were readily apparent by the late 1830s. By the end of the 1830s, signs of a new stage showed themselves: steamboats began plying the coastal seas and the lower reaches of some rivers, the world market began to demand high quality goods, and many of the leaders of New Russia started to think about solving the overland transportation problem by constructing railroads and to consider exploiting the coal deposits of the Donets basin. The new stage was one in which the way of life of the people of New Russia was being confronted by the Industrial Revolution, and the basic problem which then had to be faced was how to develop an appropriate response to this challenge. The study ends in the year 1837, when a steam powered tugboat was first used to pull barges laden with coal down the Severnyy Donets river, an event which symbolized the beginning of the new stage.

The dissertation concentrates on the stage of Russian dominance, roughly the period from 1780 to 1837, although information from earlier and later years is included where it seems relevant. This period can be

3. Ibid, p. 163.
subdivided into two parts separated by the years 1817-1819. In 1818 the Russians organized the province of Bessarabia, which had been conquered from Turkey in the war of 1806-1812, into a separate Government* (guberniya), and thus removed the last foreign boundary to touch New Russia. This act ended the threat from Turkey; New Russia was now secure from foreign attacks, and considerations of defense could be made subordinate to economic development. Furthermore, population had increased to over a million and a half and was deemed sufficient to develop the area's resources without government sponsored immigration. Therefore, the Russian government ceased the free distribution of land in 1817 and halted the immigration of foreign colonists in 1819. Thus, by 1817-1819, New Russia was both conquered and adequately settled. The development of agriculture was emphasized in the following two decades and as a result New Russia began producing significant quantities of wheat, wool and tallow for export. The years 1817-1819 separate the period of conquest and settlement from that of initial development.

Three types of source materials were utilized. The most useful were accounts by travelers who visited New Russia. The author "traveled" through the eyes of eighteenth and nineteenth century writers, following their routes carefully and recording their observations, the accuracy of which was determined by comparing them with each other and by securing biographical information on individual travelers. The British were the best sources. They were interested in Russia because of the extensive

* When capitalized, the word Government refers to the territorial-administrative unit (guberniya). Otherwise, it refers to the institution (pravitel'stvo).

4. Bessarabia was nominally part of New Russia from 1812 to 1818.
trade between Russia and Great Britain and because they had personal contacts with British doctors and naval officers in the service of the Russian government. They came to New Russia in order to see a colonial area, study the plethora of ancient Greek ruins and to follow the footsteps of the beloved British prison reformer, John Howard, who died near Kherson on January 20th, 1790.

The second type of source material was interpretive works, and of these the most important were those by Apollon A. Skal'kovskiy, who was in effect the official historian of New Russia during the second quarter of the nineteenth century, and A. Shmidt, a Lt. Colonel of the Imperial General Staff. Both these scholars lived in New Russia and included personal observations in their writings.

Maps were also consulted extensively, particularly in studying the physical geography of the region and the location of ports. These consisted of the 1:126,000 series based on the survey of 1865 published by the Corps of Military Topographers of the Russian General Staff, maps captured from the German Army after World War II, some of which were on the scale of

5. The extent of this trade is illustrated by Tooke's statement that "somewhat over half of the vessels arriving at St. Petersburg from 1792 to 1799 were English." William Tooke, View of the Russian Empire During the Reign of Catherine the Second (second edition), London, 1800, III, 444.


7. A. A. Skal'kovskiy, Khronologicheskoye obozreniye istorii novorossiyskago kraya 1730-1823, two volumes, Odessa, 1830; Opyt statisticheskago opisaniya novorossiyskago kraya, two volumes, Odessa, 1850.

1:100,000, the 1:250,000 series published by the US Army Map Service, and various special maps.

The only modern scholar who has studied New Russia is Yelena I. Druzhinina, Professor of History at the University of Moscow, whose excellent book, *The Northern Shore of the Black Sea: 1775-1800* was published in 1959. Druzhinina's major interests were in the history of settlement and of social relations during the period 1780-1796. Her well-documented book relies very heavily on eighteenth century statistical atlases, archival materials and information taken from *The Complete Collection of the Laws of the Russian Empire*. Druzhinina accepted the data from the statistical atlases without much comment, while eighteenth and early nineteenth century travelers and scholars felt that they were incomplete. In addition, she was not concerned with the physical geography of the region and the problems it posed. The archival materials and maps presented in Druzhinina's book were of great value because the original documents were impossible to obtain.

Although a fairly wide-range of source materials was consulted, the references in the text are by and large restricted to the eighteen travelers' accounts and five interpretive works discussed in Appendix IV. These are the best sources and have been analyzed with great care. Many of them, for example the writings of A. Shmidt and P. S. Pallas, are extremely long and required considerable time to study thoroughly. Other sources confirm the information taken from these books, but are less reliable, and have, therefore, usually been omitted as textual references. The bibliography is restricted to those sources cited in the text.

Many of the travelers' accounts have not been studied by the authors of the interpretive works. Even the famous two volumes by the scientific traveler P. S. Pallas have not, as far as could be determined, been subjected to rigorous analysis before. Most of the topics discussed have not been studied previously for the whole period 1780 to 1837 or for the entire area of New Russia. This dissertation also makes a contribution to an understanding of New Russia, an area which is seldom mentioned in the histories of Russia and of Russian agriculture available in English. Finally, the story of New Russia deserves to be told because it is but another chapter in the continuing study of the settlement and development of sub-humid lands, a subject pursued by such authors as Bowman, 10 Webb, 11 Meinig 12 and Kraenzel 13.

The research attempted to follow the techniques of historical geography, a discipline which has been defined as "the study of the geography of the past, seen as an entity or entities, changing through time" and "the study of the past circumstances of, or of changes in, phenomena of concern to geography." 14 The period 1780-1837 was one in which significant changes occurred in the geography of New Russia, but, unfortunately, the available data do not permit one to determine the areal extent of these changes accurately. The dissertation does concentrate on phenomena of concern to

geography, and especially on relating human problems to the nature of the physical environment. In doing this Carl Sauer's recommendation that "the historical geographer... must be a regional specialist"\textsuperscript{15} was followed as far as possible and great attention was given to establishing the nature of the physical environment during the period studied by utilizing "eye-witness accounts"\textsuperscript{16} and other sources. The full application of geographic techniques was impossible, however, because the author was unable to do field work in the region or consult archival materials. Initially, it was hoped that the dissertation could take a form similar to Carl Schott's\textsuperscript{17} study of Southern Ontario, but this proved impractical since it would have required a text that would have greatly exceeded the permissible page limitation. Instead, therefore, the dissertation attempts to apply a geographic point of view to the study of the problems of conquest, settlement and initial development.


\textsuperscript{16} Ralph Hall Brown, Historical Geography of the United States, New York, 1948, Preface.

\textsuperscript{17} Carl Schott, Landnahme und Kolonisation in Canada, am Beispeil Sudontarios, Kiel, Germany, 1936.
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INTRODUCTION

New Russia was the name given in the eighteenth century to what is now the southern third of the Ukraine, an area which has been known to the Western world since the days of the ancient Greeks who peopled its Black Sea coastline with colonies that supplied their mother country with grain, fish and slaves and which were the battlegrounds of the wars of Mithridates. Indeed, the first geographic description of New Russia was written by a Greek, Herodotus. During Roman times the ports of New Russia supplied foodstuffs and Scythian dancing girls to delight the court of the Caesars. The hardy Varangians crossed New Russia as they traveled down the Dnepr on their way to Constantinople until this route was blocked by the Mongol invasions. During the Middle Ages the ports of New Russia were controlled by the Venetians and Genoese who fought each other and the Turks and the Tatars for possession of the keys to the riches of New Russia. With the rise of the Ottoman Empire, New Russia was divided: the interior lands were peopled by the Nogay and Crimean Tatars, while the coastal towns continued to contain a mixture of Greeks, Armenians, Jews and Turks who gave their allegiance to Constantinople. The Tatars soon also became vassals of Turkey so that the rising power of Muscovy was faced with a powerful combination of foes along its southern borders as it began to expand southward. Unbridgeable differences in language, religion, culture and ways of living over the ensuing centuries made


warfare between the Turks and the Tatars on the one hand and the Russians on the other into brutal struggles where quarter was neither asked nor given. The Tatars fought for their pasture lands and the Turks for hegemony over the Black Sea, while the Russians battled to maintain the security of their southern frontier, which lacked any significant natural protection, and to push southward to plant the Russian flag along the entire northern shore of the Black Sea.

Between these two contending powers arose a third force composed of men of diverse nationalities who sought personal freedom from the harshness of life in Poland and Russia and formed the famous Zaporozhian Cossack Force, a militant brotherhood of mounted warriors centered in the wooded islands of the Dnepr cataracts where they found security from attack as well as game, fish and pastures for their animals. They moved throughout New Russia, conducting trade, especially in salt and wines, with all sides, making treaties and agreements as an independent state, migrating to the sea shores in summer to fish and back to their fortified islands in winter, and shifting their allegiance whenever the mood suited them. The fact that they were predominately Slavs, that their immediate competitors for land in New Russia were the Tatars and that the Tsars of Muscovy subsidized them usually brought the Cossacks to the support of the Russian government in wars with Turkey.

The military struggle for control of New Russia reached its denouement in the eighteenth century. Peter the Great fought for and lost the mouth of the Don. The Empress Anne sent powerful armies into the region, only to see them defeated by climate, disease and distance. Catherine the Great dispatched her best generals and admirals, provided them with all the support they required and made New Russia an inalienable part of
the Russian Empire. Catherine succeeded where her predecessors failed.

In the late eighteenth century Russia's struggles with Turkey aroused the interest of Europe, and the bloody battles which were fought earned the brilliant Suvorov the sobriquet of "the butcher of Europe," but no major European power was then willing to participate in these wars as a belligerant. The situation was different when the Crimean War broke out in 1853 and Allied Fleets destroyed the inferior Russian navy, dominated the waters of the Black Sea, held most of the major ports of New Russia under their guns, and landed a large army in the Crimea. After the Crimean War Russia began its drive for industrialization. Grain from Odessa moved abroad in ever-increasing quantities, railroads were built, iron steam powered ships brought into extensive use, and rivers and ports improved. Finally in the latter decades of the nineteenth century the true value of Catherine's conquest of New Russia was realized: the iron ore at Krivoy Rog was brought to the coal in the Donets and New Russia became the center of the most important iron and steel complex in all of Russia.
See Appendix VII for sources.

NEW RUSSIA after 1796

SEA OF AZOV

BLACK SEA
CHAPTER I: HISTORICAL BACKGROUND

1. Description and Boundaries

Within the boundaries depicted in figure 1, New Russia covered an area of about 84,000 square miles, approximately the size of Minnesota. At its extremities it stretched about 380 miles from north to south and 530 from east to west, encompassing approximately the territory between the forty-ninth and forty-fourth parallels and the twenty-ninth and fortieth meridians. A line drawn from north to south close to the thirty-fourth meridian just about bisected the area, running from Kremenchug* on the left bank of the Dnepr 200 miles to the isthmus of Perekop and thence another 120 miles across the Crimean peninsula to Cape Sarych, the southernmost tip of New Russia. The northern boundary lay in the transition zone which today separates the forest steppes and humid continental climate of the north from the grasslands and cool, sub-humid climate of New Russia. The Dnepr served as the western boundary, and just beyond it, in the highlands of Bessarabia, the change from sub-humid steppes to humid continental forest steppes is abrupt. The Budzhak steppes across the lower Dnepr are but a narrow continuation of those of

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* The place names used are those that were most common during the period studied. Alternate and modern place names are listed in Appendix II. The transliteration system of the US Department of Commerce's Board on Geographic Names has been followed.
New Russia. The Donets (Severnyy Donets) and Don rivers formed much of the eastern boundary, and eastward of them the climate increased in aridity towards the deserts of the lower Volga.

The sub-humid plains of New Russia are cut by numerous gullies and are crossed by rivers, the Dnestr, Bug, Dnepr and Don, which flow through meandering and braided channels carrying sediments to be deposited in their deltas and estuaries (limans). These sediments are picked up by sea currents and formed into complex sand bars, spits and baymouth bars which have closed many of the smaller limans, transforming them into shallow, brackish lakes. The rolling plains give way to highlands somewhat to the north of the shallow Sea of Azov and to mountains in the southern Crimea.

The boundaries of New Russia can be followed on figures 1 and 2 by starting at the town of Ovidiopol' on the Dnestr estuary. The boundary paralleled the braided and meandering channel of the Dnestr, a river difficult to navigate, and passed through the border towns of Tiraspol' and Dubossary until it reached the confluence of the river Yagorlyk, a tributary flowing into the Dnestr from the northeast a little above Dubossary. The border went up the Yagorlyk and then overland to the town of Balta on the Kodyma river where it turned east, following the Kodyma to a town called Ol'viopol', situated where both the Kodyma and Sinyukha rivers enter the Bug. There the border turned north, up the Sinyukha, following

2. The essential difference between an estuary (estuariy) and a liman in Russian is that the former is affected by the tides while the latter is not. See: Ministerstvo geologii i okhranyy nedr SSSR, Vsesoyuznyy geologicheskiy institut, Geologicheskiy Slovar', 2 vols., Moscow, 1960. Technically speaking, some river mouths in New Russia are limans and others are estuaries. The closed limans were and still are sometimes called lakes (ozera). The use of the word estuary to refer to both cases can be justified under the second definition in Webster’s New International Dictionary of the English Language, 2nd edition, unabridged, Springfield, Mass., 1960. The two terms are used as synonyms in this study to refer to bays at the mouths of rivers.
the river's swing to the east near Arkhangel'sk, but leaving it near Novomirgorod to cross overland to the headwaters of the Tyas'min. It continued on the land, ignoring the northern loop of the Tyas'min, and then joined the river downstream to go through the town of Krylov, into the Dnepr and then down the Dnepr to the left bank town of Kremenchug.

Here a pontoon bridge was erected every summer to connect Kremenchug with the town of Kryukov on the opposite side of the Dnepr.

The border followed the Dnepr to the confluence of the Orel' and then headed up the Orel' to the northeast through the town of Aleksopol'. From there it went overland to Staroverovka, the northernmost point in New Russia, and then turned to the southeast and cut across the headwaters of the Orel' and of several tributaries of the Samara, thus including most of the basin of the Samara as part of New Russia. The Samara flows about 110 miles before joining the Dnepr across from the town of Yekaterinoslav.*

The border continued to the east and north, passed south of the towns of Izyum and Slavyansk and reached the Donets (Severnyy Donets) river about 25 miles north of Bakhmut. It followed the Donets river for some distance downstream from Lugansk and then bent sharply to the southwest and then due west, cutting across the sources of the Mius river, until it reached the Kal'mius river, which it followed to reach the Sea of Azov at the town of Mariupol'. The land of the Don Cossacks lay to the east of the Kal'mius but did not include the strategic mouth of the Don which, as the Taganrog District, was part of New Russia. The border of the District started at the mouth of the Mius, went up the stream about half way to its source, turned east and south to cross the Don a little upstream from the town of Nakhichevan' and continued southward to the Yeya river, which it followed into the Sea of Azov. The District included the most important port on the Sea of Azov, Taganrog, the old fort of Azov on the left bank.

* Now called Dnepropetrovsk. See Appendix II for modern place names.
See Appendix VII for Sources
of the Don delta and the town of Rostov, situated near the former fort of Saint Dimitriy Rostovskiy at the beginning of the Don delta. New Russia thus controlled the mouth of the Don and with it all the trade that moved from the Governments* of Tula, Orlov, Voronezh, the Don Cossack Lands and Siberia to the Sea of Azov.

The Land of the Kuban Cossacks was south of the Yeya and included the peninsula of Taman' extending westward from the mouth of the Kuban. The fort of Taman' controlled movement through the Straits of Kerch' which connect the Sea of Azov with the Black Sea. The west side of the Straits is formed by the peninsula of Kerch', an eastward extension of the Crimea, and the forts of Kerch' and Yenikale situated on this peninsula could also close the Straits to shipping.

The remainder of the border of New Russia coincided with the coast of the Black Sea. To the southwest of Kerch' the coastline passes through a dry, almost desert region lying in the rain shadow of the Crimean mountains. Small ports then appear beginning at Feodosiya, situated at the easternmost edge of the Crimean mountains, followed (see figure 2) by Sudak, Alushta, Yalta and Balaklava, all located where mountain streams cross the narrow coastal strip. Beyond Balaklava the now rugged coastline turns to the north and enters the deep water naval base of Sevastopol' with its many excellent harbors. Further to the north is the old little town of Yevpatoriya, beyond which the coast turns to the north of west and then forms the Tarkhankut peninsula by doubling back to the north of east until it reaches the narrow isthmus of Perekop. Here it changes direction to the west, doubles the spit of Kinburn and runs back to the east up the Dnepr estuary. Near the apex of the Dnepr delta, somewhat south of the confluence

* When capitalized, Government is used to refer to the administrative unit (guberniya). Otherwise, it refers to the institution. The term Government replaced the word Province in 1802. Both Governments and Provinces were subdivided into circles (uyezdi) and were administered by governors.
of the Ingulets, rose the naval town of Kherson, and further up the Dnepr was the town of Berislav located at the site of an ancient river crossing. Upstream from it was Nikopol' which not only had a river ferry but in the past had been the main crossing point for wagon trains entering or leaving the territory of the Crimean Tatars. Beyond Nikopol' was the town of Aleksandrovsk which was the upstream limit of navigation, because nearby began the series of cataracts extending almost to Yekaterinoslav which were famous for centuries as the seat of the Zaporozhian Cossacks. This section of the river was impassable for vessels except during spring high water, but it contained many wooded islands and its banks were covered with trees and rushes which provided refuge for wild fowl and game.

The estuary of the Bug joins that of the Dnepr about twenty miles to the west of the mouth of the Dnepr. The naval base of Nikolayev lay close to the mouth of the Bug at the confluence of the Ingul. The limit of navigation on the Bug was reached at the town of Voznesensk, from which rapids extended almost to Ol'viopol'. As the coast line continues to the west, it passes through the small port of Ochakov situated across from the fort and spit of Kinburn. Artillery in Kinburn or Ochakov could close the Bug-Dnepr estuary to shipping going to or from the Black Sea. Between Ochakov and Ovidiopol' on the Dnestr estuary, the coast line is marked by several small rivers and intermittent streams emptying into long, shallow, brackish limans, the mouths of which are closed by baymouth bars.

Bordering New Russia were the Don and Kuban Cossacks on the east, Bessarabia on the west, Podolia on the northwest and the forest-steppe Governments of Kiev, Chernigov (and Poltava), Khar'kov and Voronezh on the north. Podolia was obtained from Poland in 1793 and contained that portion of the Ukraine which was to the west of the Dnepr. Kiev, Chernigov (and Poltava) encompassed approximately the area known earlier as Little Russia,
See Appendix VII for Sources
while the southern parts of the governments of Khar'kov and Voronezh included what had been called the Free (Slobodskaya) Ukraine.

2. Conquest and Administrative Organization

This entire area was organized under the official name of New Russia only from 1796 to 1803. After 1803 it was divided (see figure 3) into three large Governments (guberniyas). Kherson\(^3\) stretched from the Dnestr to the lower Dnepr, included the mouth and delta of the Dnepr, and contained the land to the west of approximately the thirty-fourth meridian. Yekaterinoslav consisted of the land to the east of this meridian and the mouth of the Don. Tauride comprised the Crimean peninsula and also the lands between the isthmus of Perekop and the lower Dnepr, the Konskaya, a left bank tributary of the Dnepr, and the Berda, which flows into the Sea of Azov. All three of these Governments were usually placed under the direction of one governor general whose residence was normally in Odessa.

No significant boundary changes occurred after 1796. As a result of the Russo-Turkish War of 1806-1812, however, Russia obtained Bessarabia\(^4\) so that the Dnestr ceased to serve as the boundary of the Russian Empire. Bessarabia lay in between the Dnestr, the lower Danube and the Prut rivers. It contained a settled population which remained after the Russian occupation, and the Russian government did not attempt to colonize it. Except for the

\(^3\) The Ukaz of 8 October (20 October New Style) 1802 abolished the Province of New Russia and reorganized it into three Governments (guberniyas), Nikolayev, Yekaterinoslav and Tauride. In 1803 the Government of Nikolayev was renamed Kherson due to the fact that there was insufficient space at Nikolayev, the admiralty headquarters, for the offices and personnel of the government administration, and so the administration was established in the town of Kherson. This change may have been motivated by a desire to assist the economy of Kherson which at this time was suffering greatly from the competition of Nikolayev and Odessa. See Skal'kovskiy, Khron., II, 42, 43, 60 and Shmidt, I, 66-67.

years 1812-1818, it was not subordinate to the governor general of New Russia. Bessarabia, like the lands of the Don and Kuban Cossacks to the east, had a different administration and a different set of problems, and writers of the time felt that it was quite distinct from New Russia. The first use of the term New Russia to designate an administrative area occurred in 1764 when the first province named New Russia was established. It lay between the Dnepr on the east and the Polish border on the west (see figure 4), which then followed the Sinyukha river. Its southern boundary was vague but included the headwaters of the Ingul and Ingulets rivers. This area had originally been settled by a group of Serbian, Wallachian and Bulgarian refugees who were given land actually belonging to the Zaporozhian Cossacks and organized into the colony of Novaya Serbia in 1752. To the east of the Dnepr another colony was established in 1753. It was called Slavyanoserbia and was settled primarily by Macedonian and Serbian refugees. Slavyanoserbia covered a narrow belt of land lying between the Ukrainian Fortified Line, constructed in 1730-1735, and the Donets river. In 1764 Slavyanoserbia was reorganized into Yeka-

5. Semenov-Tyan-Shanskiy is the only authority who includes Bessarabia, the Land of the Don Cossacks and the Kuban (Stavropol Government) as parts of New Russia. He was concerned primarily with the geography of the region in the early twentieth century, and by then the true uniqueness of New Russia had been lost. Bessarabia was sometimes included in New Russia for statistical purposes.


7. Skal'kovskiy, Khron., I, 63.

8. Skal'kovskiy, Khron., I, 4. See also Appendix VII, map sources.

* The Sinyukha was the boundary with Poland until the Second Partition in 1793 when Russia annexed Podolia.
terininskaya Province which contained two principal towns, Izyum and Bakhmut. Later the area around Bakhmut was made into a separate province. The seat of the Province of New Russia was first the fort of Saint Yelizaveta, and the town of Yelizavetgrad which grew up around the fort, situated on the upper Ingul river. This town was an important base for military operations. The name of this area was subsequently changed to Yelizavetinskaya Province which, with Yekaterininskaya and Bakhmut Provinces, was subordinated to a single governor who resided in Kremenchug. Kremenchug continued to be the main administrative center of New Russia until after 1784.9

The towns of Kremenchug, Yelizavetgrad, Izyum, Bakhmut and others were fortified by the mid-1760s and constituted a defense line against Tatar raids. The limit of direct Russian administration moved, thusly, south of the Ukrainian Line, but this was only a modest advance of some fifty miles in about 30 years. Kremenchug was the main Russian base for both the army and the navy10 during the Russo-Turkish war of 1769-1774.11

In the midst of the war, in 1770, the Russian government ordered the construction of the Dnepr Line which, when completed, ran from the shores of the Sea of Azov, where its left flank was anchored by the Fort of Petrovskaya near the mouth of the Berda, up the Berda, overland to the Konskaya, and down the Konskaya to the Dnepr where it ended at Nikopol’.12 This line


11. The Russo-Turkish War of 1769-1774 is known as the First Turkish War to distinguish it from the war of 1787-1791. It has also been called the Second Turkish War, because it was the first major struggle with Turkey after the war of 1735-1739, and the Rumyantsev War.

constituted a further expansion of the area under Russian administration of approximately 100 miles down the left bank of the Dnepr to Mikopol' and 160 miles to the mouth of the Berda. The Russian military machine, however, moved much farther; in a rapid advance characterized by excellent cooperation between land and naval forces it occupied the Crimea in June of 1771.13

The war was concluded with the treaty of Kuchuk-Kainarji, signed on 10 July (21 July)* 1774.14 This treaty gave Russia the forts of Kerch1 and Yenikale in the Crimea, which meant that Russia could now block the Straits of Kerch! The fort and peninsula of Taman' on the east side of the Straits continued to be part of the Khanate of the Crimea, but the Khanate was declared independent of Turkey. In addition, Russia obtained the fort and town of Azov on the Don delta and Taganrog, the principal port on the Sea of Azov. To the west, Russia received the mouth of the Dnepr and also the fort of Kinburn, which could control access to the Dnepr-Bug estuary. The Bug became the boundary between Russia and Turkey. Russia here expanded some 120 miles to the south. The Turks, however, retained the fort of Ochakov. Ochakov and Taman' were still not under Russian control, and thus both exits to the Black Sea, the Straits of Kerch15 and the Dnepr-Bug estuary, could be denied Russia. Russia had obtained, however, a firm foothold on the Sea of Azov, and possessed the territory from the mouth of


the Don to that of the Berda on the west and to that of the Yeya on the south.

Russia now also dominated the Zaporozhian Cossacks who possessed a broad tract of land which bordered New Russia on the north and, in practice, included some of the area nominally belonging to the Khan. The Cossacks had developed into a relatively powerful organization and had acted in an independent manner during the Russo-Turkish war. They were viewed as an obstacle to Russian expansion, and so their headquarters, the Sech', was occupied by a Russian army and the Cossack Force itself abolished by the Manifesto of 3 August (14 August) 1775. The Cossack lands and treasury reverted to the Crown, and with this act Russian authority was firmly established throughout the newly conquered areas. The task of organizing this territory was given to Potemkin. He revived the name of the Province of Azov and used it to cover the old Slavyno-serbia and the newly acquired land to the Dnepr Line. It thus approximated the later Government of Yekaterinoslav. Potemkin placed the area west of the Dnepr, reaching to the Bug in the southwest, the Sinyukha in the northwest and the Tyas'min in the north, into the Province of New Russia. The relatively densely populated Poltava region, constituting the basins of the Yorskla and Golta rivers, both left bank tributaries of the Dnepr, was also included in New Russia. With the exception of this area, the Province of New Russia then encompassed almost the same territory as did the later Government of Kherson.

16. The text of the Manifesto is given in Skal'kovskiy, Khron., I, 117-118.
18. Zuyev, p. 222-225; map in Schmidt, II.
These administrative arrangements lasted until 1783 when the size of New Russia was increased by a third with the annexation of the Crimea.

After the signing of the treaty of Kuchuk-Kainarji in 1774, Russia had maintained an active interest in the Crimea and had engaged in political subterfuge to have a pro-Russian khan, Shahin-Girey, elected. A revolt against Shahin-Girey broke out in May 1782, and the Black Sea fleet immediately put to sea, passed safely through the Straits of Kerch* and prevented contact between Turkey and the insurrectionists. All resistance to Shahin-Girey ceased with the arrival of Russian troops in the Crimea. The Russians succeeded in convincing him that he ought to permit the Crimea to be annexed to Russia proper, and this done by Manifesto of 8 April (19 April) 1783. The annexation strengthened Russia's position in the east because the Khanate included the Taman peninsula and territory between the Kuban and Yeya rivers. The boundary in the southeast was now easily defended from the high right bank of the Kuban against the incursions of the mountain peoples of the Caucasus. A week before the annexation was proclaimed, the Provinces of Azov and New Russia were united and renamed Yekaterinoslav Province. Potemkin** began building the town of Yekaterinoslav which he hoped would become the seat of the new province and an important cultural and economic center. The area of the Khanate of the Crimea was renamed the Oblast' of Tauride, but its boundaries remained the same. The Tatars were given Bakhchisaray as their cultural center, while the Russian administration was organized in the town.

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* Apparently there was no artillery in Taman' at this time.

** See Appendix V for a brief discussion of the major leaders of New Russia.
of Simferopol which dominated the main road leading from the mountainous part of the Crimea to Perekop. In addition the forts of Kerch', Yenikale and Kinburn were made part of Tauride. 22

The significance of Kinburn was well understood, and the artillery from the forts of the older fortified lines was sent there in 1783. 23 The Turks made Kinburn the objective of their initial, surprise attack which opened the Russo-Turkish war of 1787-1791. 24 Russia's victory in this war was confirmed by the Treaty of Yassy signed on 29 December 1791 (9 January 1792). This treaty gave Russia the so-called Ochakov area which lay between the Dnestr and the Bug and was bounded on the north by the Yagorlyk and Kodyma rivers. The fort of Ochakov was taken in December 1788 after a long and wearing siege. The Ochakov area was united to Yekataterinoslav Province on 27 January (7 February) 1792 and the boundary was rapidly fortified by the so-called Dnestr Line which consisted of the towns of Dubossary, Tiraspol', Ovidiopol' and the fort of Khadzhibey located at the future site of Odessa. 25

The Treaty of Yassy thus brought the actual conquest of New Russia to an end. The administration of the region, however, was yet to undergo some changes. Potemkin's successor, Zubov, began building the town of Voznesensk which supposedly was to be the center of a new province also named Voznesensk. This province was established by the Ukaz of 27 January

23. Skal'kovskiy, Khron., I, 158.
24. The war of 1787-1791 is variously known as the Second Turkish War, Potemkin's War and the Ochakov War.
(7 February) 1795 which formed it out of the Ochakov area, lands annexed in 1793 from Poland lying beyond the Sinyukha river, and portions of Yekaterinoslav Province. It proved short-lived: Paul I abolished it with the Ukaz of 12 December (23 December 1796). Units of the former Zaporozhian Cossacks, reorganized under a different name in 1789, were given the Taman peninsula and the area between the Kuban and Yeya rivers in 1792. They were then called the Black Sea Cossacks, but with the founding of Yekaterinodar in 1794 their name was changed to the Kuban Cossack Force. This area was separated from New Russia; indeed it had been part of New Russia only from 1783 to 1792.

The Ukaz of 12 December (23 December) 1796 also abolished Yekaterinoslav Province and the Oblast' of Tauride, and in their place it established the Province of New Russia, sometimes called New Russia II. It removed all those northern areas which had been attached to New Russia since 1751. These were the Polish lands beyond the Sinyukha and more importantly the areas of Poltava and Izyum-Slavyansk, the loss of which is estimated to have halved the population of the former Province of Yekaterinoslav. As was the practice at the time, the Province of New Russia was then divided into twelve circles (uyezdi).

26. Skal'kovskiy, Khron., I, 233-242, II, 3. Buildings were actually begun at Voznesensk in 1789. Zubov decided to make it into a show-piece that would rival Potemkin's town of Yekaterinoslav and therefore undertook a grandiose and costly plan of construction. Undoubtedly Zubov wanted to have his own town, and Paul I, disliking all of Catherine II's favorites, wanted just as strongly to abolish the town. In fact, however, the amount of trade along the Bug was so small that Voznesensk would never have prospered, and therefore Paul's order to stop the construction projects was sound. See Shmidt, II, 796; Bagaley, p. 51; Heinrich Storch, Statistische Übersicht der Statthalterechaften des Russischen Reiches, Riga, 1795, p. v-vi, (hereafter cited as Storch).

27. Druzhinina, p. 201.
3. The Significance of New Russia

During the eighteenth century, Russia gradually settled and developed its forest steppes and made them the principal producers of the grains consumed in the urban centers and particularly in the capitals of Moscow and St. Petersburg.* The expansion of agriculture in the forest steppes reflected the fact that the population of Russia living within the territorial limits of 1719 increased from some 15 millions in 1719 to 28 millions in 1795. 28 However, the forest steppes were not protected by any natural frontiers, and the Tatars and Cossacks could cross the fortified lines and raid this region almost at will. When allied with Turkey, they presented a serious threat to the very "bread basket" of Russia. In the last analysis, peace and security in this area could only be obtained by subduing the Cossacks and the Tatars in their home bases, the Dnepr cataracts and the Crimea. That the Tatars were a real danger is best illustrated by the raid of 1769 when a large army of Tatars penetrated as far as Fort Saint Yelizaveta (Yelizavetgrad) and carried out extensive destruction. This raid was similar to that of 1693 when a Tatar force of 40,000 descended on the Ukraine. 29 The Zaporozhian Cossacks were considered just about as great an evil as the Tatars themselves: "The Zaporozhians could not be counted on ... They robbed all their neighbors without discrimination and were more the cause of hate on the part of the Crimean khans than protection from their incursions." 30 They failed to

* See Appendix VI for sources supporting this statement.


30. V. Pavlovich, Materialy dlya geografii i statistiki Rossii, sobrannyye ofitsernom general'nago shebka, Yekaterinoslavskaya Guberniya, St. Petersburg, 1882. p. 4 (hereafter cited as Pavlovich).
support Russia against Turkey during the war of 1769-1774, and groups of
them were not at all adverse to moving into Turkish lands beyond the Bug
and even into the lower Danube and Turkey proper when they became dissatis-
fied with Russian rule. Further, the general distrust of Cossacks seemed
to be amply justified by the Pugachev uprising of 1773 to 1775 in which
insurgents conquered Kazan, came within two hundred miles of Moscow and
seriously threatened Tambov and Voronezh.

The Pugachev insurrection occurred during a war with Turkey, and so
little imagination was required to envisage the possibility of a concerted
alliance among the Cossacks, the Tatars, and Turkey which would have been
able to raid the grain belt of Russia and, if supported by one or more
European powers, might conceivably have threatened the very existence of
the Russian state itself. In view of these considerations, the Russians
abolished the Zaporozhian Cossacks and annexed the Crimea. The latter
event had an effect in Voronezh, 500 miles away from the residence of the
Tatar khans in Bakhchisaray:

In the eighteenth century, . . . the last haunt of the Tatars,
who had threatened the region (of Voronezh) for so long, was
destroyed: in 1783 the Crimea was annexed. With the fall of
the Crimea, the present Voronezh Government (guberniya) entered
the number of those internal areas of Russia which were forever
secure from enemy invasions, and from then onwards its people
could freely develop their activities without any fear for the
future.

The need to provide protection for such forest steppe Governments
as Voronezh was the most compelling motive behind the Russian drive to the

31. The classic and probably still the best treatment of the Pugachev
rebellion is N. Dubrovin, Pugachev i ego soobschenniki, St. Petersburg,
three volumes, 1884. The effect that the uprising had on the nobility is
described in Bolotov's famous letter of 1774 (A. Bolotov, Zhizn' i
priklyucheniya, Moscow, 1930, letter 171, p. 235-236). The Zaporozhians
did not participate in this revolt.

32. Mikhailovich, V., Materialy dlya geografii i statistiki Rossii, sobrannyye
ofitserami general'nago shtaba, Voronezhskaya Guberniya, St. Petersburg, 1862,
p. 7.
south. It is illustrated in Potemkin's proposal to Catherine that the Crimea should be annexed. He described "the difficulty of effectively protecting Russia's southern frontiers while (the) Crimea remained outside the Russian Empire," and stated: "The acquisition of the Crimea can neither make us stronger nor richer, but it will ensure our peace." This consideration was far more important than any desire to open trade routes across the Black Sea. In point of fact, the Black Sea trade remained small until the second decade of the nineteenth century. The southward flowing rivers were unsuitable for navigation except for the Don, and it emptied into the shallow Sea of Azov. Besides, in the eighteenth century, Russia already had three points of contact and trade with Europe, Riga, St. Petersburg and Archangel, each of which was superior to any potential site on the Black Sea coast. The conquest of New Russia, however, was no easy task, and it required that all local resources be used to support the military effort during the struggles with Turkey.


34. See Storch, p. 126-128, for figures showing the importance of these ports.
CHAPTER II: THE PHYSICAL SETTING

1. Relief, Climate, Soils and Vegetation*

The physiographic regions of New Russia may be divided into two groups by the 300 foot contour line which approximately separates the Black Sea and Azov lowlands from the higher regions to the north. The Volyno-Podolian highland (see figure 5) is represented in New Russia by a series of low ridges. It forms the high right bank of the Bug. The Dnepr highland consists of low ridges and hills which increase in elevation from the low left bank of the Bug to the high right bank of the Dnepr. The Dnepr lowland spreads eastward in a series of gradually rising stream terraces and reaches a maximum elevation of about 450 feet. It separates the Dnepr highland from the Donets ridge and the Azov highland. The Donets ridge is bounded on the north by the Donets river (Severnyy Donets) and, due to its elevations (which reach a maximum of over 1,000 feet), has a rather humid climate which today supports a forest steppe type of vegetation. The Donets ridge blends into the Azov highland which reaches its highest points (somewhat over 900 feet) somewhat to the north of Taganrog. The Azov highland is the source region of the Konskaya, a tributary of the Dnepr, and also of the Berda, Kal'mius, Mius and other streams which flow into the Sea of Azov. Both the Azov and the Black Sea lowlands are coastal plains underlain largely by shell limestones which outcrop along the rivers, in the gullies and along the sea coast where they form cliffs. The Azov lowland is only some 20 to 40 miles wide.

The northern two thirds of the Crimean peninsula consists principally of the Crimean plain which extends from the isthmus of Perekop to the stagnant waters of the Sivash on the east and to the Black Sea on the

* See Appendix VIII for a discussion of sources. Map sources are given in Appendix VII.
southeast and west. It is broken by the Tarkhankut and Kerch' hills, located respectively at the western and eastern extremities of the peninsula. Both hilly areas have elevations of about 500 feet. The Crimean plain rises from near sea-level at the salt lakes of Perekop (see also figure 2) towards the Crimean mountains. Figure 5 is too small to show these mountains in detail: they consist of three more or less parallel ridges running in broad arcs from Sevastopol' to somewhat east of Feodosiya. Measured along straight lines they extend about 100 miles east-west and, at the widest point, 40 miles north-south (from Simferopol' to Yalta).

The northernmost ridge has elevations of only some 450 to 900 feet; it drops abruptly into a synclinal lowland separating it from the middle ridge. The middle ridge has been dissected by northward flowing streams and consequently has a broken relief characterized by low valleys, ranging from 300 to 600 feet in elevation, and peaks rising to over 1,300 feet.

The term intermontane valley is used to denote the synclinal lowland and the valleys of the middle ridge. This was a homogeneous region which was inhabited by a large population of Crimean Tatars. The major towns of the Crimea were located here: Bakhchisaray, the Tatar capital, on the west at the mouth of a valley debouching onto the lowland from the middle ridge; Simferopol' and Karasubazar at the base of the northernmost ridge; and, Staryy-Krym at the eastern end of the lowland. The Southernmost ridge rises to elevations of over 3,000 feet. Its summits consist of small, limestone plateaus known by the Tatar word for pasture, Yayla. The

1. The Tatars used them as summer pasture lands. They were free of the vermin which bothered livestock at lower elevations. P. S. Pallas, Travels through the Southern Provinces of the Russian Empire, in the years 1793 and 1794, second edition, London, 1812, II, 109. This edition is very useful because the English translator included information from other sources in footnotes. (Hereafter cited as Pallas, Travels). K. I. Hablitzl, Fizicheskoye opisanie Tavricheskoy oblasti po eya mestopolozeniyu, i po vsem trem tsarskym prirody, St. Petersburg, 1735, p. 35. This volume was obtained in microfilm copy from the British museum.
limestone strata under the Yaylas dip towards the north and convey water from the mountains into the intermontane valley to nourish the springs and rivulets used by the Tatars for irrigation.

The area along the southern base of the mountains consists of a coastal fringe lowland which at Alushta is about 7 miles wide. The lowland is narrower to the southwest of Alushta, and it disappears beyond Balaklava where the mountains fall directly into the sea in almost vertical precipices over 900 feet high. The towns on the coastal fringe lowland were situated in small, semi-circular river valleys (often called "amphitheaters") and were separated from each other by ridges composed of resistant rocks, often diorites, which extend into the sea to form prominent capes, the tops of which are usually flat and contain the ruins of Medieval Genoese and Venetian forts. The capes and ridges hindered overland movement along the coastal fringe lowland. The rugged relief of the southernmost ridge restricted communications with the intermontane valley to three main routes: one from Sudak, one from Alushta and one from Foros (near Balaklava), but even these were steep and awkward. The route from Foros followed a steep gorge which rises to an elevation of about 1,500 feet at the Baydary gates. From here it descended into the Vale of Baydary, a flat, synclinal valley circular in shape and ranging from 10 to 15 miles in diameter, which was fertile because it received the drainage from the surrounding Yaylas. The Vale of Baydary is the source of the Chernaya, a rivulet flowing into the nearby Gulf of Sevastopol.

The plains of New Russia have a rolling appearance when viewed from an airplane, and this is caused in large part by the existence of numerous gullies. The gullies run roughly perpendicular to the main river courses and often contain intermittent streams and springs. Many of them supported
See Appendix VII for Sources
small groves of trees during the eighteenth century. They had more moisture than the surrounding higher ground, were protected from dessicating winds and blizzards, and had a reasonably reliable source of water. For these reasons, they became the early centers of settlement. Because of their steep sides, however, the gullies were obstacles to overland movement.

Shallow, circular depressions exist in the steppes. They were more common in the eighteenth and early nineteenth centuries than they are today. Ranging in size from 60 to 600 feet in diameter and from about 2 to 10 feet in depth, the depressions collect water when the snows melt and sometimes contain small ponds during the spring. As a result, they have more moist soils than other, flatter areas and are able to sustain grasses late into the summer when the vegetation elsewhere has been dessicated. Because of this, they were extremely important summer pasture lands.

New Russia can be divided into several climatic zones, as shown in figure 6.* The two northernmost zones occupy approximately the same area as the Volyno-Podolian, Dnepr and Azov highlands, the Dnepr lowland and the Donets ridge. The two major southern zones, the dry and coastal dry steppes, cover about the same territory as the Black Sea and Azov lowlands and Crimean plain. These zones reflect the fact that the climate of New Russia becomes progressively less favorable for agriculture as one moves from north to south.

The dry and coastal dry steppes experience drought about twice as frequently as do the forest and wet steppes. On the average the former suffer

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2. G. D. Rikhter and F. M. Mik'kov, editors, Lesostep' i step' russkoy ravniny, Moscow, 1956, p. 42-44 (hereafter cited as Rikhter); J. G. Kohl, Russia, St. Petersburg, Moscow, Kharkoff, Riga, Odessa, the German Provinces on the Baltic, The Steppes, the Crimea and the Interior of the Empire, London, 1942, p. 465 (hereafter cited as Kohl). Many of the depressions were leveled by ploughing in the late nineteenth and twentieth centuries.

* The sources used for this map are discussed in Appendix VII. The term steppe is here taken from the Koeppen system of climatic classification in which it indicates a sub-humid or semi-arid climate. The term forest steppe is justified below.
from drought four years and the latter two years out of every ten. Where the forest steppe receives from 18 to 20 inches of precipitation annually (450-500mm, see figure 7), the wet steppe has 16 to 18 inches (400-450mm) and the dry steppe 14 to 16 inches (350-400mm). The coastal dry steppe receives 12 inches (300mm) or less except in the southern part of the Crimean plain which has 14 inches of precipitation. This precipitation is not spread uniformly throughout the year. Rather, as can be seen by comparing figures 7 and 8, about a third of the total annual precipitation comes during the summer period. Summer rainfall occurs predominately in the form of intense convectional showers. It comes after the grains have attained much of their growth and so is of marginal value to farmers. Moreover, evaporation rates are then at their peak, so that most of this rainfall evaporates back into the atmosphere and is not absorbed by the soils. Summer storms sometimes cause dangerous flash floods in the gullies and the rain itself can fall with such force that it flattens and destroys crops. Another approximately ten percent of the annual precipitation comes in the fall, but since the crops have already been harvested this rain is not of immediate benefit. A significant portion of it is lost in surface run-off which causes the rivers to have a small secondary high water stage in the fall.

About forty percent of the total precipitation comes, therefore, in periods when it is of little use for farming. The amounts of useful precipitation range thus from about 12 inches in the forest and 10 inches in the wet steppe to 9 inches in the dry and 7 inches in the coastal dry steppes. These figures are a true indication of the subhumid character of the climate of New Russia. The only area with sufficient moisture to support farming is the forest steppe. Moisture is deficient in the wet steppe, but farming is still possible, though hazardous. The 9 inches of useful precipitation in

3. Richter, figure 19, p. 68.
4. Richter, p. 57. For a description of such a flood, see G. Hume, Thirty Five Years in Russia, London, 1914, p. 53-54.
See Appendix VII for Sources
the dry steppe is too little, and so here fields are restricted to protected gullies and river banks. The coastal dry steppe could be considered arid, and farming is possible only along the banks of the sheltered limans. The coastal dry steppe is hotter than the dry steppe, and in the northern half of the Crimean plain it has the appearance of a desert in the summer.

Winter snowfall is important because it provides a protective cover for fall sown crops and supplies moisture to the soils when it melts. Both the depth and the length of snow cover decrease from north to south, and the high winds frequently associated with blizzards blow the snow off exposed areas and cause it to accumulate in the gullies and steppe depressions. The average length of snow cover in the forest and wet steppes is 40 to 60 days, whereas in the dry and coastal dry steppes it is only 20 to 40 days. More significantly, the winters, especially in the latter two areas, frequently have thaws which cause the snow to melt and expose the ground to subsequent low temperatures associated with outbreaks of Arctic air masses. The length of snow cover can also vary greatly from year to year, particularly in the south. For example, modern records show that the shortest period that snow was on the ground at Odessa was only 2 days.

On the average, the soils of New Russia do not contain adequate moisture for grains at the beginning of spring. The soils of the forest steppe zone then lack from 1 to 2 inches and those of the other three steppe zones 2 to 3 inches of moisture. This deficit can be compensated for if the winter snows are deep and if they melt slowly. This happens 1 to 2 years out of ten in the dry and coastal dry steppes but 2 to 5 years out of ten

5. A. I. Tulupnikov, general editor, Atlas Sel'skago khozyaystva SSSR, Ministerstvo geologii i okhrany nedr SSSR, Glavnoye upravleniye geodesii i kartografii, Moscow, 1960, p. 44 (hereafter cited as Tulupnikov).
6. Tulupnikov, p. 44.
in the wet and forest steppes. Spring rainfall can also provide the extra moisture needed. However, the average amount of precipitation received during the spring ranges from only 1 inch near the Black Sea coast to 2 inches along the northwest border of New Russia. It is thus sufficient to supply the required additional moisture only in the forest steppes zone.

Another way to demonstrate the increasing deficit of moisture from north to south is by relating potential evaporation, the measurement of the amount of moisture the air can absorb, to actual precipitation. Potential evaporation in New Russia ranges from 2 inches along the northern border to about 23 inches in the dry and coastal dry steppes. In other words, potential evaporation exceeds precipitation by 6 inches in the wet and forest steppes and 14 inches in the dry and coastal dry steppes.

The months of July and August are frequently marked by days with temperatures of 95° F and relative humidities of 20% or less. These conditions are caused by hot, dessicating winds which generally come from the east and can be very damaging to crops, particularly to spring sown grains that ripen late in the summer. Planting fall sown grains which ripen early helps the farmer avoid the dessicating winds. However, such

8. Tulupnikov, p. 40.

9. Spring is defined as the period of germination and sprouting when mean diurnal air temperatures are between 40° and 60° F.


11. Rikhter, fig. 17, p. 58, gives somewhat higher figures than Tulupnikov, p. 33. In this case, Tulupnikov has been taken as the better source.

12. 18 inches is taken as the average annual precipitation for the forest and wet steppes and 14 inches as the average for the dry and coastal dry steppes.

See Appendix VII for Sources
grains can be damaged by winter cold spells during which temperatures drop to -20° F and even lower. Because of the lack of snow cover, winter grains freeze much more frequently in the dry and coastal dry steppes than they do in the forest and wet steppes. Actually, the safe growing season in the plains of New Russia extends from the last spring frosts in the early part of April to the beginning of the dessicating winds in the first days of July, or, in other words, for only about 90 days.

Climate also caused transportation difficulties during the period studied. The weather is highly variable and unreliable in the late fall, winter and early spring. During this part of the year blizzards could freeze livestock and unwary travelers to death, and violent storms on the Black Sea could swamp ships with waves over 20 feet high. In effect, the safe season for travel on both land and sea was from about the first of April to the first of October. However, the late summer is an extremely dry period, especially in the coastal dry steppe, and then both water and forage were so difficult to obtain that large numbers of livestock and beasts of burden could perish from hunger and thirst. Actually, therefore, wagon trains could travel only from the first part of April to the beginning of July and for a short period in the fall without risking the lives of their animals.

The soils of New Russia reflect to some degree the differences among the steppe climatic zones (compare figure 9 with figure 6). In the

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northwest part of the forest steppe, the dominant soil is the fully developed chernozem* which is also characteristic of the regions just north of New Russia. This is among the most fertile soils found in all of Russia. The remainder of the forest steppe and most of the wet steppe is covered by the ordinary chernozem which is similar to the fully developed chernozem but not quite as deep, has somewhat less humus and a higher horizon of calcium accumulation. While the ordinary chernozem is relatively fertile, the southern chernozem, which occupies most of the dry and part of the coastal dry steppe, is much less productive. It has only about a third as much humus as the fully developed chernozem and its humus horizon is only half as deep, a result in part of the frequent droughts of the dry steppe. The dominant soil in the coastal dry steppe is the dark chestnut, which is lighter in color, has much less humus and a higher zone of calcium accumulation than any of the black soils. It is a marginal soil for grains and reflects the aridity of the coastal dry steppe. The higher southern part of the Crimean plain is also an area of southern chernozems, probably because it has somewhat more precipitation than the rest of the coastal dry steppe. The Azov lowland contains some rather rich ordinary chernozems and carbonate chernozems. The latter soil is also found in the intermontane valley. It is formed from a limestone parent material and has a high capacity for retaining moisture. The existence of this soil in the Azov lowland helps explain why the Taganrog area was one of the more fertile parts of New Russia.

17. Rikhter, p. 115.

*Chernozems (black soils) develop under a grass vegetation in cool, subhumid climates. Their black color results from the incorporation of humus derived from the decay of grasses. The lower portion of the profile, however, is light in color because of calcium accumulation. In a general way, the fertility of these soils is related to their humus content and the depth of the zone of calcium accumulation.
The alluvial soils found in the lower gullies and in the major river valleys result from the fact that the rivers, rivulets and intermittent streams flood in the spring time. The alluvial soils are thus renewed every year and have a higher moisture content than the soils of the higher areas. They are, therefore, well-suited to farming. The best soils of New Russia are the fully developed chernozems, the carbonate chernozems and the alluvial soils, and these were the first to support settled grain farming.

As shown in figure 6, the mountainous portion of the Crimea consists of three climatic zones: the intermontane valley, the mountains and the coastal region. Average annual precipitation on the summits of the mountains (the Yaylas) ranges from about 20 inches on the east to 40 inches on the west. A large portion of this precipitation occurs as winter snowfall which collects in limestone sinks and depressions and melts slowly in the spring to supply water for springs and rivulets in the intermontane valley. In the intermontane valley, precipitation ranges from 16 inches on the east to 27 inches on the west. Most of it is associated with intense, summer convectional storms, which cause rapid run-off and short periods of flooding in the streams and rivulets. Much of this water is lost as far as agriculture is concerned. The coastal fringe lowland (the coastal region) receives from 22 to 23 inches of precipitation. It has a winter maximum caused by cyclonic storms, but also obtains significant quantities of moisture from summer convectional showers, and is, therefore, better supplied with water throughout the year than any other part of New Russia. The southernmost ridge protects the coastal region from low winter temper-

atures and dessicating summer winds. The intermontane valley, on the other hand, does suffer from periods of winter cold and intense summer heat, although these are not as severe as in the steppe zones.

The forest steppe and steppe vegetational zones are separated by the line where trees disappear from the interfluves. During the period studied, this line lay somewhat to the south of Yelizavetgrad, Yekaterinoslav and Bakhmut. The northernmost climatic zone of New Russia was, therefore, part of the forest steppes. The forests in the eastern part of this zone were felled largely between 1701 and 1783 and used for fuel in the boilers of a salt factory in Bakhmut. The factory was closed in 1783 when the annexation of the Crimea gave Russia secure access to the salt lakes of Perekop. The virgin forests in the rest of the forest steppe zone were felled principally between 1752 and 1769. However, many of the interfluvial forests grew back so that second growth timber was available as late as the mid 1840s. Trees also grew in the other steppe zones, but here they were restricted to the flood plains of the rivers and to the better watered gullies. The most common species were birch, willow, poplar and black-thorn. The Zaporozhian Cossacks regulated the use of these groves, but no one controlled their exploitation after the Cossack Force


22. This is supported by Rikhter, p. 215.


24. Skal'kovskiy, Opyt, II, 42.

25. Skal'kovskiy, Opyt, II, 234, 237. Rikhter cites a map of the forests European Russia made in the early 1840s in support of this statement. Rikhter, p. 215.

was abolished. Consequently, extensive deforestation occurred. One authority estimated that the total area covered by stands of trees declined about 50% by the 1840s.

The middle and southernmost ridges of the Crimean mountains contained beautiful forests in the early 1780s. These were first cut immediately after the founding of Sevastopol’ in 1784. Within a few years the hills around Sevastopol’ had been completely denuded of both trees and bushes, which were consumed as fuel in charring the hulls of naval vessels. The maritime pines and the oaks of the Vale of Baydary were felled during the Turkish War of 1737-1791 and used to repair the ships of the Black Sea fleet. Both the Crimean Tatars and the Russians cut trees elsewhere in the Crimean mountains, but a careful analysis of travelers' observations suggests that regrowth was rapid enough to compensate for these losses.

With the exception of the mountainous part of the Crimea and the forest steppe zone, most of New Russia suffered from a shortage of wood. Because of this, steppe bushes and weeds, and reeds from the river banks were used for fuel and construction material. Some of the bushes were large enough to conceal a man and a horse. Many of them, however, were destroyed by

27. Skal'kovskiy, Opyt, I, 196.
29. Pallas, Travels, II, 52, 97.
31. Pallas, Travels, II, 166.
32. The author noted all references to the location of Crimean forests in the accounts left by travelers. No significant differences could be noted. Accusations that the Russians deforested the Crimea are based on the fact that the trees around Sevastopol’ and in the Vale of Baydary were cut. It appears that the accessible trees elsewhere in the Crimea were not suitable for the construction of large naval vessels. Most of the timber used in Sevastopol’ after 1791 was brought by sea from Taganrog or Kherson.
sheep in the 1820s and 1830s. The Cossacks and later Russian settlers set fire to the reeds every year in order to improve the reed crop and drive away wolves.

The steppe grasses were of two general types, fescues and feather grasses. The fescues favored the moister soils and bloomed twice a year, once in the spring and again in the fall. Both types lay dormant during the heat of summer and were able to survive prolonged periods of drought. The Tatars, Cossacks and Russian settlers burned the steppe grasses in the spring or fall in order to make room for new growth; this practice frequently caused uncontrollable prairie fires which killed large numbers of livestock. The steppes contained many other types of plants, including thistles which stuck to the wool of sheep and which reportedly became widespread in areas that were overgrazed. The steppes had a colorful, verdant appearance in the spring, but in the heat of summer they looked like dessicated wastelands. Plants similar to the American sage brushes and tumble weeds were common in the dry and coastal dry steppes.

Few herds of wild herbivorous animals remained in New Russia by 1780. Packs of wolves hid in the reeds of the flood plains and in the steppe bushes, and attacked and destroyed numerous sheep. Various types of marmots were also common, especially in the dry and coastal dry steppes.

34. Kirikov, p. 23.


36. R. Lyall, Travels in Russia, the Crimea, the Caucasus and Georgia, London, 1825, I, 220 (hereafter cited as Lyall).


38. Kirikov, p. 49.

and they frequently consumed a share of the farmers' crops. Mice were a nuisance because they raided grain in storage. Locusts were a greater problem than any of the animals. They were observed by Zuyev in the fall of 1781 and continued to appear in swarms every few years. At one time or another they seem to have ravaged every part of New Russia, including the intermontane valley. Reportedly, they did most of their damage in mid or late summer and so destroyed more spring sown than fall sown grains. Locusts were especially harmful when they came in years of drought when harvests were poor anyway.

2. Contemporary Opinions

The scientific traveler Zuyev made the first recorded attempt to divide New Russia into regions in 1782. He argued that New Russia consisted of three zones: the Fertile, the Mediocre and the Deficient. The Fertile zone corresponded with the forest steppe, the Mediocre with the wet steppe, and the Deficient with the dry and coastal dry steppes. Zuyev felt that the Fertile and Mediocre zones could "be used for grain raising with good expectations of supporting a large population," but he did not recommend grain farming for the Deficient zone. Others agreed that the

40. Kirikov, p. 53; Shmidt, I, 417; Guthrie, p. 207; E. D. Clarke, Travels in Various Countries of Europe, Asia and Africa: Part the First Russia, Tartary and Turkey (second edition), London, 1811, I, 251 (hereafter cited as Clarke).


42. Shmidt, I, 413.

43. Clarke, p. 540.

44. Shmidt, I, 419.

forest and wet steppes were suited for agriculture. For example, in 1793 a government official traveled between Yelizavetgrad and Dubossary and stated that "during my wide travels I never saw a more beautiful, darker soil, a richer soil. . .The soil. . .repays the exertion of the farmer a hundred fold." 46 Storch, a leading statistical economist, mirrored such opinions when he commented in 1795 that the area between Balta and Ol'viopol' could be "compared in fertility with the best parts of southern Russia." 47

Others thought that the dry and coastal dry steppes could be productive. Among them was the governor of Yekaterinoslav Province, Vasily Kakhovskiy, who in 1792 reported to Catherine the Great that the area around Odessa was a rich region "with land quite deep and fertile." 48 Pallas visited Taganrog in 1793 and found that this area was "so fertile" that wheat would return a twenty to thirty fold harvest from the same field for as many as five successive years. He felt that

good farmers might cultivate gardens and plant all the useful species of timber here, with the greatest facility; as the soil, which is sufficiently moist, is productive of very luxuriant vegetation, and requires little or no labour. 49

The opinions of such men as Kakhovskiy, Pallas and Zuyev undoubtedly influenced the government's decision to encourage grain farming in New Russia. 50


47. Storch, p. 94-96.


49. Pallas, Travels, I, 499.

50. This belief was probably reflected in the statistical atlases of the eighteenth century which classed most of the land of New Russia as "favorable." See, Druzhninina, p. 22; Skal'kovskiy, Opyt., II, 389.
One of the reasons for these optimistic comments was that the observers had seen or heard of bountiful crops. It appears probable that the harvests between 1773 and 1791 were mostly good except for the severe drought of 1780 and the poor yields of 1789.* The subsequent decade, however, brought tragedy. The harvest of 1792 was "indifferent," at least in the Taganrog area, and a drought in 1794 was followed by a severe winter during which many animals perished. Crop failure was widespread in 1795, and in the fall of this year the government permitted the inhabitants of Tiraspol', Voznesensk and Kherson circles to move wherever they wished in order that they might have a chance to search for food. The next drought occurred in 1799. It caused a famine and compelled the government to feed a large portion of the population from recently established grain warehouses.51 This was followed in 1800 by a harvest that "surpassed all hope." The year 1804 produced surpluses that were stored in warehouses. These reserves had to be distributed in 1805 when harvests once more were poor. Good crops were obtained during most of the next decade, but the year 1813 began with a brutally cold winter in which about half of all the livestock in New Russia died.52 Partial harvest failures were reported again in 1820 and 1821 and the government once more had to feed some of the people, especially in the Crimean plain and in parts of Yekaterinoslav Government. Another failure in 1824 was followed by seven "fruitful and productive years."

The 1830s saw what was probably the greatest disaster in the history

* See Appendix III for information on the period 1780-1837.

51. Semenov-Tyan-Shanskiy, p. 459. Zubov was responsible for establishing the warehouses. They did not contain sufficient food to prevent famine.

52. Skal'kovskiy, Khron., II, 227-228.
of New Russia. A prolonged drought occurred in the years 1832, 1833, 1834, and 1835. Apparently 1833 was the worst: whole families of Tatars were said to have died in the Crimean plain and food was in such short supply that Odessa, normally an exporter of wheat, had to import almost a quarter of a million bushels of grain. Although the years 1836, 1837 and 1838 had good harvests, people had become pessimistic about the agricultural potential of New Russia. Travelers then reported that New Russia was a marginal region for grain farming, and the head agronomist of New Russia, a Swiss named J. Demole, stated that he had seen only nine good harvests between 1809 and 1840, all the rest being either "quite mediocre or even ruinous."

Much was learned about the climate of New Russia in the late eighteenth and the first half of the nineteenth centuries. The distinction between the wet and forest steppes on the one hand and the dry and coastal dry on the other, first made by Zuyev, was further refined in the 1840s and 1850s. The heat and aridity of the Crimean plain and the three climatic zones of the mountainous portion of the Crimea were recognized in the 1780s and 1790s. The intermontane valley was then described as having occasional winter cold spells and very hot summers in which most

53. Hommaire, p. 423.
54. Skal'kovskiy, Opyt, II, 37.
57. Skal'kovskiy, Opyt, I, 35-36.
58. Shmidt, I, 364; Pavlovich, p. 76.
of the year's rain came in convectional showers. In addition, Pallas understood that the melting snows on the Yaylas nourished the springs in the intermontane valley.

The 1790s and more especially the 1830s taught the people of New Russia that the weather could vary significantly and could cause severe crop failures for several consecutive years. By the end of the 1830s, and probably earlier, it was known that the melting snows and spring rains were the principal sources of moisture for vegetation and for crops and that the true growing season extended from the last spring frost to the beginning of high temperatures in mid summer. By the 1840s, the main features and problems of the climate of New Russia were about as well understood as they are today, and educated people were well aware that New Russia was a region deficient in moisture.

The rich black soil in our New Russia might be the equal of the virgin fields of America in the strength of its productivity if climate were not the principal obstacle to this. Its main want is the small quantity of moisture, the deficient rainfall.

60. P. S. Pallas, Bemerkungen auf einer Reise in die suedlichen statt- halterschaften des Russischen Reiches in den Jahren 1783 und 1794 (first edition), Leipzig, 1799, 1801, II, 334-390 (hereafter cited as Pallas, Bemerkungen); P. Sumarokov, Dosugi krymskago sud'i ili vtoroye puteshestviye v Tavridu, St. Petersburg, 1803, 1805, I, 220-221 (hereafter cited as Sumarokov).

61. Pallas, Travels, II, 64.

62. Sumarokov, I, 81.

63. Pavlovich, p. 73.

64. Kohl understood these problems in 1838 (Kohl, p. 464-473) and Skal'kovskiy in 1844 (Skal'kovskiy, Ozyt, I, p. 37). Shmidt's discussion of climate (Shmidt, I, p. 364-377) compares favorably with Rikhter's (Rikhter, p. 70-85) which was written a hundred years later.

65. Pavlovich, p. 73.
CHAPTER III: THE PROBLEMS OF CONQUEST

1. The Role of Settlement

It is necessary to discuss briefly the experiences of the Turkish War of 1735-1739 in order to understand why the Russian government encouraged settlement in New Russia. During this war the Russians demonstrated conclusively that they were capable of defeating the Turks in battle. Russian armies occupied and devastated the Crimea, captured Kinburn and Ochakov with minor losses and conquered the area between the Dnepr and the Bug. In spite of these successes, however, the Russians were unable to stay in the regions they conquered. They suffered catastrophic losses from disease and from shortages of water and forage in the dry and coastal dry steppes. For example, 20,000 Russians died of disease in Ochakov and Kinburn between 1737 and 1739, forcing these two forts to be abandoned. Furthermore, the Tatars operated as guerrillas in the rear areas, killing thousands of carters and interdicting supply lines. In the campaign of 1737, a Russian army of 70,000 men suffered 11,000 casualties among its regular troops, and 15,000 among the irregulars guarding the supply lines. Animals were also lost in large numbers. In the single month of October 1735, one army saw 10,000 of its horses die in early winter blizzards. The army commanders tried to solve these problems by building fortifications every six miles and detailing large numbers of troops to defend the supply lines, but all to no avail. The war ended in October 1739 without any important territorial acquisitions.

1. Information on the war of 1735-1739 has been taken largely from Shmidt, I, 15-28; II, 77, and also Semenov-Tyan-Shanskiy, p. 656-658.

The armies had lost thousands of men and animals and had been completely unable to consolidate their victories because of disease, shortages of supplies and long and exposed lines of communications.

It was clear that the answer to the problem of conquering New Russia was not increasing the size of the armies, but rather moving the supply base farther south, closer to the theater of operations, and settling the northern part of New Russia with loyal people who could raise food and animals for the army and act as irregular forces to defend the borders and protect the supply lines. Increasing settlement and the gradual movement of the frontier southward in the following decades provided this base and enabled the Russian armies to meet with lasting success in the period 1769-1791 in the same areas where they failed in 1735-1739.*

As can be seen by comparing figures 4 and 6, Russian settlement prior to 1774 was concentrated in the forest steppe zone. Population growth was slow in the 1740s, but accelerated in the 1750s and 1760s. The most frequently cited figure for the population under Russian control at the outbreak of the Turkish War of 1769-1774 is that in 1768 the area of New Russia to the west of the Dnepr contained 19,639 male souls excluding civil servants, priests and officials serving in the irregular cavalry.3 This figure could be doubled to allow for females and an additional 20,000 people could reasonably be added as an estimate of the population of the area to the east of the Dnepr. This suggests that the total population under Russian control on the eve of the Turkish War of 1769-1774 was at least 60,000. The census of 1773 showed a total population

* Other factors were, of course, also very important. Appendix IX contains a brief discussion of the diplomatic situation during the period 1769-1791.

3. Shmidt, I, 33-42. The last group was numerous.
of 107,140 to the west of the Dnepr and 55,780 to the east, including
the females. The total of about 160,000 included immigrants and people
who had not been counted in the previous census. Both the figures for
1768 and 1773 are probably too low, but they do indicate that the
population available to produce grains and other foodstuffs and to supply
irregular soldiers was significant. That the number of people was still
not sufficient to defend the area was demonstrated by the Tatar raid of
January 1769 in which the Tatars reached Yelizavetgrad and carried off
some 100,000 sheep belonging to the Zaporozhian Cossacks and caused the
Russians the loss of some 30,000 horses.

The need further to build up this base in preparation for the next


5. See Kabuzan, p. 163. Kabuzan gives the following data for the areas
later covered by Yekaterinoslav and Kherson Governments:

<table>
<thead>
<tr>
<th>Year</th>
<th>Male souls</th>
</tr>
</thead>
<tbody>
<tr>
<td>1719</td>
<td>8,641</td>
</tr>
<tr>
<td>1744</td>
<td>14,115</td>
</tr>
<tr>
<td>1762</td>
<td>105,379</td>
</tr>
<tr>
<td>1782</td>
<td>290,026</td>
</tr>
<tr>
<td>1795</td>
<td>519,950</td>
</tr>
</tbody>
</table>

Kabuzan is concerned with population as reported in the revisions and his
study is a general one for all of Russia. Boundaries of both provinces
and circles (uezd) changed in New Russia, and this causes difficulties
in relating population data for different years. In addition, significant
numbers of people, particularly those serving in irregular forces, were
not taxed and therefore not counted accurately. Some of Kabuzan's figures
are suspect, for example, those for Tauride, and several of them differ
from those given by Druzhinina, Skal'kovskiy and Shmidt who used archival
materials with great care. Until more information is available on how
Kabuzan arrived at his figures for New Russia, it seems best to rely on
Druzhinina, Skal'kovskiy and Shmidt. Kabuzan's data support the central
conclusion that substantial population growth did occur.


* In all probability the 1769 estimate is much too low, and the 100,000
increase does not indicate that 100,000 new people came to New Russia.
See Appendix VII for Sources.
war with Turkey caused Potemkin to encourage settlement and to organize the population along military lines. He also expanded the territory of New Russia to include the rather densely settled Poltava region, so as to bring this area's population and resources under his direct control. The success Potemkin had in organizing irregular forces is suggested by the fact that in 1787 about 160,000 of the 200,000 registered male state peasants in New Russia were under obligations to provide soldiers, support and supplies for auxiliary cavalry units. Probably the total registered population in New Russia excluding the Poltava region doubled between 1774 and 1787.* The numbers of people reported in the censuses, and therefore at the disposal of the government, reached 530,000 in the Provinces of Azov and New Russia in 1782 and about 820,000 in 1793 in the Province of Yekaterinoslav. It would be fair to estimate that half of these people lived in areas that were later removed from New Russia, but this still meant that substantial numbers were available within New Russia itself.

In addition, settlement also moved south, out of the forest steppe, and into the wet steppe. This can be seen by comparing figures 10 and 6. The settlers in the wet steppe were concentrated along the river valleys and thus provided protection for the lines of communication. The contri-


* This subject is discussed more fully in the following chapter.

8. Skal'kovskiy, Khron., I, 149.

bution the people of New Russia were able to make to a war effort was indicated in an Imperial Manifesto dated 4 May (15 May) 1789 which thanked the nobility of Yekaterinoslav Province for their assistance during the first years of the Turkish War of 1737-1791. Skal'kovskiy paraphrased the Manifesto as follows:

Not counting the fact that Yekaterinoslav Province was the base and quarters for almost the entire . . . army, we note in addition that the population formed the regiments of Light Cavalry, the Yekaterinoslav Cossack Force, the Black Sea Force, the units of the Settled Greek Volunteers (Arnautes) and the newly created Bug regiment. . . During the lengthy siege of Ochakov, cannon, shells and weapons were transported by the workers from the Kremenchug factories. At the same time dried bread was prepared with incredible devotion in the villages and transported to the Army without charge. After the taking of the Ochakov fortress, up to 10,000 horses were collected with wagons and almost the entire army was transported to winter quarters. Due to the severity of the weather and the lack of fodder, the greater part of these horses died. In addition, the nobility of New Russia supplied 4,000 oxen, 1,000 carts and 3,000 horses for the artillery and for transportation.10

This is eloquent testimony to the success which the Russians had in solving their logistics and rear area security problem. The difference between 1739 and 1789 was that settlement in the intervening years had created a supply base close to the theater of operations, reserves of animals and sizeable auxiliary forces.

New Russia produced a certain amount of the food required by the armies. Bread was the principal ration of a Russian soldier in the late eighteenth century. His normal requirement was three quarters* of flour per year.11 In 1787 approximately 70,000 soldiers were stationed in New


* A Russian quarter (chetvert') is equivalent to 5.75 English bushels. Appendix I contains a conversion table for measurements.

11. Druzhinin, p. 133.
Russia, including 30,000 in the Crimea. They therefore required 210,000 quarters or 1.2 million bushels of flour. The methods of milling were then quite simple, so that a wastage figure of no more than 20% in converting grain to flour would appear reasonable. This indicates that the total requirement for the army was about 250,000 quarters or approximately 1.4 million bushels, the equivalent of 42,000 wagon loads of grain. Of course the army was reinforced during the Turkish War of 1787-1791 and food also had to be provided for the navy, but this figure gives a good indication of the quantities of grain that had to be procured.

This explains why the Russian government encouraged grain farming. It wanted to supply as much of the military's requirement as possible from within New Russia in order to decrease the burdens on the transportation system. Potemkin's interest in grain production is illustrated by the fact that he required the governor of Yekaterinoslav Province to send him reports on the harvests. The following data are based on such reports:

Yekaterinoslav Province (including Poltava)

<table>
<thead>
<tr>
<th>Year</th>
<th>Returns (fold)</th>
<th>Amount Sown (quarters)</th>
<th>Amount Harvested (quarters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1778</td>
<td>3.7</td>
<td>115,209</td>
<td>436,736</td>
</tr>
<tr>
<td>1779</td>
<td>2.8</td>
<td>148,200</td>
<td>437,365</td>
</tr>
<tr>
<td>1780</td>
<td>1.9</td>
<td>125,107</td>
<td>237,816</td>
</tr>
<tr>
<td>1781</td>
<td>1.2</td>
<td>190,245</td>
<td>241,745</td>
</tr>
<tr>
<td>1782</td>
<td>4.5</td>
<td>146,804</td>
<td>674,187</td>
</tr>
<tr>
<td>1783</td>
<td>1.7</td>
<td>543,209</td>
<td>969,393</td>
</tr>
</tbody>
</table>


13. This figure is arrived at by assuming that one bushel of grain weighs 60 pounds. The average wagon at this time carried about one ton of cargo, so that one wagon could transport about 33 bushels of grain.


* A quarter is 5.75 bushels.
These figures are by no means complete. The reported population of the area covered by these reports was 530,000 in 1782. At the time it was estimated that 3 quarters of grain were needed per year to support one peasant. Therefore, in 1782, New Russia needed 1.5 million quarters of grain, and yet according to the above figures it produced only 45% of this amount. The historical records, on the other hand, provide no indication of a food shortage in 1782, indicating that the data did not include all the grain raised in New Russia. However, this information can be used to show that the area sown to grains did increase. One quarter (5.75 bushels) was generally required to plant one desyatina (2.7 acres) of land. This suggests that the sown area increased from about 400,000 acres in 1782 to 1.4 million acres in 1789, i.e. about three-and-a-half times. It seems highly probable that an expansion of this order of magnitude did in fact occur. The data for 1782 and 1789 also suggest that by decreasing civilian consumption the government could have obtained part of the food required for the armies sent into the Crimea in 1783 and for those fighting Turkey in 1790.

The figures showing returns demonstrate further that grain farming was not a reliable basis for the rural economy. When converted to the English system,* yields appear to have ranged from a low of 2.5 bushels

15. Lyashenko, p. 119. This norm was used by such nineteenth century authorities as Tegoborsky and Protopopov in calculating grain requirements for domestic consumption.

16. Skal'kovskiy argues that the data are not complete, and cites as an example that grain was exported in the year 1789 when, according to the table, there should have been an acute shortage of food. See Skal'kovskiy, op. cit., II, p. 92.

17. L. Tegoborsky, Commentaries on the Productive Forces of Russia, London, 1855, I, 42 (hereafter cited as Tegoborsky).

* The conversion was made by assuming that one quarter of grain (5.75 bushels) was planted to each desyatina (2.7 acres) of land. Thus a yield of 4.5 fold indicated a harvest of 4.5 quarters per desyatina or 9.6 bushels an acre.
See Appendix VII for Sources
an acre in 1781 to a high of 9.6 bushels in 1782. The other years had harvests of 3.6, 4, 6 and 7.9 bushels an acre. These low and variable yields illustrate both the climatic difficulties faced and the low levels of agricultural technology. In view of the lack of information and the variation in harvests from year to year, it is impossible to determine how much food New Russia actually provided for the military establishment. The quantities, however, were probably significant and the fact that they were available close to the theater of combat meant that at least a part of the Russian Army did not have to fear for its supplies.

2. Ports for the Navy*

The struggle for New Russia was more than a battle on the land; it was also a contest for hegemony over the Black Sea. The coastline (fig. 11) was long and difficult to defend. The Turkish navy could land soldiers in the rear of the Russian armies advancing to the west, towards the Dnestr and Danube, attack vital forts like Taman', Kerch', Ochakov and Kinburn, incite rebellion in the Crimea, thwart the Russian dream of one day conquering Constantinople, and effectively block any ocean borne trade with New Russia. Naval vessels were able to move rapidly on the Black Sea. For example, the Black Sea Fleet sailed from Sevastopol' to Varna in 2 days in 1791 and required only 5 days to cover the distance from Constantinople to Sevastopol' in 1800. The Russian government was acutely conscious of the fact that the Turks could travel just as quickly

* Most of the information on the advantages and disadvantages of port sites is based on map analysis.

and, therefore, wanted to build a large and powerful navy, one capable
of defeating the Turks in major engagements and dominating the Black Sea.

Russian naval ships made their first appearance in New Russia on the
Don river and in the Sea of Azov. They were built on the Khoper and sent
down the Don in 1769 and encountered sand bars, shoals and sunken logs that
impeded progress. The vessels were armed and provisioned at Rostov, which
then was a fort well-protected from land attack by deep gullies. It
dominated river traffic, controlled the best anchorage on the lower river,20
and was used as the staging area for the troops who captured the fort of
Azov in 1769. Azov was situated about 15 miles to the west on a highland
which dominated the southern branch of the Don, the main navigation channel
at the time.

The fleet moved downstream from Rostov and then waited, presumably
at Azov, for a west wind which would force water out of the Gulf of
Taganrog and into the river channel, thus raising the water level over
the bar at the mouth of the Don21 and permitting vessels to exit. Usually
(but not always) the waiting period was not too long because the prevailing
wind here is from the west during the ice-free season.22 After crossing
the bar, the fleet proceeded for 18 miles in a northwesterly direction to
Taganrog which was also seized from the Turks in 1769. On this part of
the journey, the ships were at an angle of 45° to the west winds, which
is what sailors call a "broad reach," the optimum angle for a ship to
take towards the wind. No other site along the shore of the Sea of Azov

20. Clarke, 313; L. Oliphant, The Russian Shores of the Black Sea in the
Autumn of 1852, Edinburgh, 1854, p. 156 (hereafter cited as Oliphant).
21. Pavlovich, p. 65; I. V. Samoylov, Ust'ya rek, Moscow, 1962, p. 243
(hereafter cited as Samoylov).
was as easily accessible for vessels coming from the Don. Taganrog was situated on a 70 to 80 foot high promontory\(^23\) and so was a clear landmark; it was reportedly possible to see all the way to Azov on a clear day.\(^24\) To some extent the promontory also shielded the port from storms. The natural barrier of the Mius liman protected the western side of Taganrog from land attack. The town could be defended along a five mile front running from the fort to the northernmost part of the Mius liman. Retreat was also possible, either overland or by sea to Rostov. No other site on the Sea of Azov was as accessible and as well defended by natural barriers. These evidently were the considerations that caused the navy to make Taganrog its first base on the sea coast of New Russia.

The fleet started its journey down the Don in 1769 but was not ready for operations until 1771, and even then only 12 of its 79 ships were fit to take to sea. The others had been improperly constructed and were unseaworthy. The first mission the navy undertook was to ferry troops from Genicheysk to the Arabat Strelka in preparation for the invasion of the Crimea. The ships left Taganrog on 13 May (29 May) and arrived at Genicheysk on 9 June (20 June) 1771, thus taking 22 days to sail only 200 miles.\(^25\) Some of these vessels later sailed hesitantly along the coasts of the Crimea and even "discovered" Sevastopol. However, they were simply not adequate for use on the Black Sea; they were too small, too shallow of draft and too poorly constructed to be able to meet the Turkish

\(^{23}\) Pallas, Travels, I, 505.

\(^{24}\) Oliphant, p. 171.

\(^{25}\) Golovachov, p. 12-18.
fleet. Ships with a minimum draft of 17 feet were required, and these had to be used where there was another 6 feet of water under the keel to provide protection from wave action. Vessels of this size could not be built on Khoper river and brought like this fleet 250 miles down the Don through shoals, sand bars and winding channels into the shallow Sea of Azov. To establish a fleet Russia needed a good port, protected from winter storms, with calm water sufficiently deep to float ships-of-the-line, one which could be supplied especially with timber and could be defended against both land and sea attack.26

The Russians first looked for such a site along the Sea of Azov. Taganrog was too shallow, and, in addition, off-shore winds frequently blew water out of the harbor, leaving vessels stranded in the mud, and forcing arriving ships to lie ten miles off-shore. Lighters then had to be used to load or discharge cargoes. The Sea of Azov was either frozen or covered with broken ice during four months of the year, making navigation impossible. This ice could be blown into Taganrog and damage ships. In addition, the sea had frequent fogs in winter, spring and especially fall.27 Obviously the type of ships required could not be built at any place on the coast of the Sea of Azov. Attention was then given to Kerch*, which was found to be equally unsuitable. The depth of water in the Straits was reported as being only 1½-16 feet. The water, moreover, was not calm: a current was known to flow generally from the Sea of Azov into the Black Sea, but during southerly winds it reversed itself. These


See Appendix VII for Sources

MAJOR PORTS ON THE WEST

BLACK SEA
currents are now reported to flow at a rate of up to two miles an hour in either direction during strong winds; they caused difficulties for sailing vessels lying in the Straits. Kerch was also blocked by floating ice for three to four months during the winter and was open to storms. Finally, it could be attacked from the sea and, until the annexation of the Crimea, from the land.

Kherson, Clubokaya Pristan and Sevastopol

Potemkin initiated an active search for a naval base immediately after the Turkish War of 1769-1774. The Sea of Azov had been discounted, and therefore sites were examined on the west. The Bug was then the boundary between Russia and Turkey, and any base on its estuary was too exposed to land attack. In point of fact this area was raided by Turks at the outbreak of the next Turkish war. The implication of this situation was that the port had to be located either on the lower Dnepr or in the Dnepr estuary. Two sites were considered: Kherson and Clubokaya Pristan.

Kherson was located on the high right bank of the Dnepr at the beginning of the delta. Its site was thus similar to that of Rostov on the Don. It was surrounded by natural barriers on practically all sides: the Koshevaya, the northernmost distributary of the Don delta, on the

28. Pallas, Travels, II, 233; Leonov, p. 634-635.
29. Hommaire, p. 441, 412.
30. Information on Kherson was taken from: Golovachov, p. 47-50; Bagaley, p. 35-36; Segur, III, 117-119; Hommaire, p. 34-37; Lyall, I, 212-219; Skal'kovskiy, Khron., I, 125-126, 132-138; Druzhinina, p. 61; Shmidt, II, 733-747; E. Craven, A Journey through the Crimea to Constantinople in a series of letters written in the year 1785, London, 1785, p. 156-159 (hereafter cited as Craven, Journey); Guthrie, A Tour performed in the Years 1785-6, through the Taurida, or Crimea, London, 1802, pp. 5, 33 (hereafter cited as Guthrie). No traveler visited Clubokaya Pristan.
southwest, the swampy left bank of the Dnepr on the south, and a small lake, Beloye Ozero, on the northwest. A series of deep gullies existed to the west and one of them curved around to provide protection on the north. The only stretch of flat land lay in the northeast, and it was only three miles wide, running from the end of a deep gully to the lowest meander of the Ingulets river. The main road to the north, to Yekaterinoslav and Kremenchug, passed through this area. The water was deeper at Kherson than it was anywhere else on the lower Dnepr or on the delta, and this water was probably not turbulent because the main current here follows the left or opposite bank of the river.31 There was another possible site: the confluence of the Ingulets and Dnepr about ten miles upstream. The probable disadvantages of this location were that it was farther from the Dnepr estuary, the mouth of the Ingulets was partially blocked by a sand bar and the current of the river reverses itself during high water on the Dnepr, thus causing turbulence. The Dnepr was the major supply route for wood. Timber was floated through the rapids during spring high water and brought downstream to Kherson. To reach the lower Ingulets, however, the logs would have to be brought around a spit which separates the Dnepr from the Ingulets and then taken upstream against the normal current. These factors apparently removed the mouth of the Ingulets from consideration.

The Admiralty favored Glubokaya Pristan, which was situated on the east side of the first cape, Cape Stanislav, to project into the Dnepr estuary along its northern shore. The main channel through the Dnepr delta was the southernmost one (Belogrudovskoye girlo).32

32. Shmidt, I, 184.
Ships, especially the large men-of-war, could cross the bar at the mouth of this channel only when the wind blew from the west and forced water upstream. Then, however, they still needed the assistance of pontoons or "camels." Fortunately, west winds prevail here during the ice-free season, from April to November, so that vessels enjoyed a "broad reach," the optimum angle for a ship in relation to the wind, in sailing from the mouth of the channel to Cape Stanislav. Taganrog also had this advantage. The water reached a depth of 14 feet about 230 yards from the east side of the cape. The estuary's bottom consisted of silt which moved in the same direction as the surface current. Ships of more than 14 foot draft could sail safely here even with their keels imbedded in the mud.

Glubokaya Pristan' was the most defensible of all the sites available on the east side of Cape Stanislav. It was situated between two steep gullies, one of which extends three miles inland and forms a natural barrier to the west. Somewhat north of this gully are some small hills on which artillery could be placed to dominate the area to the northwest. The Admiralty probably chose Glubokaya Pristan' over other possible sites because of these natural defensive features. However, in 1778, Potemkin overruled the Admiralty and decided that the shipyard and the headquarters of the Black Sea Fleet would be established at Kherson. Potemkin's reasons are not difficult to determine. The main Turkish base at this time was Ochakov, and ships could sail from there, raid the entire Dnepr estuary and sink partially constructed vessels.

34. Samoylov, p. 267-268.
35. Zuyev, p. 223; Shmidt, I, 186.
lying off Cape Stanislav. They could not, however, go upstream through
the winding channels of the Dnepr delta against Russian opposition.
Moreover, timber could be floated to Kherson much more easily than it
could to Glubokaya Pristan*. In addition to these factors, the site
of Kherson was flat and relatively dry and was underlain by shell lime-
stones which were easy to cut and use as construction material.36
Most of the buildings were actually made from limestone blocks. Glubokaya
Pristan* was not completely ignored, however; it was used to outfit
ships and as a base for naval operations during the Turkish War of 1787–
1796.

Many travelers criticized Potemkin's decision.37 They emphasized
three serious drawbacks to this site: first, the channel through the
Dnepr delta was shallow and winding so that ships passed through it
with great difficulty and only with the use of pontoons; second, timber
could be brought down the Dnepr only at flood time; and, third, malaria,
which they knew came from the swamps along the river, carried away a
large part of the population. What these people ignored, however, was
that Kherson was a naval shipyard that had to be defended and that it
was the best site available when Potemkin made his choice in 1778. From
a strictly military point of view, Potemkin made a wise decision. Kherson
became a successful shipyard; as late as 1826 half the vessels in the
Black Sea Fleet had been built there, including the first 100 gun ship-
of-the-line, constructed in 1800.38 The real proof that Potemkin was

36. Pallas, Travels, II, 495.
37. Segur made the earliest and the most incisive criticisms in 1787.
See Segur, III, 117; see also Clarke, p. 60, and Bagaley, p. 43.
right is that no enemy ever succeeded in attacking Kherson, not even the Allied Fleet during the Crimean War, which, however, was able to shell the far better port of Odessa, besiege Sevastopol', and raid Kerch'.

The construction of Kherson began in 1778 and proceeded on a "crash basis" in the 1780s to prepare the navy for the struggle with Turkey that everyone knew would come. The government still continued to search for a better port. The navy surveyed the Gulf of Sevastopol' in 1773 and used it to repair ships damaged by storms during the latter years of the Turkish War of 1769-1774. The navy returned immediately upon the annexation of the Crimea in 1783 and began to construct a naval base with great haste. There was (and is) no other site on the Black Sea with the manifest advantages of Sevastopol'. It is ice free throughout the year, completely protected from storms, and has enough deep water bays to accommodate 100 ships-of-the-line. Vessels could be docked right along the shore so that no expensive piers were required. In addition, it is located just about in the center of the Black Sea, so that the fleet could quickly reach any desired point. It soon became the main operations base for the Black Sea Fleet. The admirals kept most of their ships concentrated here as a counterpoise to any possible Turkish movement into the Black Sea.

Sevastopol', however, suffered from a shortage of timber and so could not be used as a major shipyard. The trees of the Crimea were not the right types for the construction of large ships. Timber could be obtained by two routes: down the Don, through the Sea of Azov and along the south coast of the Crimea, or down the Dnepr, through the Dnepr-Bug estuary, and along the west coast of the Crimea. Both these

routes were long and subject to storms and enemy interdiction. It was far easier and much less expensive to continue building ships at Kherson. The new base also lacked an adequate supply of good drinking water and the rivulet Chernaya which empties into the head of the Gulf created swamps in which malaria carrying mosquitoes bred. Malaria killed many people in Sevastopol', just as it did in Kherson.

As soon as Russian naval vessels appeared on the Sea of Azov in 1771 they were attacked by sea crustaceans and especially by a type of worm which bore so many holes in the ships' hulls that "water spurted into the holds like water out of a fountain."\(^{40}\) This made it necessary to careen the vessels and char their hulls every two years.\(^{41}\) The work was done in Sevastopol' in 1773 and 1774 and after 1783. Sevastopol' was reported to be free of these worms as late as 1783,\(^{42}\) but later they became so serious that they made ships totally unfit for sailing in only five to ten years. The worms continued to ruin vessels even on the eve of the Crimean War;\(^{43}\) they destroyed more ships than were ever lost in battle.

The recognized solution to this problem was to cover the ships' hulls with copper sheathing. This was done to most of the Baltic Fleet by the late 1780s. The first tests on the use of copper for this purpose were made in the Black Sea Fleet in 1788,\(^{44}\) but it was not until 1800 that the Tsar ordered copper sheathing for the Fleet.\(^{45}\) The order was

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40. Golovachov, p. 22.
41. Golovachov, p. 22.
42. Golovachov, p. 69.
43. Oliphant, p. 255-256.
44. Golovachov, p. 142.
not carried out, and only one ship is known to have been given a copper bottom. It was launched in Nikolayev in 1804 and arrived in Sevastopol in 1805.\(^6\) An official report prepared for Nicholas I in 1826 complained bitterly about this problem and recommended the use of copper sheathing; however, it was not adopted.\(^7\) Only one explanation has been offered for the government's action, and it was given by a minor official who visited the naval base in 1794. He had many friends in government service, reported that worms were destroying the fleet, recognized copper sheathing as the answer, and then argued that this solution should not be adopted because of its expense and because "there would be much thievery, as there is now with iron, whole wagon loads of which are stolen from Sevastopol and sold in Simferopol."\(^8\)

The government chose to give preference to the Baltic Fleet in this as in other matters. The Black Sea Fleet could be prevented from reaching the Mediterranean by Turkish control of the Bosphorus, whereas the Baltic Fleet could sail around Europe and operate in this sea.\(^*\) In the Turkish War of 1767-1774, the Baltic Fleet engaged and destroyed the Turkish navy in the Aegean, and thus kept the enemy's major ships from operating on the Black Sea.\(^9\) The same thing happened during the Turkish War of 1806-1812.\(^10\) On the other hand, Sweden declared war on Russia during the Turkish War of 1787-1791 and kept the Baltic Fleet

\(^{46}\) Golovachov, p. 220.

\(^{47}\) Golovachov, p. 231.

\(^{48}\) Reimers, III, 37.


\(^{50}\) Golovachov, p. 220, 225-227.

* This strategy was based on the assumption that neither France nor England would oppose the fleet's movement. See Appendix IX.
occupied so that it could not divert the Turks. In this war, therefore, the Black Sea Fleet had to bear the brunt of the sea fighting. Then the Turks probably made a major strategic error: they chose to concentrate their efforts in the Dnepr-Bug estuary where the water was too shallow for large ships to operate effectively. The Russians feared that the Turkish navy would choose to attack diverse points along the sea coast and particularly in the Crimea. The Turks, however, made only one attempt to exploit this possibility, and it was repelled by the Black Sea Fleet under Ushakov in August 1790. It seems probable, therefore, that the government decided to allocate resources for copper sheathing only to the Baltic Fleet with the expectation that it could divert the major portion of the Turkish fleet and thus enable the inferior ships of the Black Sea Fleet to be used for only minor operations. One could speculate, however, that the amount of money thus saved was probably exceeded by the long-run costs of frequently replacing and repairing the ships of the Black Sea Fleet, not to mention the resulting severe reduction in the fleet's combat capability.

Nikolayev and Odessa

The handicaps of Kherson must have been obvious to Potemkin because

51. Golovachov, p. 147.

52. Suvorov had this possibility in mind when the Turks made their initial attack against Kinburn in 1737. He delayed his counterattack until the last possible moment in order to permit the Turkish build-up to become so large that a withdrawal and a new attack elsewhere would be difficult. Golovachov, p. 124.


he instituted a search for a better site closer to the Dnepr estuary as early as 1787. He may have had Nikolayev in mind even then since a proposal had been made in 1784 to construct a fort at the mouth of the Ingul river. Potemkin was probably most interested in finding a place where ships could be repaired without having to sail through the shallow Dnepr estuary and the winding channels of the delta to reach Kherson. He first sent his trusted assistant M. L. Faleyev to the confluence of the Ingul and the Bug in 1787 to investigate a claim for damages presented by a Frenchman who owned an estate (Spasskoye) which had been destroyed by Turkish soldiers. The following year Potemkin dispatched an engineer to survey the area and then ordered a shipyard built in June 1788, i.e. about six months before Ochakov fell. The formal founding of Nikolayev, however, did not occur until March 1789, by which time it was secure from Turkish attack. Construction proceeded rapidly and in 1795 the Admiralty headquarters was moved here from Kherson.

Nikolayev was located at the confluence of the Bug and Ingul rivers at the head of the Bug estuary. Neither of these rivers forms much of a delta. The town was built on the point of land where the rivers come together, but the shipyards were placed on the Ingul rather than the Bug. The reason for this probably was that the Ingul, which has its sources within New Russia, has less annual flow than the Bug, less floating ice, and less variation in flow, so that its waters would generally be calmer than those of the Bug. Its mouth was deep enough to

55. Skal'kovskiy, Khron., I, 193, 203.
56. Golovachov, p. 146.
57. Shmidt, I, 192.
float ships of war which could be docked right next to the banks. In addition there appears to have been a diurnal reversal in the direction of the current so that ships were easy to move both into and out of the Ingul. A site might have been chosen in the estuary itself. However, the left bank, where the deepest water lay, had a sandy shore which would have made the construction of buildings difficult. The right bank was a plateau reported to be 140 feet high, but the water along this shore was very shallow. Neither side, therefore, would have been suitable.

Nikolayev had one disadvantage. The Bug estuary and the exit into the Black Sea were shallow in places. In 1818 a steam powered dredge was employed to deepen the channels to twenty one feet, and thus the obstacles were removed. Dredging was apparently repeated every year thereafter. This is an interesting reflection on the scale of values of the Russian government. It was willing to invest in dredging for a naval base of little economic value, but not for any of the commercial ports, like Taganrog, which suffered more grievously from shallow water. Timber was difficult to transport to Nikolayev: it was brought down the Dnepr and through the Dnepr-Bug estuary instead of down the Bug. The Bug was not only shallow for most of its course, but it was also

60. Shmidt, I, 186, 194; Skal'kovskiy, Opyt, II, 101; Skal'kovskiy, Khron., II, 275.
61. Reimers, III, 106; Guthrie, p. 7; Lyall, I, 204.
flocked by rapids between Voznesensk and Ol'diopol', and evidently timber rafts could not negotiate these rapids during spring high water. Even Voznesensk was supplied with wood brought upstream rather than downstream. The fact that timber could be floated more easily to Kherson than to any other port explains why it continued to contain the major naval shipyards.

With Kherson established as the main construction yard, Nikolayev as the principal repair yard and Sevastopol' as the major operations base, the Black Sea Fleet was well provided with port facilities. However, the worms, poor construction, shortages of timber, especially of good ship masts, and the long lapse between the time a keel was laid and the time a vessel became operational limited the number of ships in the fleet. At the end of the Turkish War of 1787-1791, it consisted of only 8 ships-of-the-line and 13 frigates-of-the-line supported by 8 small frigates, 46 other smaller craft and 16 transports. The small ships patrolled the coasts of the Crimea to prevent infiltration of Turkish agents, scouted the Turkish fleet, and assisted the 21 ships-of-the-line in battle. The large ships had to be kept concentrated in Sevastopol' to be ready to sail against the Turks. The Black Sea Fleet was not large enough to detail vessels to support the army, and in any case most of its ships were of too deep a draft to operate effectively in the Dnepr-Bug estuary and in the other coastal areas where the ground forces needed assistance.

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63. Skal'kovskiy, Opyt, 101.

64. Golovachov, p. 186.
The Russians therefore built a flotilla of galleys which contained 170 small craft by 1791. These shallow draft vessels were rowed and so operated independently of the winds. They fought the battles of the Dnepr-Bug estuary in 1787 and 1788 and supported the army in the successful assaults on Khadzhibey and the Turkish forts on the Danube.

The flotilla continued to be an important part of Russia's military machine; at the battle of Varna in July 1828, its vessels succeeded in removing 14 armed Turkish ships from under the very guns of the fortress.

It needed a port, one close to the potential theater of operations, where the unseaworthy small craft could find quick refuge during any kind of bad weather. This meant that after 1791 it had to be based as close as possible to the Dnestr river, now the boundary between Russia and Turkey.

The search for such a base resulted in the establishment of what was to become the most important port and the only city in New Russia, Odessa.

Two sites for the new base were considered. Major General Joseph De Ribas proposed the former Turkish fort of Khadizhbey, which he, as commander of the rowing flotilla, had helped capture. Admiral Nikolay Semenovich Mordvinov, appointed commander of the Black Sea Fleet in 1792, wanted Ochakov which he felt could also serve as a refuge for the large vessels of the fleet. Evidently he wished to construct a canal through the Ochakov peninsula to be used as a ship haven and to shorten the time required for ships to exit the Dnepr-Bug estuary.


68. For biographic information on De Ribas, see Skal'kovskiy, Khron., I, 199.
Catherine the Great officially recognized the need for a new port on 7 June (18 June) 1793 in an Ukaz which directed Platon Zubov to select a site closer to the sea than Kherson or Nikolayev. Interestingly, she referred directly to Mordvinov's proposal and pointed out that Ochakov had no protection from storms and suffered from floating ice during the winter. She also emphasized that the new port ought to be suitable for commerce. A commission was appointed to survey all possible sites, and De Ribas was selected as one of its members. He made, reportedly, a personal survey of the coastline and then recommended Khadzhibey where Suvorov had already begun to build a fort. As happened when the Admiralty favored Glubokaya Pristan' over Kherson, the final decision went against the Navy and Khadzhibey, renamed Odessa, was officially established as a new port by the Manifesto of 27 May (7 June) 1794. De Ribas was appointed governor of the town and also continued as commander of the rowing flotilla. Ochakov would actually have been a bad choice. It suffered from ice in the winter and storms, and its only possible commercial advantage was that it could be used as a transshipment point for cargoes coming down the Dnepr. In this respect Ochakov was similar to Kerch', and like Kerch' it never developed into a significant port. Its population as late as the 1840s remained under 5,000. Odessa, on the other hand, had real advantages. There is only one indentation in the coastline between the Dnepr-Bug and the Dnestr estuaries, and this occurs at Odessa where the coastline makes

69. Skal'kovskiy, Khron., I, 222-223.
70. Skal'kovskiy, Khron., I, 237.
a ninety degree turn to the south. The town furthermore is situated on a promontory about 150 feet high, high,\textsuperscript{72} an inconvenience for loading and unloading ships but an ideal location for a fortress.* The water was (and is) deep, 20 to 40 feet, and there was little current\textsuperscript{73} so that large ships could anchor close to shore. The port was not completely ice free, and later records showed that ice could occur in the harbor from two to fifty-four days a year.\textsuperscript{74} However, this was not a particular handicap because storms caused almost all navigation on the Black Sea to cease in the winter anyway and the absence of a current meant that ice floes would not damage ships spending the winter in Odessa as they would those staying in Ochakov or Kerch'. The single greatest disadvantage of Odessa was the fact that its port was open to the east and, to a lesser degree, to the south. This handicap was later overcome by the construction of a breakwater. The Dnestr liman was the only other site in this area that might have been considered. In addition to the fact that it was exposed to Turkish attacks, the liman also suffered from shallow water and was almost completely closed by a baymouth bar and was, therefore, unsuitable.

Later, Odessa's location proved to have some other advantages. It was the closest seaport to the grain surplus producing areas of Volynia and Podolia and could be reached by roads following the Dnestr valley. It was also better situated than Kherson or Nikolayev to receive goods

\textsuperscript{72} Shmidt, I, 150.

\textsuperscript{73} Shmidt, I, 155-156.

\textsuperscript{74} Shmidt, I, 155-156.

* It might be noted that in these respects Odessa was similar to Taganrog.
from Kherson Government. Indeed, these ports soon came into the "shadow area" of Odessa. Furthermore, the Dneestr valley itself was fertile and was beginning to be settled in the early 1790s. As the export potential of New Russia improved, another locational feature became important: Odessa was much closer to the Dardanelles than any other port except the naval base at Sevastopol and the small port of Yevpatoriya on the west coast of the Crimea, neither of which developed any significant foreign trade.

Thus there were sound and logical reasons for the selection of Odessa over Ochakov. However, another factor may have been important, because the issue in reality represented a disagreement between Mordvinov and De Ribas. Mordvinov, although by reputation an efficient administrator, had proved to be an ineffectual naval commander in the battles on the Dnepr-Bug estuary. Probably for this reason he quarreled with such people as John Paul Jones, Prince Nassau Zigen and even the most talented Russian naval commander of the time, F. F. Ushakov. The quarrel with Ushakov was so severe that it caused the government to remove Mordvinov as commander of the Black Sea Fleet in 1799. In light of this situation, Mordvinov may very well have disliked De Ribas who, like the others, had a brilliant combat record, and the issue of whether Ochakov or Khadzhibey should become the new port may have in fact been but a reflection of a struggle between these two men. De Ribas may have favored Khadzhibey simply because he had helped conquer it from Turkey, and Mordvinov may have wanted Ochakov for no better reason than that he disliked De Ribas. The final decision after all won De Ribas a position of considerable importance as the first governor of Odessa.

75. Taganrog is about twice as far from Constantinople as Odessa.
76. Golovachov, p. 214.
This discussion has shown that the major ports of New Russia were
without exception originally founded in order to provide shipyards,
repair yards and bases for the navy, just as the original reason for
settling the lands of New Russia was to obtain animals, supplies and
irregular forces to support the army. Military considerations slowly
decreased in importance after 1791, although they still remained signi-


cificant because of the possibility of war with Turkey. Commercial
activities began to increase, and traders who, after all, wished to
make a profit, quickly learned that shallow water, ice conditions,
winding channels and poor ports made the Sea of Azov and the Bug-Dnepr
estuary inferior places in which to conduct foreign trade. The ports of
the Crimea not only lacked export goods but also suffered from severe
restrictions imposed by the government.

Odessa was quick to make use of its advantages. Within one year it
surpassed in total trade turnover Kherson, Feodosiya, Kerch', Yenikale
and Sevastopol', and in 1796 it passed Yevpatoriya, but was still second
to Taganrog. Odessa needed a breakwater, warehouses and other port
facilities. Work on these projects began in 1794, but was stopped
when Catherine the Great died in 1796. A large part of the funds
originally assigned to them appears to have vanished into the pockets of
dishonest officials. Paul I ordered a review of Odessa's needs, and

77. The Russians feared a Turkish attack in alliance with France in 1798.
Colovachov, p. 196-199. The Black Sea Fleet assisted the Turks and the
British against the French in the Aegean in 1799 and 1800. Colovachov,
p. 200-201; Mitchell, p. 115. It also raided Turkish possessions on the

78. Druzhinina, p. 258.

79. Guthrie, p. 25.

the report he received recommended that the harbor improvements be completed. However, Paul procrastinated, and in 1799 the town suffered a double disaster: a total harvest failure and a destructive earthquake. Then the people of Odessa decided to do something and they displayed what in the long run was probably the town's greatest asset: clever and sagacious leadership. In 1800 the head magistrate sent Paul I a present of 3,000 oranges, a delicacy at the time, with a request for a loan of 250,000 rubles. The loan was granted. None of the other towns of New Russia ever did anything like this. In 1803 talented leadership became the hallmark of Odessa with the appointment of Richelieu as governor general, and by the end of his administration in 1817 Odessa had become the most important port in New Russia. Its export trade exceeded Riga's in 1844, and even surpassed that of St. Petersburg in 1877.

3. Malaria and the Bubonic Plague

Malaria

As will be recalled, Kherson was founded in 1778 and rapidly developed in the subsequent years. The town's site was dry, but both banks of the river near it contained large marshes in which mosquitoes thrived. The mosquitoes carried malaria in the summer months, infected the population, and caused so many deaths in the 1780s that construction

82. Semenov-Tyan-Shanskiy, p. 459.
83. Semenov-Tyan-Shanskiy, p. 462.
84. Vivax malaria requires a mean daily temperature of 60° F or higher and falciparum 70° F or higher in order to develop and spread. United States Army Medical Department, Preventive Medicine in World War II, Vol. VI, Malaria, Washington D. C., 1963, p. 255.

* See Appendix V for information on Richelieu.
Although called by different names, malaria was clearly associated with the "putrid miasmas" coming from the swamps in summer. For example, the French Ambassador, Segur, who visited Kherson during Catherine's famous journey of 1787, commented to Potemkin that "the infection from the morasses and the islands covered with reeds, which encompass the city, make it an unhealthy and frequently a mortal residence to its inhabitants." Potemkin replied that he intended to drain the "adjoining marshes." In point of fact, however, no such work was undertaken, and when Alexander I visited Kherson in the summer of 1818 he was presented with a report which emphasized the high frequency of mortal diseases emanating from the swamps. Alexander was impressed and ordered a drainage plan prepared. Like Potemkin's earlier statement of intent, however, the plan was never carried out.

One port improvement had been made. In 1807 an earthen dam was constructed along the river bank in order to permit vessels to anchor close to the town even during low water. It ran parallel to the shore but about 350 feet out in the river. Several perpendicular embankments connected it with the land so that cargoes could be taken from the ships and brought into warehouses. The dam was low, and during flood stage

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85. Guthrie, pp. 33, 233. Losses from malaria may be one of the reasons why convicts were used as construction laborers. Three to four thousand convicts were reportedly in Kherson in 1786. See Craven, Journey, p. 159. If this figure is correct, they constituted about a quarter of the town's total population. Segur, who visited Kherson in 1787, makes no mention of convicts. They were probably removed before Catherine's famous journey.

86. Pallas, Travels, II, 165; Lyall, 1, 160; Alexander, I, 243; Ronmaire, p. 36; J. Webster, Travels through the Crimea, Turkey and Egypt, performed during the years 1825-1828, London, 1830, I, 47 (hereafter cited as Webster).

87. Segur, III, 118.

88. Skal'kovskiy, Khron., II, 281.
water covered it, inundated the open spaces between the embankments, and created more large swamps right next to Kherson. In short, it merely brought the mosquitoes closer and made malaria more prevalent. A proposal was finally made in 1635 to raise the height of the dam and fill in the areas behind it. The plan was approved and the work carried out between 1838 and 1842 at a total cost to the government of only 61,300 silver rubles. This was hardly an excessive sum of money. The fact that over 50 years had elapsed since Potemkin first indicated that the swamps would be drained indicated the low priority which the Russian government gave to public health projects.

Malaria also caused many deaths in the main Russian naval base, Sevastopol. It originated in the marshes at the head of the Gulf of Sevastopol where the rivulet Chernaya has its mouth. This area was called Inkerman and its air was known to be "unwholesome during the months of summer and autumn; tertian fever /malaria/ is most common." The existence of malaria here may explain why few Tatars lived along the Gulf of Sevastopol before the annexation of the Crimea. The answer to controlling the disease was rather simple, just keep the sailors and soldiers away from the swamps:

These marshes /of Inkerman/ have been called the cemetery of the Russian army, since the conquest of the Crimea; but the government now /1820s/ takes care to canton the troops at some distance from them.

Malaria was also common in the small port town of Balaklava. It may also have existed along the major rivers of the intermontane valley.

89. Schmidt, II, 744.
90. Malaria continued to be endemic in the Kherson area until recent years. Its incidence, reportedly, was reduced ten times during the Soviet period. The principal carrier was the mosquito Anopheles maculipennis (Samoylov, p.275).
91. Clarke, p. 502. For similar reports, see Reimers, III, 37; Webster, I, 70.
92. Lyall, I, 284.
93. Sumarokov, II, 2.
However, as will be shown later, the mortal diseases here were more probably intestinal in nature.

The government could ignore malaria, but was compelled to do something about the highly contagious bubonic plague because, among other things, it was capable of destroying whole armies. The Russians frequently called it the "sea poison" because it often came on ships that had passed through Turkish ports. Catherine the Great learned about the disease the hard way when it was brought into Russia by the armies returning from the Turkish War of 1769-1774. At this time the plague killed about a fifth of the total population of Kiev and about a third of that of Moscow.\textsuperscript{94} It did not, however, infect St. Petersburg, quite obviously because the capital was "the only city to prohibit outsiders from entering."\textsuperscript{95} This demonstrated clearly that the way to stop the disease was to institute rigorous controls on the movement of people and goods. Quarantines were a known eighteenth century technique; they had been applied with good effect in London and the American colonies,\textsuperscript{96} but knowing what was required and actually doing it were two different matters.

The plague appeared in Turkey in the summer and autumn of 1782\textsuperscript{97} and entered New Russia with the annexation of the Crimea in 1783. The quarantine system was then in operation, but was not applied rigorously.


\textsuperscript{95} Prinzing, p. 91.

\textsuperscript{96} Mullet, p. 320; J. Duffy, Epidemics in Colonial America, Baton Rouge, Louisiana, 1953, p. 101.

enough and the epidemic spread rapidly and, reportedly, killed 10,000 people in Kherson by the spring of 1784. This was practically the entire population of Kherson. It was brought to Kremenchug by the large numbers of people who congregated here to witness the festive founding of Yekaterinoslav Province in April 1784. The plague had a shattering effect on the Black Sea Fleet: it carried off large numbers of sailors and soldiers in Kherson and Sevastopol' and, more importantly, killed many talented naval officers and caused a shortage which was still being felt at the outbreak of the Turkish War of 1787-1791.

Potemkin's first reaction was to establish quarantine lines around the ports and across the isthmus of Perekop. These actions were taken too late, and so he placed all of New Russia in quarantine. This was the first time an entire Russian province had ever been so treated, and it demonstrated how far the government was now willing to go. Plague appeared again in Ochakov in December 1785, and at Taman' in 1796, but measures were taken in time and it did not spread. Quarantine installations became a permanent fixture in the ports and along the Turkish frontiers after the Turkish War of 1787-1791. Forts were built at the major river crossings along the Dnestr, and each of them had a

98. Shmidt, I, 52.
99. Skal'kovskiy, Khron., I, 161-162; Bagaley, p. 43.
100. Golovachov, p. 174; Druzhinina, pp. 148, 166, 178.
102. Skal'kovskiy, Khron., I, 161.
103. Skal'kovskiy, Khron., I, 179.
104. Pallas, Travels, II, 332.
special quarantine area. Ships entering the Dnepr-Bug estuary were compelled to undergo quarantine at Ochakov, while another installation was established at Odessa. These measures were effective in the western part of New Russia. However, the Crimea and the Sea of Azov presented a more difficult problem. Once a ship passed the Straits of Kerch' there was no practical way to control its movements or prevent it from contacting and infecting Russian ships at sea. The coast of the Crimea, especially the coastal fringe lowland, contained many ports which carried on small-scale trade with merchants from Turkey. This trade was difficult to supervise because much of it was conducted by smugglers. The coastal area was also considered dangerous because the Turks were believed to be sending agents through it in a clandestine fashion to agitate among the Tatars and spy on the Russians. The question of how best to control the Crimea and the Sea of Azov was complicated, and the solution finally adopted had long range effects on foreign trade.

The Quarantine System

The first quarantine in the Crimea was evidently established at Perekop. A Russian officer, who was stopped here in 1784, reported that the detention period was fifteen days for travelers, but that it was "sometimes shortened," and that merchants with goods were delayed six weeks. No quarters or provisions were given those detained; they simply had to live in the open. This situation made Perekop into a "gold mine" for the post commander who sold food and drink at exhorbitant prices.

106. King, p. 223-224.
Similar controls were enforced in Yevpatoriya, Balaklava, Sevastopol' and Feodosiya in the 1790s. A traveler who arrived in Yevpatoriya from Constantinople in 1794 reported that the regular detention period was only 6 days, but because the captain of the vessel on which he traveled had died, he and the other passengers were isolated for 23 days. They were finally examined by two German doctors from Simferopol', who were in charge of all the quarantines in the Crimea, but permission for their release had to be obtained from governor Hablitzl himself. Part of the isolation period was spent on board ship, the remainder on the beach, with no food or shelter being provided.107

Balaklava represented an awkward problem because the Russians had removed the Tatars and given the town to a group of supposedly loyal Greeks from the Aegean who formed a colorful group of irregular soldiers responsible for guarding the coastline. Goods were allowed to enter in the late 1780s, but Turkish merchants were not permitted to have direct contact with the inhabitants.108 The Greeks, however, were suspected of smuggling, and so in 1796 the port was completely closed to all shipping. A chain was stretched across the narrow harbor entrance,109 two cannon emplaced and orders issued to fire on any ship attempting to enter, even ships in distress. The result was that vessels were unable to take refuge in Balaklava even during severe storms, causing, reportedly, some needless shipwrecks.110 The situation apparently changed in 1808 when permission was granted to open Balaklava for the commercial import


110. Pallas, Travels, II, 53, 132; Clarke, I, 513. Clarke may have obtained his information from Pallas.
of goods for use in Sevastopol*. There is no evidence, however, that any trade was actually permitted. The Greeks were given the legal right to conduct trade on both land and sea in 1820,112 but evidently they were unable (or unwilling) to exercise this privilege. In any case, by 1841 the arrival of a single vessel in Balaklava was considered a highly unusual event.113

Ships coming to Sevastopol* in the 1790s were closely regulated to prevent infection and smuggling. In effect, trade was severely restricted, and this caused prices for both the necessities and luxuries of life to become inordinately high, even higher than in St. Petersburg.114 The port was completely closed to all commerce sometime between 1800 and 1805 in order, apparently, to stop "the embezzlement of the public stores, which were sold to the merchants by Government officers..."115 It was not reopened to commercial vessels until 1820, and then only to ships coming from New Russian ports where they had already undergone quarantine.116 Actually, few if any foreign ships ever came to Sevastopol*.

The government probably intended to build decent quarantine establishments in Yevpatoriya and Feodosiya in the 1790s. However, conditions in both places remained extremely harsh until at least 1800. The

111. Golovachov, p. 218.
112. Skal'kovskiy, Khron.*, II, 282.
113. Hommaire, p. 351.
114. Pallas, Travels, II, 52-54.
115. Clarke, p. 497. This passage is taken from an unpublished manuscript of a Mr. Heber who stated that he obtained the information while visiting Sevastopol* from the admiral of the port, Bandakov, and from English officers serving in the Black Sea Fleet.
isolation period in Feodosiya was reported to be 40 days.\textsuperscript{117} The poor facilities may have resulted from wholesale thievery. An official who visited the Crimea in 1794 stated that 20,000 rubles had been allocated and that the lumber had been purchased and brought to the sites. All the materials, however, were stolen "and the money has gone into the pockets of those who were supposed to guard the lumber..."\textsuperscript{118}

Some order was brought into the system by the promulgation of regulations in 1798 which were confirmed in 1800.\textsuperscript{119} At this time the government was seriously concerned about the difficulties of supervising shipping along the Crimean coast and in the Sea of Azov. Evidently it was unwilling or unable to build quarantines in all the ports, and so wished to have only one or two such establishments to serve the entire area. Sevastopol\textsuperscript{1} and Balaklava were removed from consideration when, for all practical purposes, they were closed to commercial shipping. There was no alternative to Yevpatoriya on the west coast, but it had little trade so that only a small installation was necessary. Furthermore, the small ports like Yalta, Alushta and Sudak along the coastal fringe lowland had so little commerce that they could be closed without harm. The issue, then, became a question of whether or not quarantines should be operated in Feodosiya, Kerch\textsuperscript{1} and Taganrog.

The issue was officially posed in an Ukaz of 9 May (21 May) 1803 instructing the governor of Taganrog District to determine if a quarantine should be constructed in Taganrog, Feodosiya or Kerch.\textsuperscript{120}

\textsuperscript{117} Samarkov, I, 129-130; Reimers, III, 75.
\textsuperscript{118} Reimers, III, 35.
\textsuperscript{119} Skal'kovskiy, Khron., II, 30.
\textsuperscript{120} Skal'kovskiy, Khron., II, 55.
Taganrog was the most important port in the Sea of Azov. Its principal advantage was that it was more accessible to shipping coming down the Don than any other site. The arguments in favor of placing the general quarantine in Kerch' deserve attention because they were finally accepted by the government. Pallas wanted all ships entering the Sea of Azov to undergo quarantine at Kerch' in order to economize on the number of facilities required and to prevent cheating on the part of ship captains who, in order to reduce the detention time at Taganrog, were claiming that the voyage from Constantinople was taking 40 to 50 days when in point of fact it seldom took more than 8.\textsuperscript{121} He also felt that this would cause Kerch' to become an important trading center and an "emporium" for goods brought by barge down the Don.\textsuperscript{122} Pallas apparently wanted Feodosiya to remain open to shipping. Sumarokov, a judge in the Crimea and at one time a member of a commission appointed to supervise all of Tauride, went further and argued that all the ports between Kerch' and Sevastopol' should be completely closed. This, of course, included Feodosiya. He was opposed to Taganrog because it was difficult to isolate from the land side, so that if the plague reached the town there would be no secure means of preventing the rest of New Russia from becoming infected. If the disease spread beyond Kerch', however, it could be halted at the narrow isthmus of Perekop.\textsuperscript{123} Admiral N. S. Mordvinov advanced another argument, probably in 1815. He felt that the size of the ancient Greek towns of Pantikapei and Fanagoriya located on the peninsulas of Kerch' and Taman' indicated that this area had a

\textsuperscript{121} Pallas, \textit{Travels}, I, 489.

\textsuperscript{122} Pallas, \textit{Travels}, II, 278-279.

\textsuperscript{123} Sumarokov, I, 135-136.
real potential for trade. A Genoese merchant, Rafail Scassi, entered the picture in 1810 when he got Richelieu and later Langeron to intercede in his behalf with Alexander I in order to obtain a 200,000 ruble subsidy to develop trade between Kerch' and the eastern shore of the Black Sea.

The government, however, vacillated. In 1806 it made Kerch' a general quarantine for suspect goods (e.g. cloth and cotton), but ships carrying non-suspect goods or in ballast were permitted to proceed directly to Taganrog and undergo quarantine there. In 1804 Feodosiya was designated a district like Taganrog with its own quarantine and customs house. However, sometime between 1822 and 1827 Feodosiya lost its quarantine and in 1827 it also lost its special status as a district and was closed to foreign shipping. The argument against Feodosiya probably was that it failed to develop much trade. This, however, is surprising in view of the natural advantages which it enjoyed. Its deep water harbor was known to be protected from storms and ice-free throughout the year. Furthermore, it could receive goods brought overland along the Arabat Strel'ka, a route which was used in the 1790s. In addition, small craft could bring cargoes from the Sea of Azov to Feodosiya and some export articles could be obtained from the Crimea.

124. Skal'kovskiy, Khron., II, 249. The prosperity of these ancient Greek towns rested on the rich fisheries of the Sea of Azov, trade with the nomadic peoples of the steppes and irrigated orchards and grain fields (See Rostovtzeff, Passim; Vernadsky, Origins, especially p. 59-60).
128. Iyall, I, 370.
In view of its location and superior harbor it had a better potential as a transhipment point than Kerch. Such considerations caused later travelers to argue that Feodosiya should have been developed as the major port not only for the Crimea but for the Sea of Azov as well. 129

These arguments were further buttressed by the fact that Feodosiya had been a populous, wealthy and thriving port until the early 1770s. Its most numerous inhabitants then were Greeks and Armenians whom Suvorov removed in 1778 and resettled near Mariupol' and in Nakhichevan', thus depriving Feodosiya of its commercial talents. Sometime after 1778 the Russians completely destroyed almost all the buildings in the town. The few remaining Tatar residents were viewed with suspicion; the government distrusted the Crimean Tatars and feared that they might revolt during a war with Turkey. Perhaps for this reason Feodosiya was closed, whereas Kerch', inhabited by presumably loyal Greeks brought from the Aegean, was left open. The government did nothing to develop Feodosiya except build a beautiful but unused quarantine establishment.

A large quarantine was under construction at Kerch' by 1827. In 1832 the isolation period was fixed at 30 days and began after fumigation and cleansing of vessels and cargoes which in itself took 10 to 15 days. These regulations continued in effect throughout the remainder of the period studied. 130 Finally people like Pallas, Sumarokov and Mordvinov got their wish, and in 1833 all foreign vessels were required to undergo quarantine at Kerch' before entering the Sea of Azov. 131 The results,


however, were quite disappointing. The port never became an "emporium" nor indeed even a moderately sized town. Its few thousand inhabitants were mostly Greeks who conducted no trade themselves but earned a living by working lighters and exploiting the rich fisheries of the Sea of Azov. The physical handicaps made it a poor port to begin with, and merchants did their best to avoid the costly delays required by the quarantine regulations. Instead of docking, they anchored their vessels in the open Straits. The ships' crews would take command of the lighters already loaded on shore, discharge the cargoes into the ships' holds, and then return the lighters without making contact with any of the local people. This was a "tedious, costly and uncertain procedure" and was also dangerous because the Straits were exposed to high winds and storms. However, it was far less expensive than the cost of undergoing quarantine. Sometimes ships received cargoes directly from barges which came from Taganrog and avoided Kerch altogether. The quarantine system thus closed the one good natural port that existed in the eastern half of New Russia, Feodosiya, imposed heavy burdens on the foreign trade of the Sea of Azov and almost totally prevented any sea-borne commerce with the mountainous portion of the Crimea.

Odessa, no doubt because of its talented leadership, acquired the most elaborate and comfortable quarantine in New Russia during the first years of the nineteenth century. No traveler ever complained about the facilities. The establishment was repeatedly improved and became very efficient. By the end of the 1830s Odessa had acquired an additional advantage: all ships wishing to enter the Dnepr-Bug estuary had first

132. Hommaire, p. 413.
133. Clarke, p. 632.
to undergo quarantine in Odessa. In effect few of them ever chose to make the longer journey to Nikolayev or Kherson. Vessels which had passed the Dardanelles were isolated for 14 days within the safe harbor and then permitted to load or unload. This was quite different from Kerch where ships were detained for 30 days even after a period of 10 to 15 days fumigation. The difference in quarantine periods was unquestionably advantageous to Odessa. Indeed, the whole system operated to favor Odessa by discriminating against both Kerch and Taganrog on the east and Kherson and Nikolayev on the west and by closing all the ports of the Crimea's coastal fringe lowland.

The great plague of 1812 demonstrated that quarantines remained necessary in the nineteenth century. The infection first appeared in Odessa with the revival of trade after the end of the Russo-Turkish War of 1806-1812. It penetrated the city in August 1812, but Richelieu was not certain that the disease was in fact the plague and was unwilling to close the city immediately because of the adverse effects on commerce. He finally had no choice, however, and Odessa was isolated on 13 September (25 September) 1812. The delay was fatal: the epidemic spread throughout the Ochakov area which then had to be completely quarantined. It also broke out in Feodosiya and, through the fact that one woman succeeded in passing through the line around the town, reached Kerch and infected the eastern Crimea, causing the government to quarantine the entire peninsula. These measures remained in force until the summer of 1813.

134. Hommaire, pp. 19, 34.
The direct losses were officially put at about 5,000 people, half of whom died in Odessa. Unofficial estimates, however, were much higher. For example, a traveler who lived in the eastern Crimea from 1816 to 1820 learned that the plague had carried off 3,000 of Fedoeiya's total population of 7,000 and about a third of Odessa's inhabitants. These figures included people who died from the indirect effects of the epidemic, from malnutrition and cold. The quarantine lines around the towns and closing off the Ochakov region and the Crimean peninsula were effectively guarded and stopped practically all movement of people and goods. Merchants were permitted to sell articles across the lines in such a fashion that no contact between them and the quarantined people occurred. They had a monopoly and took advantage of it by charging outrageous prices that only the wealthy could afford. The common people simply had to do without the necessities of life. The governor of Feodosiya reported on this situation and stated that people released from quarantined buildings were dying in the streets because they were unable to obtain fuel and food. Odessa, as usual, was somewhat better off because Richelieu fed his people from the grain which had been stored awaiting shipment abroad, but life was still very difficult. In addition, many people fled the villages and towns and spent the winter on the open steppes. This must have been dangerous and frequently mortal because the month of January 1813 was one of the coldest in the history of New Russia. The evidence available clearly


138. Holderness, p. 76-77. Mrs. Holderness met the Commandant of Odessa, General Cobley, an Englishman in Russian service, and the British counsel in Odessa, Mr. Yeames, in 1816. She probably obtained her information from them.
suggests that far more people died from malnutrition and exposure than from the disease itself.

Plague again became a serious problem during the Russo-Turkish War of 1828-1829 when it infected the Russian army fighting in Moldavia and Wallachia. Strict quarantine measures were imposed on the troops, the naval vessels and merchant ships returning from the theater of combat, and the disease was prevented from spreading into New Russia.\textsuperscript{139} Infected persons did somehow reach the city of Odessa, and the entire city was isolated from 13 May 1829 to 25 January 1830.\textsuperscript{140} Only 219 persons were reported to have died from this epidemic in Odessa, but all foreign trade came to a complete standstill. Sevastopol\textsuperscript{1} also had to be quarantined. The government, as usual, failed to take any measures to assist the inhabitants in obtaining food, and rapacious merchants just beyond the quarantine line were thus able to charge exhorbitant prices. The situation was so bad that it caused a riot on 4 June 1830 in which an enrage mob destroyed all the barriers and tore five people literally limb from limb.\textsuperscript{141}

The riot in Sevastopol\textsuperscript{1} illustrated one of the worst features of the quarantine system: it caused great suffering among the common people. Furthermore, it periodically disrupted both foreign and domestic trade for long periods of time, discriminated against the towns of the southern coast of the Crimea and the Sea of Azov, and added costs to the shipment of goods to and from the ports of New Russia. If the

\textsuperscript{139} Prings, p. 165-170.

\textsuperscript{140} Schmidt, II, 838; L. M. De Ribas, editor, Iz proshlago Odessy, Odessa, 1894, p. 263.

\textsuperscript{141} Golovachov, p. 246-247.
liabilities of the system could somehow be weighed against the advan-
tages it brought by preventing and controlling epidemics, one could
probably conclude that in the long run it did more harm than good.
Certainly it could have been applied in a more selective fashion, with
restrictions being eased when no plague was known to exist in Turkey.
This practice was followed in England and in the American colonies
during the eighteenth century. In addition measures could have been
taken to alleviate the extreme shortages of food and fuel which existed
in the quarantined towns. Finally, there seems to have been no justifi-
cation for ignoring the natural advantages of Feodosiya and for insti-
tuting a more restrictive quarantine at Kerch' than at Odessa.

4. The Indigenous Peoples

The territory of New Russia was inhabited by four different groups
of peoples at the outbreak of the Turkish War of 1769-1774. As a
comparison of figures 4 and 6 shows, Russian settlement was then con-
centrated in the forest steppe zone. The Zaporozhian Cossacks claimed
an extensive area, but most of their permanent villages were in the wet
steppes. The dry and coastal dry steppes were occupied by Nogay Tatars,
and the intermontane valley and coastal fringe lowland of the Crimea were
rather densely settled by Crimean Tatars. By 1791, Russian settlers,
primarily but not exclusively Ukrainian in origin, dominated the wet,
the dry and the coastal dry steppes, and the indigenous peoples, the
Cossacks, Nogays and Crimean Tatars had been brought under Russian
control. It is important to understand how the change occurred, because
the indigenous peoples taught the Russians how to utilize the lands of
New Russia and were the means of transmitting the "seeds of change"
that influenced the stage of Russian settlement and development.\textsuperscript{142}

**Nogay Tatars**

The Nogay Tatars were the first group to be affected by the Russian drive to the south. They must have been a numerous people in the 1760s. This is indicated by the amount of damage they were able to do in their last military effort in January 1769.* The Khan of the Crimea then received an order from Turkey to open hostilities with Russia, and he dispatched the Nogays on a two-pronged raid.\textsuperscript{143} One force raided as far north as Yelizavetgrad on the west and another as far as Bakhmut on the east,\textsuperscript{144} without, however, taking either town. Immediately afterwards, for reasons which are still unclear, the Nogays emigrated from New Russia. Some retired to the west, across the Dneistr, and others into the Kuban on the east.\textsuperscript{145} The numbers who left New Russia are suggested by a report from Suvorov in 1783 in which he estimated that up to 100,000 Nogays were then living in the Kuban.\textsuperscript{146}

Some later returned at the invitation of the Russian government which evidently preferred to see them under Russian control than acting

\textsuperscript{142} D. Whittlesey, "Sequent Occupance,"

\textit{"Annals of the Association of American Geographers,"} Vol. 19 (1929), p. 162-165. The application of Whittlesey's concept to New Russia has been discussed in the preface.

\textsuperscript{*} As previously indicated, the Nogays carried off 100,000 sheep owned by the Zaporozhians and caused the loss of 30,000 horses. In a retaliatory raid the following summer, the Cossacks attacked Nogays living near Khadzhibey and brought back 20,000 horses, 1,000 head of cattle, 4,000 sheep and 180 camels (Semenov-Tyan-Shanskiy, p. 457-459). 13 years later this area was said to be completely uninhabited.

\textsuperscript{143} Skal'kovskiy, Opyt, I, 301-302.

\textsuperscript{144} Druzhinina, p. 50-51; Pavlovich, p. 6.

\textsuperscript{145} Skal'kovskiy, Opyt, I, 299; Pallas, Travels, II, 3-4; Segur, III, 127.

\textsuperscript{146} Cited in Druzhinina, p. 95.
as Turkish auxiliaries. In 1770 a group of 12,500 Nogays crossed the Dnestr, Bug and Dnepr rivers under the supervision of the Zaporozhian Cossacks and were settled along the banks of the Kal'mius river. Potemkin, however, still "did not trust the Nogays" and so had them removed to the Ural steppes in 1784. Many of them perished on this journey. 3,000 Nogay families were brought back from the Ural steppes in 1790 or 1791 and given lands along the Molochnaya river,* and by the end of the eighteenth century they were believed to number about 14,000 persons. In 1807 and 1808 they were joined by 4,000 Nogays from the Budzhak steppes, but 3,000 of the new arrivals were permitted to emigrate to Turkey in 1812. The total Nogay population increased to an estimated 30,000 by 1844. The large emigrations of the early 1770s account for the frequent observation that the dry and coastal dry steppes were "empty" when Russia conquered them. Considerable numbers of Nogays must have died from exposure, want, the plague of 1771 and other diseases.

These Tatars had followed a pattern of life that was well suited to the physical environment of the dry and coastal dry steppes. They raised sheep, which were hardy and could survive without water for several days, kept horses, primarily for military purposes, and had some cattle and a few camels for use in drawing wagons. Their way of life was described by

147. Skal'kowskii, Opyt, I, 300.
149. Skal'kowskii, Opyt, II, 16.

* Ushakov brought 4,500 Nogays back from his raid on Anape in 1790 and the government placed them in the mountainous part of the Crimea where they soon "acquired opulence by rearing cattle and cultivating lands." Pallas, Travels, II, 345.
In summer, these people, with their flocks, travel northward along the banks of the rivulets, where they sow wheat and millet in remote places, and neglect all farther cultivation till the time of harvest. At the return of winter, they again approach the Sea of Azov, near which they find grass preserved for forage, and, perhaps a remaining supply of hay which they had formerly made in the valleys. The Nogays thus not only raised sheep but also cultivated drought resistant millet, the most reliable grain that could be grown in the dry and coastal dry steppes, and some spring wheat. When the harvests were good they sold surplus grain in the Crimea. The combination of livestock raising, grain farming, haying and seasonal migration gave the Nogays a rather secure livelihood. Their knowledge was transmitted by example to later settlers in the Azov lowland and indirectly by the influence they had exerted for years on the Zaporozhian Cossacks. Many of the same techniques were followed by a smaller group who lived on the Crimean plain but who appear to have been ethnically somewhat different from both the Nogay and the Crimean Tatars.

For want of a better name, this group is called the Perekop Tatars. They raised both sheep and cattle, had windmills, cultivated some grains but did no gardening, built permanent homes of unbaked clay bricks, and used dried dung for fuel. The dung was collected and placed in huge piles near the houses. They were also involved in the salt trade at Perekop, and travelers sometimes saw their ox and camel drawn wagons on

150. Pallas, Travels, I, 532-533.
the mainland. They seem to have been relatively unaffected by the Russian invasions, probably because they were not numerous and their arid lands were of little value.  

Crimean Tatars

The Nogays presented no particular problem after the 1770s. On the other hand, the Crimean Tatars represented a potential threat to Russian dominance because many of them continued to live in the intermontane valley and the coastal fringe lowland. There is evidence, however, to indicate that there was also a large emigration of Crimean Tatars between 1769 and 1787. Zuiev felt that the Crimea underwent a population loss of two-thirds during this period,  

152. See Pallas, Travels, II, 345; Craven, Journey, p. 162; Clarke, p. 588; Guthrie, pp. 59, 213-214, 226, 232; Segur, III, 127, 131; Lyall, II, 233; J. Webster, Travels through the Crimea, Turkey and Egypt, performed during the years 1825-1828, London, 1830, I, 48 (hereafter cited as Webster).


156. Guthrie, p. 224; Lyall, I, 345.
annexation, suggesting a total population of about 100,000.\textsuperscript{157} Apparently the writers merely extrapolated back in time to reach a higher figure in order to illustrate that a large number of people had in fact fled. More Tatars left between 1783 and 1787 with the permission of the Russian government which "preferred to see these unruly inhabitants depart."\textsuperscript{158} Pallas estimated that 80,000 people emigrated during these years.\textsuperscript{159} In all probability, however, the 1783 figure was far too low, since the population of Tatar males alone was estimated as high as 120,000 in the 1790s.\textsuperscript{160} Neither immigration nor any reasonable population growth rate would account for the difference. Thus, in spite of emigration, large numbers of indigenous people remained in the mountainous portion of the Crimea.

The Russian government encouraged the Tatars to depart, and this involved more than just granting exit visas. Russian armies invaded the Crimea in 1771, occupied it again in the years 1776 to 1779, and returned to stay permanently in 1783. Many Tatar villages and towns had been destroyed and their fields ruined by 1783.\textsuperscript{161} The wide-spread destruction has usually been attributed to "disturbances" before the

\begin{enumerate}
\item \textsuperscript{157} Sumarokov, I, 160.
\item \textsuperscript{158} Skal'kovskiy, Opyt, I, 306.
\item \textsuperscript{159} Druzhinin, p. 260; Tooke, I, 457; Sumarokov, I, 160.
\item \textsuperscript{160} Pallas, Travels, II, 342-343.
\item \textsuperscript{161} Kabuzan gives the population of Tauride as: 51,649 males in 1782, 129,651 males in 1795 and 192,278 males in 1811. Kabuzan, p. 163. In 1816, Tauride was reported to have 150,768 male state peasants, most of whom were Crimean Tatars. See: N. M. Druzhinin, Gosudarstvennye Krest'yanye i reforma P. D. Kiseleva, Moscow, 1946, p. 89 (hereafter cited as N. Druzhinin).
\end{enumerate}
annexation, but more probably it was caused by the Russians themselves. A reliable eye witness of the invasion of 1737 and 1738 reported that the Russian soldiers then demolished many towns and villages. In 1771 they committed destructive acts in Feodosiya, Kerch', Balaklava, Bel'bek and other places, and it seems highly improbable that they acted any differently between 1776 and 1779. This argument is further supported by the fact that Russian soldiers ravaged and ruined many Tatar towns from 1783 up to and including the year 1800. The evidence to back up this statement is that travelers actually observed soldiers performing acts of destruction. Clarke was the most literary traveler. Portions of his book were severely criticized by others, but all the observers felt that the following passage was substantially correct:

If it now be asked what the Russians have done with regard to the Crimea, after the depravity, the cruelty, and the murders, whereby it was obtained, the answer is given in a few words. They have laid waste the country; cut down the trees; pulled down the houses; overthrown the sacred edifices of the natives, with all their public buildings; destroyed the public aqueducts; robbed the inhabitants; insulted the Tatars in their acts of public worship; torn up from the tombs the bodies of their ancestors, casting their reliques upon dunghills, and feeding swine out of their coffins; annihilated all the monuments of antiquity; breaking up alike the sepulchres of Saints and Pagans, and scattering their ashes in the air.

The only statement in this quote that is not supported by other evidence is the reference to swine. No one else reported seeing pigs eating out of coffins. Clarke not only saw the ruins, he also saw Russian

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162. E.g., Druzhinina, p. 105-107.
164. Semenov-Tyan-Shanskiy, p. 311.
165. Russian historians have consistently ignored the destruction wrought by the Russian soldiers during these years.
166. Clarke, p. 480.
soldiers in Feodosiya tearing down mosques, minarets and public aqueducts in order to obtain the lead that had been used in their construction.\textsuperscript{167}

The last observation is very interesting because a Russian officer who was in Feodosiya for a time in the summer of 1771 reported that it then was a thriving port with 15,000 to 16,000 inhabitants, an annual trade estimated at 11 million rubles, and excellent public baths. He saw no ruins, but left while the Russian army was still occupying the town.\textsuperscript{166} Suvorov occupied Feodosiya in 1778 and 1779, and when his army left the Crimea it took some 20,000 Greeks with it and resettled them near and in Mariupol'. Many of these Greeks evidently died during the move or from the "cold" in the Azov lowland.\textsuperscript{169} In 1781 about 10,000 Armenians also left the Crimea and were settled in Nakhichevan, just to the east of Rostov.\textsuperscript{170} These peoples had lived in Feodosiya, Staryy Krym, Yalta, Yenikale and in some of the inland towns.

Either during or after these emigrations, Feodosiya was completely destroyed.\textsuperscript{171} Yevpatoriya was also ravaged, and by the 1790s its aqueducts had been destroyed.\textsuperscript{172} The same thing happened in Sudak where the Russian soldiers tore down most of the buildings in order to construct barracks.\textsuperscript{173} Staryy Krym at the eastern end of the intermontane valley had once been a populous town, but by 1787 it too was in ruins, and in

\footnotesize{
\textsuperscript{167} Clarke, p. 455.
\textsuperscript{168} King, p. 38-41.
\textsuperscript{169} Skal'kovskiy, \textit{Opyt}, I, 263-278; Bagaley, p. 92.
\textsuperscript{171} Segur, III, p. 161-164; Pallas, \textit{Travels}, II, 267; Clarke, p. 443-445.
\textsuperscript{172} Pallas, \textit{Travels}, II, 492; Clarke, p. 578-579; Sumarokov, I, 130-132.
\textsuperscript{173} Pallas, \textit{Travels}, II, 225; Segur, III, 160-161.
}
a traveler reported that "all the adjacent parks and orchards... have been almost entirely laid waste." There was less damage in the inland towns of Bakhchisaray, Karasubazar and Simferopol. The government gave the Tatars complete control over Bakhchisaray, but countenanced the destruction of its aqueducts in the 1790s. Simferopol lost its aqueducts through "mere malice and neglect."

Destruction "encouraged" the Crimean Tatars to emigrate in the years between 1771 and 1787, ruined all the coastal ports through which contact had been maintained with Turkey, and thus helped isolate them from possible Turkish agitators. Some of the destructive acts, however, can be explained without impugning evil motives to the Russian government. A sizeable army was placed in the Crimea, but to prevent antagonizing the Tatars the soldiers were prohibited from quartering themselves in private homes. The result was that they had to build their own barracks and obtain their own fuel for cooking and heating purposes. A battalion was only allotted 120 rubles (evidently a year) to build quarters, buy fuel and obtain fodder for its horses. In all probability little even of this paltry sum actually reached the soldiers. They, therefore, used what was closest at hand: ancient ruins, cemetery stones and Tatar buildings to construct barracks and trees in orchards and grape plants in vineyards for fuel. The soldiers were also obligated to buy their own ammunition. Therefore, they razed

174. Pallas, Travels, II, 261; See also Craven, Journey, 181; Sumarokov, II, 73.

175. Pallas, Travels, II, 20, 33.

176. King, p. 238; Druzhinina, pp. 93-97.

177. Pallas, Travels, II, 252; Clarke, p. 465.
the aqueducts and other structures to get lead to make bullets. Another factor was also important. Gypsies and others earned a living in the towns by carrying water, and so they pulled down aqueducts in order to make more business for themselves. The Tatars had maintained a special police force which supervised the water supply systems and prevented deprivations of this kind. After the annexation, however, no one tried to care for the aqueducts.

On the other hand, the destruction of ancient and Medieval monuments was officially sanctioned. The Tatars had great respect for these structures and left them alone. The Russians had no such love for antiquity and demolished them rapidly. The best known example of this occurred in Sevastopol'. Admiral MacKenzie was appointed commander of Sevastopol' and ordered to build all the facilities required for a naval base as rapidly as possible to prepare for Catherine's famous journey* of 1787 and for the expected war with Turkey. MacKenzie was not able to procure much construction material from Taganrog and had no funds with which to purchase lumber in the Crimea. Furthermore, he was given no civilian laborers as were used to build Kherson and Nikolayev. In short, he had to utilize what was locally available and therefore employed the sailors and soldiers stationed in Sevastopol' on a part-time basis, giving them small wages for their extra services, and used

179. Pallas, Travels, II, 33.
180. Skal'kovskiy, Khron., II, 176-177.

* The journey was evidently originally scheduled for 1784 but postponed because of the plague epidemic.
the ruins of the ancient Greek town of Khersones for construction material. In this way he was able to build a naval base at a total cost of only "up to 100,000 rubles." Most of the buildings which Catherine the Great and her entourage saw in Sevastopol' in 1787 were built of the stones taken from Khersones. It should be emphasized that MacKenzie was only following orders because Potemkin was putting pressure on all his subordinates to do everything in their power to get the Black Sea Fleet and its bases ready as quickly as possible.

That Sevastopol' was not an isolated incident is evidenced by the Imperial Manifesto of 13 February (24 February) 1798 which was designed to encourage the return of the Greeks and Armenians who had left the Crimea twenty years before. Among other things, it gave any person settling in Feodosiya and Yevpatoriya the right to "use the stones from ancient ruins" for construction purposes.

The Russians were obviously afraid of a Tatar revolt from 1783 until the end of the Turkish War of 1787-1791. This is demonstrated in the reports of the first Russian governor of the Crimea, Ingel'strom, which contain many references to Turkish spies and to the arrival of Turkish vessels in a clandestine fashion. One of these reports from 1787 asserts:

The arrival of people here who are able to implant disturbances dangerous to us among the inhabitants is almost impossible to prevent as long as all the local ports are open to trade.

182. Sumarokov, I, 194.


184. Skal'kovskiy restricted his comments on this Manifesto to a short footnote in which he wrote: "Unfortunately, many inhabitants of the Crimea utilized this right up to 1810 so assiduously that almost all the priceless remains of antiquity were almost completely destroyed." Skal'kovskiy, Khron., II, 15-17.

Ingel'strom was worried that he would not have sufficient forces to suppress a revolt if it coincided with a Turkish amphibious invasion. Fear was greatest in the spring of 1790 when information was received indicating that the Turks were indeed planning such an invasion. The attempt was foiled, however, by Ushakov's victories in July and August of 1790. The solution that was found to Ingel'strom's difficulty was to remove all the Crimean Tatars a distance of 6 miles away from the coast during the Turkish War of 1787-1791. The purpose of this act quite clearly was to prevent them from having "dangerous" contacts and from acting as "spies and traitors." 186

The problem was lessened after 1791, when the Tatars were permitted to return to the coastal areas, but it apparently still bothered the Russian government during the Turkish War of 1806-1812. In 1807, the entire Tatar population was again forcibly removed from the coasts and up to 20 of their vessels were summarily confiscated. The continuing distrust of the Tatars was one (if indeed not the major) reason why the government closed the ports along the southern coast of the Crimea and failed to develop the excellent natural harbor of Feodosiya. It also explains the distribution of Russian soldiers. They were stationed at Perekop and Simferopol', two key points controlling movement from the Crimean mountains to the mainland, at Karasubazar which dominates the eastern intermontane valley, and along the coast, particularly in the Sudak-Feodosiya area. Furthermore, this distrust was the reason why loyal Aegean Greeks were given exclusive permission to settle in Kerch' 187

186. Golovachov, p.159-160.
and Balaklava: Kerch' because it controlled access to the Sea of Azov, and Balaklava because of its proximity to Sevastopol'. The numbers of soldiers varied. They reached a high of 37,000 in December 1783 and then declined to 20,000 at the end of 1784, perhaps because of supply shortages. They rose in 1786 to 30,000 in preparation for Catherine's journey in 1787 and apparently stayed at this level throughout the Turkish War of 1787-1791 even though no military actions actually took place in the Crimea. In 1800 the garrison was reportedly only 15,000 men, and by 1820 it had been reduced to 10,000. The last figure suggests that by the early 1820s the Russian government finally felt secure in its control over the Crimean Tatars.

The government also attempted to placate the Tatars by adopting certain lenient policies which undoubtedly made life more pleasant and probably more profitable for the individual, but which also retarded the economic development of the Crimea and prevented it from developing a domestic or an export trade at all commensurate with its agricultural potential.

The government transformed the Tatars not living on lands held by landlords into state peasants and made all the nobles who accepted

188. Druzhinina, p. 132-133.
189. Craven, Journey, p. 152.
193. That the Tatars remained unhappy with Russian rule is indicated by the fact that large numbers of them emigrated to Turkey after the Crimean War. Officially, 141,667 Crimean Tatars and 50,000 Nogays left. See Semenov-Tyan-Shanskiy, p. 173-174. Hume saw Tatars departing. Hume, p. 80.
obedience to the Tsar members of the Russian nobility. At the same
time, however, it granted uninhabited lands and lands owned by departed
Tatars to Russian civil and military officers and to such high-ranking
personages as Potemkin, Mordvinov and MacKenzie. The deeds to these
properties were vague, no records existed from the Tatar period and
surveying was highly inaccurate. The remaining Tatar nobles also had
claims to these lands and utilized their new positions to entangle the
Russian landlords in endless litigation over property rights. The
government was unwilling to force a decision in favor of the Russians.
In addition the Tatar peasants refused to recognize the demands of their
new masters, even though they were required to perform only two days of
free labor a week. Evidently the little work they did do was done slowly
and slovenly. The result was that the Russian landlords lacked both
labor and secure title to land and so were unwilling (and indeed unable)
to develop their estates to produce surpluses.

This situation caused great bitterness on both sides. Pallas,
himself a Russian landlord, mirrored this when he referred to the
Tatars as "unprofitable and unworthy inhabitants of these paradisical
vallies /sic/." Sumarokov, a judge closely involved with land tenure
cases, had this same opinion and felt that "the best thing that could

194. Druzhinina, p. 97.

195. The evidence on these points is extensive. See: Pallas,
Bemerkungen, II, 369-370, 376-378; Clarke, p. 522-523; Sumarokov, I, 161,
II, 28-29; Druzhinina, p. 119-121; N. Druzhinin, p. 85.

196. Pallas, Travels, II, 346. Clarke quotes another British traveler,
a Mr. Haber, as stating that Pallas complained of the Tatars of the
Crimea "as disaffected, and spoke much of their idleness. Yet their
vineyards are very neatly kept, and carefully watered; and, what is
hardly a sign of indolence, their houses, clothes and persons are
uniformly clean." Clarke, p. 535.
happen to the Crimea would be the complete removal of the Tatars because no industry or agriculture could flourish among them. 197 Travelers learned the Tatar point of view when they found that they could get no service or hospitality when they spoke Russian, but were treated with great respect and entertained handsomely when they spoke a language which proved they were foreigners. 198 This antagonism may have been further exacerbated by a failure on the part of the Russians to show proper respect for the Tatars' Moslem customs. 199

Another result of these policies is not as clearly evident from the literature. The Russian government in an effort to mollify the Tatars forced its soldiers to construct their own barracks. In the 1780s and 1790s these were usually poorly built and were located along the rivers and rivulets. 200 At the same time the Russians, as described earlier, permitted the water supply system of the Tatar towns in and near which their troops were quartered to be destroyed. The Tatars had an almost religious veneration for clean water and therefore built and maintained aqueducts and fountains at public expense in their towns. 201 This attitude was reflected in the location of villages. The Tatar villages were on the slopes of the mountains, not in the irrigated valleys, 202 and

197. Sumarokov, I, 166-168, II, 10-11

198. The best example of this is Reimers, III, 32.

199. Reimers, III, 81-82, contains a rather unpleasant example.

200. King, p. 239; Pallas, Travels, II, 208; Druzhinina, p. 94.

201. Pallas, Travels, II, 33.

202. Hommaire, p. 393; Lyall, I, 316-317; Oliphant, p. 231; Guthrie, p. 117; Pallas, Travels, II, 345. This pattern left more land free for irrigation and kept the villages safe from the sudden river floods which could be catastrophic after a short but intense rainstorm or a sudden thaw on the mountains. Sumarokov, II, 9; Skal'kovskiy, Op. cit, I, 134-135.
obtained drinking water from springs which were nourished by limestone aquifers carrying water from the melting snows of the uninhabited Yaylas.

Since the vast majority of Tatars lived in villages, they were drinking pure spring water, while the Russians, stationed in and near the towns, were drinking river water which must have been polluted. This would explain the frequent observation that large numbers of Russian soldiers died\(^{203}\) from "intermittent and remittent bilious fevers," while the Tatars remained "exempt" from such diseases.\(^{204}\) The implication of the above argument is that these were water-borne, intestinal diseases rather than malaria and that the Russians contracted them by drinking polluted river water while the Tatars were not affected because they were careful to drink only spring water.\(^{205}\) Thus, it seems highly probable that the government's attempts to placate the Tatars by not quartering troops amongst them probably caused the death of many Russian soldiers.

The situation changed in the nineteenth century. Most of the Russians moved into the valleys of the middle ridge and enjoyed good spring water. The number of troops was reduced and decent barracks were built away from the rivers. This explains the fact that the literature from the nineteenth century contains few references to disease and that by the 1820s the Crimea was thought of as a delightful place in which to live.

Russian policies towards the Crimean Tatars were designed to prevent them from assisting the Turks in a war with Russia. This objective

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203. Drushinina, p. 94. Drushinina here cites a report sent to Potemkin by governor Mertvyy.

204. Sumarokov, II, 36; Pallas, Travels, II, 360-361.

205. An alternative or contributory explanation might be that the Tatars had an immunity to these fevers that the Russians did not have but later acquired.
was attained: no Tatar uprisings occurred after 1783 and the Crimea became an inalienable part of the Russian Empire. In the process, however, coastal towns were destroyed, economic development hindered and relations between Russians and Tatars further embittered. In addition the policies may well have caused the death of many Russian soldiers by compelling them to live in inferior quarters and drink polluted water and resulted in the massive destruction of Classical Greek and Medieval ruins and contributed to a large depopulation of the Crimea between 1769 and 1787. These factors caused travelers in the 1820s and even later to be extremely critical of what the Russians had done. However, as Chapter V will show, governor-general Vorontsov did bring some development and progress to the fertile valleys of the Crimea between the mid-1820s and the mid-1840s.

Zaporozhian Cossacks

The Zaporozhian Cossacks were an obstacle to the conquest of New Russia. They had refrained from giving the support desired during the Turkish War of 1769-1774 and constituted an almost independent state, something which the Russian government could not countenance. Moreover, by 1775 the government was in a position to destroy the Zaporozhians once and for all. It had an experienced and sizeable army at its disposal and had the lands of the Cossacks completely surrounded. The Russian army held the line of the Bug on the west, the Dnepr line on the south and the area around Taganrog on the east (see figure 4). No doubt it was the recognition of this superiority that caused the Cossack leaders to capitulate without firing a shot when, in 1775, General

207. Oliphant, p. 308.
Tekeliy's army supported by artillery appeared before the walls of the Sech and demanded the abolition of the Zaporozhian Cossack Force.

The Russian objective was to destroy the Cossack organization, not the Cossacks themselves. They were, after all, Slavs and individually represented, no threat whatsoever. This was quite different from the attitude taken towards the Nogay and Crimean Tatars. In view of this, most of the Cossacks stayed in New Russia and were assimilated among the other inhabitants. Some of them, however, did leave: up to 9,000 emigrated to Turkey in the 1790s; others may have moved into the Ochakov area which was not conquered until the Turkish War of 1787-1791.

Thus the government adopted a very harsh policy towards the Cossack organization but a lenient one towards its individual members. The results of the former were that the Sech was destroyed and its records and treasury, which contained 120,000 rubles, summarily confiscated. The information seized by General Tekeliy in 1775 indicated that the Zaporozhians had 45 villages, 1,600 winter settlements (zimovniki) and a population of 59,637 people of whom 35,891 were married. These data were important because they were used as a basis for assessing taxes and other obligations to the State.

The lenient policy gave former Cossacks the right in the late 1770s to become state peasants provided only that they moved into villages and out of their scattered settlements. Many, if indeed not most, of them utilized this right, became state peasants and constituted a significant increment to the total Russian population of New Russia. There

209. Bagaley, p. 28.

* Sech was the name of the Cossack headquarters.
is some evidence to indicate just how large an addition they represented. One estimate from the early 1770s stated that the Cossack winter settlements numbered 4,000 instead of the 1,601 figure reported by Tekeliy. In addition, the Cossacks had accepted large numbers of runaway serfs and religious dissidents during the eighteenth century and had given these newcomers lands around their winter settlements. These people did not officially become Cossacks; instead, they constituted a kind of very lightly enserfed class paying limited dues and services to their Cossack "lords." Undoubtedly Tekeliy did not receive much information on the possible numbers of these people. Since they were runaway serfs, they would hardly have wished to register themselves and risk being returned to their former masters. Moreover, the Cossack leaders probably had no census data on them anyway. Such factors caused Skal'kovskiy to estimate that the total population of the Cossack lands was 100,000 in 1775. This figure was later accepted by Bagaley and Shmidt.

211. Bagaley, p. 28.

212. Shmidt, I, 25-27; Bagaley, p. 28.

213. A. A. Skal'kovskiy, Istoriya Novoy Sechi, Odessa, 1846, I, p. 32-40. See also Druzhinina, p. 50.


215. Shmidt, I, 47.

* That the higher figure was correct is suggested by the reported size of the Cossack military force in 1775. At this time the Sech' had 5,000 infantry, 6,000 cavalry and 1,899 men guarding the borders. Additional forces served outside the Sech' and raised the total number of armed Cossacks to 16,000 men (Shmidt, I, 47) Cossacks were able to mobilize about 10% of their total population. For example, in 1801 when Paul I ordered the Don Cossacks to assemble all their forces for an abortive invasion of India, they were able to mobilize 22,507 men (Krasnov, p. 59-60) out of a total population estimated at 200,000 (Tooke, I, p. 423; Clarke, p. 264). During the Crimean War the Don Cossacks mobilized up to 90,000 men out of a total population of 854,000 (Krasnov, p. 204-206). If the 16,000 figure for the Zaporozhian Cossacks actually represents the number of men they could mobilize, it would therefore suggest a total population of about 150,000.
The 100,000 figure becomes very significant when it is compared with the total registered population of New Russia in 1773. As indicated earlier, this amounted to about 160,000 people. The assimilation of another 100,000 people thus represented an increase of approximately 60% in the numbers of people available to the Russian government to act as auxiliary forces, producers of foodstuffs and carters in the army supply system. The Cossacks also brought knowledge with them when they joined the villages of the state peasants. They had developed an agricultural system which combined extensive grain cultivation with sheep herding, and they transmitted their techniques to the new settlers.

Moreover, the Cossacks knew the area of New Russia and its resources and paved the way for much subsequent settlement and development. The location of their winter quarters and temporary summer villages indicated the most favorable sites for new villages and towns, and in fact most of the towns of New Russia developed on such sites. The Cossacks were also traders, and their activities indicated part of the economic potential of New Russia. They had developed an extensive salt trade, carrying salt from the Perekop Lakes to Poland and the Ukraine. The Russian government permitted this trade to continue after 1783 and obtained modest revenues from the taxes imposed on it until a reorganization of the administration of the salt lakes in 1815 caused a dramatic change. In that one year revenues increased from 150,000 to 400,000 silver rubles, and they continued to increase until by 1840 they exceeded 2 million silver rubles annually and became a significant source of income for the Russian

218. Skal'kovskiy, Opyt, II, 484, 501-503.
The Cossacks also sold horses and oxen to the farmers of the forest steppe and forested zones, something that also continued after 1775. In addition they brought Crimean wines north and thus paved the way for the later expansion of this commerce. Finally, they knew the fisheries of New Russia and established the basis for an activity which by the 1840s was employing 12,000 men and producing fish to a value of more than 1 million silver rubles a year. More than any other group, the Cossacks transmitted the "seeds of change" to the subsequent stage of settlement.

5. Summary

There are several features of the conquest of New Russia that need to be borne in mind in analyzing the problems of settlement presented in the next chapter. The most important is that from 1739 to 1791, and to a somewhat lesser degree until 1817-1819, the basic, the fundamental purpose behind all government policies in New Russia was to develop resources, supply systems, auxiliary military units and naval bases to support a large and continuing military effort to conquer, subdue, hold and protect the territory of New Russia. All other considerations were secondary to this goal. The inhabitants of the regions controlled by the government were directly or indirectly part of the military effort. The Zaporozhian Cossacks, who lived primarily in the wet steppe zone, were subdued and incorporated into the expanding organization supporting the military machine. The ports of New Russia were built not for commerce but to enable the Black Sea Fleet to dominate the Black Sea, support the army and block all Turkish efforts to maintain contact with the Crimean Tatars. The exodus of the Nogays

from the dry and coastal steppes was welcomed because it removed yet another obstacle to the Russian advance. The policies towards the Crimean Tatars were also determined by this goal. Their coastal towns were destroyed, their political organization shattered and large numbers of them were encouraged to leave. Those that remained were then isolated from all possible contact with Turkey by closing most of the ports to foreign trade and placated by policies which interfered with the economic development of the Crimea.

In the process, the new settlers learned how to use the agricultural resources of New Russia from the Zaporozhian Cossacks and from the Nogay Tatars, while the government encouraged an expansion of the area sown to grains and organized a quarantine system which favored Odessa and restricted the export trade of the Crimea and the Sea of Azov.
CHAPTER IV: THE PROBLEMS OF SETTLEMENT

1. Population Growth and Settlement Plans

The population of New Russia is impossible to determine accurately because the information available is incomplete and because boundaries changed in the eighteenth century. As previously discussed, the northern sections were densely settled, and many of them were separated from New Russia in 1796. One authority argues convincingly that census data prior to 1796 must be reduced by half to account for this loss.  

Bearing such considerations in mind, the probable registered population under the control of the Russian government at various times was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>1773</td>
<td>160,000</td>
</tr>
<tr>
<td>1782</td>
<td>255,000</td>
</tr>
<tr>
<td>1787 (excluding Crimea)</td>
<td>360,000</td>
</tr>
<tr>
<td>1793</td>
<td>610,000</td>
</tr>
<tr>
<td>1796</td>
<td>835,000</td>
</tr>
<tr>
<td>1812</td>
<td>1,400,000</td>
</tr>
<tr>
<td>1834-1835</td>
<td>2,200,000</td>
</tr>
<tr>
<td>1844</td>
<td>2,300,000</td>
</tr>
</tbody>
</table>

The figure for 1773 must be considered a minimum. It is not known how

1. Druzhinina, p. 201. Druzhinina's argument is based on the data from the 1793 census. Druzhinina, p. 200. Blum ignored the factor of boundary changes when he wrote: "When Catherine II annexed New Russia in 1787/sic/ there were around 808,000 people in what became Yekaterinoslav, Tauride and Kherson gubernias." Blum, p. 279.

2. Sources: 1773 - see footnotes 3, 4, 5, Chapter III.
1782 - Druzhinina, p. 150.
1787 - Druzhinina, p. 200.
1793 - Druzhinina, p. 200. 200,000 is used as an estimate of the population of Tauride during the 1790s. Pallas, Bemerkungen, II, 345-347.
1796 - Skal'kovskiy, Opyt, I, 348.
1812 - Kabuzan, p. 163. The number of males is assumed to be equal to females. Kabuzan appears reliable for
many of the former Zaporozhian Cossacks were included in the census of 1782. Many, if not most, of them probably avoided registering because they feared being enserfed. These data must be used with caution, and can be considered only as illustrating the order of magnitude of population growth. Schmidt had this in mind when he wrote:

The method of collecting official information among us is known to all and this must bear the responsibility for the fact that it is impossible to base any reliable conclusions on them. Great care in their use is necessary. . .3

In spite of their drawbacks, however, these figures do suggest that the number of people in New Russia quadrupled during the period of settlement, roughly 1780-1817, not counting the former Cossacks and the Crimean Tatars, and increased by 50% during the period of initial development, 1817-1837. Population growth reflected substantial immigration. The size of the movement into New Russia is suggested by a report from governor Tutolmin in which he stated that about 183,000 people were settled in the Provinces of New Russia and Azov between 1764 and 1784. How many of the immigrants settled in areas later separated from New Russia and how many were in reality former inhabitants of the Cossack lands is not known. People continued to move into the area during the nineteenth century. Official records show that about

2. (continued from page 103)

the nineteenth century but less so for the eighteenth.

1834-1835 - Kabuzan, pp. 121, 163.
1844 - Skal'kovskiy, Opyt, I, 322-323.

For discussions of population growth, see: Skal'kovskiy, Opyt, I, 322-360; Schmidt, I, 590-593; Drushmin, pp. 69, 150-151, 198-202; N. Drushinin, p. 69-90; Schmidt, I, 590-593, II, 731-732, 448-451; Tegoborskiy, I, 83, 237.

3. Schmidt, I, Preface. One of the frustrating aspects of the censuses is that they covered primarily people subject to taxation. The Cossacks were exempt from taxes and so not counted correctly. For example the eighth revision in 1834-1835 gave Voznesensk a total population of 61 males and 47 females. In point of fact, the town contained over 2,000 Cossacks. See Schmidt, II, p. 797-798. See also Pavlovich, Preface; Skal'kovskiy, Opyt, I, 321.

150,000 people arrived and took up residence in Kherson Government between
1816 and 1836. It appears probable that most of the population growth
in the years before 1817 resulted from immigration. Epidemics, warfare,
droughts and food shortages must have caused an extremely high death
rate and retarded natural increase in the period 1769-1817. In the two
decades after 1817, however, the surplus of births over deaths was
generally believed to be at least as important as immigration in
causing population growth. Perhaps this was one of the reasons why
government-fostered settlement ceased in 1817.

The basic law for the settlement of New Russia was promulgated on
22 March (2 April) 1764. It was entitled "The Plan for the Distribution
do Treasury Lands and their Settlement in the Government of New Russia." Most of the area of New Russia was considered treasury land, i.e., the
property of the State. This plan with general and local modifications
continued in force until the year 1817 and replaced previous policies
which had involved giving financial subsidies to the military colonies
established in the 1740s and 1750s. One of the reasons for the change
was that the leaders of these colonies were suspected of misappropriation
of funds.

5. The calculation is based on tables given in Shmidt, I, 590-593.

6. Skal'kovskiy, Opyt, I, 344. Skal'kovskiy illustrates this belief
by citing the year 1844 when the recorded rate of natural increase was
1.8%. Skal'kovskiy, Opyt, I, 344. Shmidt reported that the annual rate
of natural increase in Kherson Government was 2% in the 1840s and 1850s.
Shmidt, I, 451. A figure closer to 1% would be more believable. Kabuzan
gives an annual rate of 1.01% for all of Russia for the years 1815-1833.
Kabuzan, p. 164-165.

7. Information on the plan of 1764 has been taken primarily from
Druzhinina, p. 58-61.

The plan provided that a family was to receive 70 acres of land in forested areas and 80 acres in areas without forests, reflecting the importance of wood in the rural economy. When the frontier moved into the dry steppe the size of the family parcel was increased to 160 acres. The parcels could not be legally subdivided. Taxes were levied on them, not on the male inhabitants as was the practice in Russia proper. People were settled in villages, however, not on individual farmsteads, and did not receive title to land. This, instead, was vested in the State, when the land was occupied by state peasants, and in private landlords. The latter were a mixed group of people. Some were members of the established nobility, but most were low-rank officers in the military and civil service who were stationed in New Russia or just adventurers. The leading government officials in New Russia also obtained large estates. The plan placed limitations on the number of parcels which any individual was permitted to acquire, but the provision was frequently modified, and in practice appears to have been ignored. A landlord received title if he succeeded in settling his lands within a specified number of years, but in actuality the period was often extended. Initially all parcels had to be occupied, but this requirement was later reduced, and in the 1780s a landlord received title when he succeeded in settling only 13 to 15 families on an estate of 4,000 acres, and even this modest stipulation was evidently ignored in many cases.9 Provisions were included but seldom enforced under which unsettled lands were to be returned to the state with the payment of penalties. Furthermore, the plan freed landlords from taxes for 6 to 16 years depending on the quality of the land. The actual exemption period varied, and in many cases was extended.

Legally a landlord was prohibited from selling his estate before it was settled, but in practice unsettled lands were sold. In some instances landlords returned estates to the government. 

Thus the plan itself functioned more as a statement of intent and gave guidelines to be followed rather than concrete instructions. However, it was the law, and the difference between the law and the practices actually permitted meant that few landlords were able to obtain secure title to their land. This resulted in repeated attempts by groups of land owners to get their titles confirmed by Imperial Rescripts. The inaccuracy of surveys and property documents also created conflicting claims among both landlords and among settlements of state peasants and caused many disputes which the cumbersome, inefficient and corrupt court system was unable to resolve. The situation was worse in the Crimea than elsewhere, but existed throughout New Russia. The government did little to solve the problem. Landlords thus usually owned very large estates but often lacked secure title and so were unwilling to make capital investments which they might lose. They therefore pursued extensive rather than intensive farming and refrained from improving their lands. 

The reason for the government's leniency was that land without people was worthless, and the basic purpose of the plan of 1764 was to encourage landlords to bring people into New Russia. Only in this way could the State acquire the human resources needed to prosecute war with Turkey. The landlord was not really receiving free land, because

10. Bagaley, p. 75-76.
11. Druzhinina, pp. 194, 196, 203; Shmidt, I, 73.
12. N. Druzhinin, p. 357.
he was compelled, at his own expense, to move settlers to New Russia. The government, however, aided him in attracting people by pursuing a deliberate policy of restricting and in most cases preventing the forcible return of runaway serfs. The best example comes from 1779 when the government officially granted freedom to any peasant coming into New Russia from Poland. Many serfs then left their masters in the western forest steppe governments, fled to Poland and later moved from Poland to New Russia. Therefore most of the newcomers were Ukrainians rather than Poles or Great Russians. Recruiters also went to Poland and encouraged the peasants to migrate.

In the 1770s the government gave inducements to recruiters. They were rewarded with land grants or commissions as military officers (without having to perform any active service), the size of the grant or the rank depending upon the number of people they brought into New Russia. In some cases the government also gave them funds which in theory were to be used to defray transportation expenses. In practice, however, no control was exercised over the way in which the money was used, and the recruiters no doubt put much of it in their own pockets. The system provided an avenue for advancement to low ranking civil servants and adventurers and encouraged them to use any and all means to induce settlers to come to New Russia.

Both recruiters and landlords did their utmost to spend as little

15. Druzhinina, p. 61.

* Until the Partition of 1793, New Russia bordered on Poland along the Sinyukha river. This boundary was not affected by the Partition of 1772.*
money as possible in helping settlers get established. The recruiter's obligation ended when the people arrived, and the landlord spent his money in encouraging more people to come in order to secure title to his property, and not in assisting those already living on his estates. In addition, most of the new arrivals were runaway serfs and were not able to bring many possessions with them. For these reasons, livestock, seed, agricultural implements, etc., were in extremely short supply. On the other hand the landlord was unable to demand very much from his peasants. They were not serfs, were free to move and others would gladly receive them in order to obtain title to more land. The obligations of the peasants were, therefore, much lighter than in Russia proper. They appear to have been greatest in the forest steppe zone which was settled first and had the densest population and became progressively milder to the south.

The first substantive change in the legal status of the peasants came with the Uказ of 12 December (23 December) 1796 which forbade the free movement of peasants into, within and from New Russia. It was a response to the demands of the landlords in Russia proper and in the forest steppe zone of New Russia who were disturbed by the large numbers of their people who were moving south to settle in the dry and coastal dry steppes and in the lands of the Don Cossacks. The new law increased the landlord's power, but did not, as some believe, extend serfdom to New Russia. Moreover, peasants continued to migrate without securing permission and runaway serfs still came illegally to New Russia.

17. Druzhinina, p. 70.
18. E.g., Blum, p. 418.
and the Lands of the Don Cossacks. 20

Landlord estates were far more common in Kherson than in Yekaterinoslav Government. There are several possible reasons for this. The largest uninhabited area obtained at one time was the Ochakov region, and it apparently was quickly granted to landlords. In addition, the territory of Kherson Government was the combat theater during the Turkish Wars of 1769-1774 and 1787-1791 and was, therefore, the area the minor military and civil servants knew best and where they could most easily secure land. It was also close to Poland from whence came most of the settlers in the eighteenth century. A would-be landlord could more easily get people to settle his land here, and thus secure title, than he could in Yekaterinoslav. Finally, this part of New Russia was close to the major Black Sea ports: Kherson, Nikolayev and Odessa and thus offered the best available markets where grain might be sold for urban consumption and for export.

Yekaterinoslav Government was far from these ports and had no good road connections with them. Only the area close to the Sea of Azov had any real export potential, and it was given to Greeks from the Crimea, Nogay Tatars and in the first years of the nineteenth century to German colonists. Apparently few Russians were encouraged to settle here in the eighteenth century. The mountainous portion of the Crimea, as described earlier, was already inhabited by Crimean Tatars and offered

little potential for settlement.

Whatever the reasons were, the largest numbers of Russian state peasants lived in Yekaterinoslav Government. This remained true even in the middle of the nineteenth century when Yekaterinoslav contained 215,052 registered male state peasants, while Kherson had only 48,482.\(^{21}\) The government administered these people and managed their immigration into New Russia. One of the principal sources of state peasants was the former Zaporozhian Cossacks.\(^{22}\) In practice, the government accepted and settled any serf who legally or illegally could get to New Russia, a deliberate policy which irritated the landlords of Russia proper. In addition regular migrations of whole villages were arranged during the 1780s and 1790s. For example, in 1784 and 1785 the government moved 20,000 state peasants to New Russia, and in 1794 another 20,000 were brought into the short-lived Government of Voznesensk.\(^{23}\) Smaller groups were settled in the area of Tauride north of Perekop after the annexation of the Crimea. They were established along the main roads from Perekop to Aleshki and Berislav, the principal routes for all traffic between the Crimea and Kherson and Yekaterinoslav, and thus provided loyal people who could protect and maintain these important lines of communication.

\(^{21}\) Tauride had 229,111 male state peasants, most of whom were Crimean Tatars. Tegoborskiy, I, 275. According to the seventh revision, 1816, Yekaterinoslav Government contained 141,621, Kherson Government 50,473 and Tauride 150,768 male state peasants. N. Druzhinin, p. 89. The Eighth Revision, 1833, reported:

<table>
<thead>
<tr>
<th>Number of Male State Peasants</th>
<th>Total Number of Male Peasants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yekaterinoslav Government</td>
<td>358,945</td>
</tr>
<tr>
<td>Kherson Government</td>
<td>191,316</td>
</tr>
<tr>
<td>Tauride Government</td>
<td>214,150</td>
</tr>
</tbody>
</table>

\(^{22}\) Druzhinina, p. 66; Bagaley, pp. 26, 60-61.

\(^{23}\) Skal'kovskiy, Kuron., I, 181; Shmidt, I, 53; II, 62.
The state peasants were supposed to be transported at government expense and to receive implements, housing, seed stock, draft animals, etc., free of charge. In reality, however, little of the money assigned to these purposes actually reached them. They really moved themselves and were genuine pioneers in every sense of the word. Some were required to pay whatever taxes they owed in arrears in their former villages after coming to New Russia. In addition, they were exempted from taxes for only the first three years, and then had to pay higher taxes than landlord peasants who were freed from taxes for much longer periods. The state peasants were also obligated to form most of the irregular military units in New Russia.

The plan of 1764 divided settlers into two classes: military and non-military. A family in the former class was given a parcel of land, freed from taxes and required to provide and support one man always prepared for combat. When a family could no longer provide a man, its parcel became non-military and subject to taxation and another family was permitted to accept the military obligation. During 1776, however, the state peasants were simply required to support the irregular forces without receiving any exemptions whatsoever. As will be recalled, the Russian armies again occupied the Crimea in this year. The special category of military settlers became less common in the 1780s and apparently disappeared by 1797 when 160,000 to 170,000 of the 200,000 registered male state peasants were ordered to supply men for the

24. For an example, see Pallas, Travels, I, 476.
27. Druzhinina, p. 62.
irregular armed forces without receiving any tax exemptions. Immediately after the outbreak of the Turkish War of 1787-1791, the remaining males were also placed under this obligation. In addition, Potemkin bought whole villages from landlords and required the inhabitants to form and support irregular forces. These measures in effect mobilized practically the entire population, since probably about two-thirds of all the registered peasants of Yekaterinoslav Province were then state peasants.

The military burden was removed after 1791 and the irregular forces were reduced in strength and organized along traditional Cossack lines. New Russia reportedly contained 43,000 Cossacks in 1793, a figure which apparently includes both fighting men and their families. 6,000 were settled on the Taman' peninsula in 1791 and 1792 and later became the Kuban Cossack Force. The most important group in New Russia were the Bug Cossacks formed in 1777. They were responsible for guarding the Bug river and in exchange for performing this service received land and exemption from taxes for 30 years. Potemkin evidently mistrusted the Cossacks because he abolished their organization and privileges and began to transform them into state peasants in 1785. With the need for irregular forces in the Turkish War of 1787-1791, however, he reformed the force which then was able to muster from 1,000 to 1,500 fighting men. The organization was again dissolved after the war, but some of the men continued to form units without authorization. Because of their petitions and the threat of war with Turkey, the government once more organized the

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31. Skal'kovskiy, Opit, I, 221; Shmidt, I, 60.
Bug Cossacks in 1803, at which time they could mobilize 1,500 armed men out of a total male population of 6,000. In 1817 they were incorporated into the military-agricultural colonies being established in the valleys of the Bug and Ingul rivers.  

The history of the Bug Cossacks demonstrates that the need for irregular forces lessened considerably after 1791 but remained important until 1817 and that government policies vacillated, no doubt because it distrusted the Cossacks and was not anxious to have an armed peasantry in peacetime. The military-agricultural colonies were, of course, part of a greater reorganization of the Russian army which began in the second decade of the nineteenth century.

The government's policies and settlement plans strongly influenced the agricultural economy of New Russia. Landlords received large estates, but lacked both people and capital and often had insecure title to property. These factors caused them to engage in extensive agriculture involving little investment. The peasants on both landlord estates and state lands received little assistance in establishing themselves in New Russia. In addition they were soon forced to pay taxes and perform military service and support irregular units. Such obligations were a heavy burden and coupled with an initial lack of even modest personal resources compelled the peasantry to adopt a way of life which made maximum use of what was locally available in New Russia.

2. Adapting to the Environment

The problems faced by settlers in New Russia were well summarized by a priest named Markianov who was a contemporary of Potemkin:

the main obstacles, sometimes causing settlers to go back, were as follows: dangerous evaporations (miasmas) of the flood

32. Skalkovskiy, Opyt, I, 252-253; Shmidt, II, 794.
 plains, gnats and mosquitoes, marmots; to this must be added a whole group of other equally important difficulties: the difficulty of ploughing the solid virgin steppe, frequent droughts and, as a consequence of them harvest failures, insufficient quantity or poor quality of the water causing disease. . . , winter blizzards, snow storms and cold, often destroying the vegetation, and especially the livestock, the lack of fuel, infectious disease. . . It was necessary to become accustomed to tolerating (italics DFL) all of these handicaps in order that the energy in the villages was not lost during the first years and cause the settlers to long for their lost homeland.33

Perhaps the most important word in this quotation is the verb "tolerate," because it typified the attitude of both the people and the government of New Russia. People adjusted to the environment and its problems, but did not attempt to overcome them by making capital investments or by consciously altering the landscape. This attitude is best illustrated by the problems of water supply.

The rivulets and rivers that originate in New Russia contain little water in the summer. Most of their annual flow occurs in the spring when the snows melt, and many of them dry up completely later in the year. The ground water, moreover, contains a high salt content, and the water table is low in many places. Even the major rivers contain a large quantity of dissolved salts.34 Villages were located primarily where surface water was available, i.e. along the rivers and rivulets and in the gullies. In the dry and coastal dry steppes, however, wells had to be dug because the streams and limans were too

33. Quoted in Bagaley, p. 100.

34. Modern data indicate that the waters of the Bug, Dnepr, Severnyy Donets and Don rivers contain on the average from 500 to 1,000 milligrams of salts per liter. The rivulets and the ground water have a higher quantity. The predominating salt is calcium carbonate except in the Azov highland and lowland where the water contains sulfates obtained from the dissolution of gypsum strata. L. K. Davydov, Gidrografiya SSSR (Vody Sushi): Chast' I Obshchaya kharacteristika vod, Leningrad, 1953; p. 139 (cited as Davydov).
brackish. The water table was low in these zones, and wells had to be
35 to 55 and even more feet deep and then sometimes failed to supply
water in the summer.35 The deepest reported wells in New Russia were
in the fort of Taganrog. They were from 120 to 170 feet deep and con­
tained brackish water received from a stratum of sandstone lying below
sea level.36

Springs occurred in some of the gullies. They were frequently
associated with limestone outcrops and were the only sources of good
water in the dry and coastal dry steppes. There was such a spring in
a valley near the fort of Taganrog. It was owned by the fort commandant.37
Another was located at the estate of Spasskoye a few miles from Nikolayev;
it was the only source of pure water in the Nikolayev area, and became
the property of Potemkin and later of the successive commanders of the
Black Sea Fleet.38 The owners of these springs sold water to those who
could afford it.

A similar situation existed in Sevastopol'. The wealthy people
here used a 28 foot well situated three miles out of town.39 The one
good well in the port itself was reserved for the exclusive use of the
army, while the navy relied on brackish wells situated on the shores
of the harbors. No attempt was made to provide a better supply and
even as late as the 1870s this extremely important naval base was

35. Shmidt, I, 148; cf. Rikhter, p. 88; Davydov, p. 158.
36. Pallas, Travels, I, 505.
37. Pallas, Travels, I, 505.
38. Pallas, Travels, II, 498; Holderness, p. 98; Lyall, I, 205.
critically short of good water. The same situation also existed in Odessa. It had many wells, but most of them contained little water, and even that was brackish. A perceptive traveler in the 1820s reported that Odessa then had only one good well which was located on the sea coast about two miles south of town. Water was transported by carts, which had to be pulled up a 150 foot high hill, and then sold for more than a ruble a barrel. Quite obviously only people with money could afford such a price.

Thus, the only people in New Russia who could have good water were the wealthy; the commoners had to "tolerate" the brackish water from rivers and shallow wells. For example, the common people in Tiraspol drank water from the Dnestr which in summer was brackish and very dirty. The residents of Yelizavetgrad got their water from the shallow Ingul. They also washed their clothes in the river, and, according to one writer, the water was so dirty that even the animals could hardly drink it. The same situation held true in the villages; it meant that many people were drinking polluted water. Nothing was done to supply even the important naval bases with good water, even though the government had the example of the Tatar aqueducts before its very eyes.

The polluted water caused intestinal diseases, many of which are fatal, and accounts for the frequency of "intermittent" fevers during the summer months and for the observation that many settlers died from

40. Golovachov, p. 234.
42. Shmidt, II, 762, 763.
43. Shmidt, II, 788.
diseases. Two cases illustrate the problem: they were recorded because they referred to highly unusual groups of foreigners. The first concerns a group of French emigrés who formed a small colony located on the Bug about twenty miles upstream from Voznesensk at the site of a former Zaporozhian village called Gard which had been an important fishing station and river crossing for three or more centuries. The Frenchmen came to this site in the early 1790s, and by 1800 most of them had died from "fatal fevers." The second was a group of 904 Swedes who were brought from the island of Dagö in the Gulf of Riga and settled near the vital river crossing of Berislav in the 1790s. By 1800 all but about 150 had died "from the change in climate" and from poor housing. In both these cases, the cause of death probably was fatal water-borne diseases, since neither plague nor malaria infected these sites.

The best description of how serious this situation could be was written by Danilevskiy who told the story of a presumably fictional village established by a wealthy landlord who wished to do everything to make his peasants comfortable. The people arrived and were placed in the huts. They planted winter grains and tried to prepare reserves. And then they were struck by a rotten, snowless winter. But even in the fall the people began to fall ill. What a parable! Anyone who drank from the well took sick. And by spring half the village had died. They wanted to move to another place, to forbid drinking from the well, but where could they go? The epidemic took such a hold that by Peter's Day of the next year of all the three-hundred families, Lord, only one crooked old woman remained.

44. Guthrie, p. 34; Skal'kovskiy, Opyt, I, 95-96; cf. Tooke, I, 505.

45. G. P. Danilevskiy, "Beglye v novorossii," Sochineniya, vol. III, St. Petersburg, 1884, p. 28-29. Danilevskiy is considered a minor author. In this story he accurately portrays life in New Russia. His details and facts are authentic and his characters genuine. Danilevskiy captured the essence of New Russia better than any historian, geographer or traveler.
There was another "disease" which sapped the energies of the people of New Russia with great frequency. It was referred to in the plural as "scurvy" or "scorbutic diseases" which are now better known as scurvy. Scurvy results from vitamin shortages; it was first brought under control with the introduction of lime juice as part of the diet of sailors in the British Navy in the year 1795. However, as later as the 1880s two factors were believed to cause this disease, a high content of salt in the diet and a shortage of fresh fruits and vegetables.\footnote{46} The latter is, of course, correct because fruits and vegetables contain vitamins, and the inhabitants of New Russia lacked these items in their diet.

The Russians, unlike the Cossacks, devoted themselves almost exclusively to grain farming in order to satisfy the government's requirements for foodstuffs, and failed to grow adequate quantities of vegetables and fruits.\footnote{47} They did not have sufficient labor during the summer months to cultivate kitchen gardens and orchards because this was the season when the men left to operate the overland transportation system, to do construction work in the towns and to load and unload ships in the ports. During the Turkish Wars, of course, many more men were away fighting in the irregular forces.

\footnote{46} See for example Edward Ellisberg, Hell on Ice: The Saga of the "Jeannette," New York, 1938, p. 127-140. Saline water taken in the right amounts is beneficial during hot weather (Thor Heyerdahl, Kon-Tiki, Chicago, 1950, p. 131-133).

\footnote{47} Apparently even cabbage, which was so common in Russia, was not grown in significant quantities. The Cossacks cultivated rather large vegetable gardens and raised quantities of melons, but later settlers neglected these crops.
The disease caused the greatest amount of suffering during the spring following a bad harvest:

Scorbutic diseases frequently appear in the spring among the village inhabitants... especially in years of bad harvest when the winter is long... The diseases arise from the fact that... in years of bad harvests, when the small store of vegetables is consumed during the winter, they are nourished until spring exclusively by flour and salt fish, live in cold, damp huts and drink dirty water from swamps or wells.43 (italics DFL)

In addition to learning to "tolerate" disease, the settlers also had to build houses, find fuel and earn a living, and since they had little in the way of personal resources they had to use whatever was locally available. For this reason they followed the practices of the Zaporozhian Cossacks and of the earlier settlers of the original military colonies. Many of these techniques were similar to those followed in the forest steppes of the Ukraine. The greatest problem faced was finding substitutes for wood, an extremely important item in the rural economy. In the forested zones of Russia, houses were made of logs, wood was used for fuel, splinters of fir or dry birch were burned for domestic lighting, and grain was dried in wood-fired kilns. The peasant also consumed "a monstrous quantity of wood" in his steam bath which was an exact duplicate of the modern Finnish sauna. In addition, he used young trees to make bast shoes; on the average he wore out about fifty pair of these a year "to the making whereof, if we take a middle number, one hundred and fifty young linden stems are demolished."49 The inhabitants of the forested zones were able to

43. Pavlovich, p. 293; See also Shmidt, II, 682.
49. Tooke, III, 261-262.
consume wood in large quantities and showed little care of frugality in its use. 50

The trees available in the forest steppe zona, the river valleys and gullies were insufficient to permit the use of wood on such a scale. Instead, the people had to find substitutes, and this they did by using bushes, straw, reeds, dung and clay. They constructed houses of clay with thatched roofs. In the winter the buildings were cold, and so, like the Cossacks, they built, or rather dug, sod houses that were half underground and covered with pieces of turf.* For fuel, wattles, thatch and fences they cut the bushes and weeds from the steppes and the reeds from the flood plains. Such plants were extremely important, and a large amount of labor was required to harvest them in the spring and early summer. Animal dung was also collected, dried in the sun, piled next to the sod houses and covered with straw so that it would be available for cooking and heating purposes in the winter months.

Instead of building barns, the peasants stored grain underground in yamas, a structure used by both the Cossacks and the Tatars. The yama was dug in the shape of a bottle, a fire was burned within it for several days to harden the clayey soil, and then it was lined with straw and filled with dried grain. The top was covered with straw and sod and usually protruded in the form of a small cone in order to shed rain water. The yama was air tight, and as long as it remained undisturbed by rodents, could keep as much as 85 bushels of grain for as long as 15 years. The only danger involved was that it had to be aired several days after it was opened. A person who entered too soon took the risk of being suffocated. This method also concealed foodstuffs

50. Tooke, III, 261-262. See also King, p. 6-7.

* Sod houses were easy to heat because they were well insulated by earth and sod and, being half underground, protected from wind. Kohl, p. 440.
from possible enemies. In place of wood-fired kilns, the settlers sun dried grain by placing it on a piece of hard ground formed from packed clay. Trees could not be used to make shoes, and therefore the bast shoe was replaced by leather footwear. The steam bath, so common in the forested areas, was, unfortunately, not utilized: no attempt was made to adapt it to the types of fuel locally available. The steam bath required little water, was an excellent method of keeping the body clean, and might have reduced the frequency of such diseases as the bubonic plague which are transmitted by vermin on the human body.

The most important use of wood was in the manufacture of agricultural implements, the most unique of which was a heavy plough, the saban, which reminded travelers of the heavy German plough of the period. The saban was also used by the Cossacks and by the Tatars, although the latter apparently covered its blade with iron more frequently than the Russians. This implement, when pulled by 4 to 8 oxen, could cut the heavy steppe turf and thus made grain farming possible. It had some liabilities, the most important of which was that it required large numbers of draft animals, and few settlers had many oxen at their disposal at one time. In addition, the plough was difficult to use in cutting the bushy weeds which invaded fields after they had been cultivated for a couple of years.

51. For descriptions of yams, see Zuev, p. 271-272; Tooke, III, 161; Kohl, p. 441; Holderness, p. 290; Shmidt, I, 503-504.

52. The Tatars built Turkish steam baths in their towns. Russian officials enjoyed the baths in Bakhchisaray but never attempted to build them in the naval bases where they might have contributed greatly to personal hygiene and reduced the incidence of disease. Similarly, the effective water supply system maintained by the Tatars was observed but never copied.

53. Tooke, III, 143; Holderness, p. 297; Pallas, Bemerkungen, II, 390;
A lighter plough was employed in planting a field the second time, and the traditional Russian fork plough, the sokha, which was made from a tree branch and pulled by only one animal, was used to cultivate the alluvial soils of the gullies and flood plains. The farmers harvested with a scythe very similar to one used by the Tatars, rather than with the cycle which was common in Russia proper. The improved scythe with an attached cradle appeared in the nineteenth century among the military agricultural colonies in the valleys of the Bug and Ingul rivers and among the Germans but, for some reason, was never adopted by the mass of peasantry. Where the peasants of the forested zones threshed with flails, the inhabitants of New Russia adopted the Tatar custom and used horses. Grain was spread over a large surface made of packed clay in the center of which stood a wooden post. One or two horses were tied to the post by a long rope and then driven in a circle, kicking the grain with their hoofs as the rope slowly wrapped itself around the post. In the 1830s, and perhaps earlier as well, the post was sometimes dispensed with. Instead a fence was built around the threshing area and a whole herd of horses driven repeatedly over the grain. The method was extremely wasteful, something to be regretted in an area with frequent harvest failures, but it did have one great advantage: it required little human labor. As Chapter II emphasized, the growing season in New Russia is very short, and

53. Continued from p. 122.
J. Gueldenstaedt, Reisen durch Russland und im Caucasischen Geburgen, St. Petersburg, 1787, II, 450, contains a drawing of the saban. It should be noted that the saban antedated the steel plough by a century or more. See also bottom p. 125.

54. Tooke, III, 142-143; Skal'kovskiy, Opyt, II, 68.

55. Many travelers described this technique. E.g., Holderness, p. 273.
Therefore, farmers preferred to put what labor they had into the fields rather than on the threshing floor.

Afterwards the grain was sun dried and then either stored or taken to mills, the most picturesque of which were small, portable wind mills so constructed that they could be rotated to keep the vanes pointed in the direction of the wind. They were first described by Zuyev who saw Cossacks using them in the wet steppe along the right bank of the Dnepr in the fall of 1781. They appear to have been somewhat different from the Tatar wind mills. With the passage of time permanent wind mills became dominant, but undershot water mills and "earthen" mills still existed. The water mill was usually located at the mouth of a gully where an earthen dam would be built to hold back the water. The dam also served as a bridge, and because of spring floods had to be rebuilt almost every year. The "earthen" mill was most frequent in the dry and coastal dry steppes and was used by the Tatars. It was merely a hole in the ground in which grind stones were placed. The stones were turned by animals. The water and earthen mills were simple to construct and operate, but were inefficient and slow and therefore unsuited to the production of large amounts of grain for commercial sale.

Many of these implements and the substitutes found for wood were "seeds of change" which the Russian settlers inherited from the Cossacks and Tatars. They remained virtually unchanged during the entire period studied.

3. Grain Farming

The people of New Russia pursued an extensive form of grain cultivation, requiring little capital investment, which they learned from

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56. Zuyev, p. 247-248, describes these mills in detail.
the Zaporozhian Cossacks and from the inhabitants of the military colonies of the 1740s and 1750s. The earliest settlers planted grains on the principle of "squatters rights" (zakhvatnoye vladenije), by which a farmer simply took any plot of land he wished, planted it and then had the exclusive right to the harvest. In the case of rye, he also had the sole prerogative to any second (padalitsa) or even third crop (prapadalitsa) which might grow from seeds inadvertently dropped on the ground during harvesting. Afterwards, however, the land was open for anyone who wanted it. The same principle also applied to hay fields, but all the inhabitants of a village were required to begin haying on the same day so that everyone would have an equal opportunity to cut the steppe grasses.

Increasing population caused land to be divided into family holdings, but these remained under the control of the village and were apparently subject to periodic redistribution. Land continued to be left in fallow for long periods of time. A field generally would be cultivated for several successive years until it became covered with bushy weeds which the heavy saban plough could not easily cut, and then it would be left in fallow for about 10 years. The steppe grasses would slowly return and drive out the weeds, so that it could be used for grazing purposes. When grasses became dominant the field would again be cultivated. The system was also a type of dry farming, for during the long fallow period the soil would accumulate

57. Druzhinina, p. 57.
58. Holderness, p. 112.

* In Russian, bur'yan, which means a tall, bushy weed with a thick, tough stalk. The stalk was difficult to cut. Shmidt, II, 19.
moisture which the farmer then utilized for his crops. There is no evidence to suggest, however, that this feature was recognized at the time. As population increased and the area under grains expanded, the farmers were no longer able to cultivate the same field for just one year and then leave it in fallow. This caused them to cultivate for longer periods of time, and by the 1840s it appears that the average field was being planted to grains four or five years in a row. The fallow period, however, remained constant at 10 years, and, therefore, for every field planted to grains two additional ones were in fallow. 60

Settlements, particularly in the wet and dry steppes, were concentrated in the river valleys, in the gullies and especially at the confluence of a gully with a major stream valley. These were the most protected and the best watered locations and had the further advantage of lying along the major overland transportation routes. The land closest to the settlements was sown to grains, while that farthest away was used for haying. The area between the grain and the hayfields was devoted to grazing livestock. The hayfields were apparently never used for grain because they were far from the villages. Some rotation evidently did exist, however, between the grazing area and the fields planted to grains.

Most of the farm work was done in the months between about mid-April and the end of August. Spring sown grains were planted in April, and afterwards the reeds on the flood plains were harvested. Haying started in May but often was continued through July. It competed with the

60. Shmidt, II, 17-22; Druzhinina, p. 51; Tooke, III, 145.
harvesting of grain sown the previous fall. This harvest in turn was often prolonged and interfered with harvesting the spring sown grains and planting fall crops. During these same months the farmers also had to collect dung and bushes for winter fuel. Spring and summer was thus a period of intense activity when a large amount of labor was required in the fields to perform a variety of different, often competing tasks.

One of the reasons why farm work was seldom finished on time was that the draft animal was the ox. The ox was stronger than a horse, could eat a wider range of natural grasses, cost less and could be eaten, but he was an extremely slow moving animal and caused all farm activities to take longer than they would have if horses had been used. Moreover, non-farm activities drew labor off the farms during the critical summer months. Most of the goods hauled over the roads of New Russia moved during the spring and summer when grass was available for beasts of burden, when blizzards were not a threat and when the rivers could be crossed without encountering the dangers of floating ice. Many men then left the villages to work as carters, while others went to the towns to work as construction laborers and longshoremen. This situation remained true in the nineteenth century. Wage rates were high in the major ports like Odessa and Taganrog and they attracted farmers who needed money to pay taxes.

61. Druzhinina, p. 75; Shmidt, II, 20. See p. 121.

62. The head tax (podat’) and land tax (obrok) on state peasants in Russia amounted to approximately 12 to 15 rubles a year per male soul in the second decade of the nineteenth century. There were also other local taxes that had to be paid. N. Druzhinin, p. 50. The villages were frequently in arrears, especially after bad harvests. As a result of poor harvests in 1832, 1833 and 1834, arrears reached 65 rubles per
The labor shortage caused delays that were sometimes disastrous in sowing and harvesting crops, prevented farmers from cutting sufficient hay to feed their animals adequately during the winter months, and largely explains why the peasants failed to engage in such time-consuming activities as raising silk worms and wine-making which many people thought could be conducted in the physical environment of New Russia. The essence of the problem was not the lack of people able to work but the fact that construction work, farm work, transporting goods and loading and unloading ships all had to be done during the spring and summer months.

Landlords in the nineteenth century sought to solve this problem by hiring migrant workers to plant and harvest crops and cut hay. No real control was exercised over these people so that their numbers are impossible to estimate. The best that can be said is that they numbered in the thousands and that more of them probably came to Kherson Government than to Yekaterinoslav because Kherson had more landlords. The migrants came from the forest steppe and forested zones in large, organized groups, often bringing women along to do the cooking. They worked for wages, and this meant that only landlords with money could hire them. The amount of money, rather than the quantity of land an individual possessed determined the numbers of laborers.

63. For information on silk raising, see: Reimers, III, p. 60-61; Salkovskiy, II, p. 156-160; Schmidt, II, 264-271; Fallas, Travels, II, 251-252. Potemkin subsidized silk raising in the eastern Crimea, but next to no silk was produced. Schmidt felt that silk raising was feasible in the late 1850s.
he could employ and correspondingly the size of the crops he could plant and harvest. As a result a landlord with a large estate but little money would go broke while his neighbor with a small estate but more money became rich. Furthermore landlords hired migrant labor only to perform the most necessary tasks and seldom used it to make improvements for which they lacked the necessary capital. This is probably the reason why they stopped building yams in the nineteenth century and instead simply piled grain in huge stacks in the fields or near the threshing floors. The grain must have been damaged by moisture particularly if it could not be sold in the fall and was, therefore, left in unprotected piles throughout the winter.

Grain farming, as one would expect, was concentrated in the forest and wet steppes. In the dry steppe it occurred along the river valleys and in or near the gullies, and in the coastal dry steppe it was restricted to the banks of the sheltered limans. In addition to travelers' reports, two other types of evidence can be used to demonstrate this distribution. The first is population density because grain farming was the dominant occupation of the people of New Russia. The population density map (figure 10) shows that most of the people lived in the forest-and wet steppes. Population increased during the period studied, but, according to travelers' accounts, its distribution remained the same. The second piece of evidence is the location of mills for grinding grain. In the year 1799 New Russia contained 2,253 mills in its forest-and wet steppes, but only 267 in the dry and coastal steppes.

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64. Skal'kovskiy, Opyt, II, 54, 70.
66. This was determined by comparing the data given in Druzhinina, p. 216, with the map of climatic zones, figure 6.
These same proportions evidently held true in 1837, since travelers saw few windmills in the dry and coastal dry steppes.

The area used for grain cultivation and gross production at the end of the period studied can be derived from estimates of the amount of grain sown in the year 1845.

Grain Sown in 1845

<table>
<thead>
<tr>
<th>Government</th>
<th>Sown (quarters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kherson Government</td>
<td>359,850</td>
</tr>
<tr>
<td>Yekaterinoslav</td>
<td>770,790</td>
</tr>
<tr>
<td>Tauride</td>
<td>325,140</td>
</tr>
<tr>
<td>Odessa District</td>
<td>9,610</td>
</tr>
<tr>
<td>Taganrog District</td>
<td>57,830</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,523,220</strong></td>
</tr>
</tbody>
</table>

These data suggest that about 8.6 million bushels of grain were planted in the mid-1840s, that twice as much was cultivated in Yekaterinoslav Government than in Kherson and that the area immediately around the

67. Skal’kovskiy, Opyt, II, 94. It has been impossible to find any reliable figures on grain cultivation. Skal’kovskiy commented in the mid-1840s that such information was very sparse. The data available are crude estimates, and Skal’kovskiy is taken as the best source because he was the head of a statistical office and had better access to information than any other authority. Another book, with no sources cited, gives the following data apparently for the late 1820s or early 1830s:

<table>
<thead>
<tr>
<th>Government</th>
<th>Gross production (quarters)</th>
<th>Seeds (quarters)</th>
<th>Local Consumption (quarters)</th>
<th>Surplus (quarters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kherson</td>
<td>992,000</td>
<td>233,000</td>
<td>230,000</td>
<td>529,000</td>
</tr>
<tr>
<td>Yekaterinoslav</td>
<td>1,976,000</td>
<td>415,000</td>
<td>989,000</td>
<td>572,000</td>
</tr>
<tr>
<td>Tauride</td>
<td>350,000</td>
<td>56,000</td>
<td>382,000</td>
<td>88,000 DEFICIT</td>
</tr>
</tbody>
</table>

Geographical, p. 45. These figures appear to be incorrect, but they do illustrate that Yekaterinoslav Government produced more grain than Kherson. Tauride appears to have been a grain deficient area in both the eighteenth and nineteenth centuries.

Tegoborskiy reported that 750,000 quarters of seed corn were required in Yekaterinoslav Government in the 1840s, indicating "at least 750,000 desyatinas under culture." He stated further that Tauride had 430,884 desyatinas sown with cereals in 1845. Tegoborskiy, I, p. 42. The dearth of data has prevented the making of any maps. This author believes that Skal’kovskiy’s data are more than likely too low.

* One quarter (chetvert’) equals 5.75 bushels.
major export port, Odessa, produced insignificant quantities. Since one quarter (5.75 bushels) of seed grain was generally used to plant one desyatina (2.7 acres) of land, these data suggest further that about 7.5% of the total area of New Russia was under grains during the 1840s. However, as indicated previously, the agricultural cycle involved leaving two fields in fallow for every one under cultivation, and therefore the actual amount of land utilized for grain farming probably amounted to three times this figure, or 20 to 25% of the total area of New Russia. This represented a substantial growth from the 1780s and indicates that grain farming was well-established by the end of the period studied.

Yekaterinoslav Government, which contained about half of New Russia’s total lands under grain production, was not able to send its surplus grains in significant quantities to the major export port of Odessa because of distance, inferior roads and high transportation costs. Its surplus was instead used in liquor distilleries, shipped north or exported in small amounts through Taganrog. The grain produced in Tauride was completely consumed by the inhabitants of the Crimea. Thus, Kherson Government was the only part of New Russia which was close enough to the major port, Odessa, to be able to export grain. It planted, however, only about 360,000 quarters, and most of this was in the forest-and wet steppes. Assuming a four-fold yield, which was considered a good return for the time, Kherson could produce about 1.4 million quarters of grain annually, one-fourth of which had to be set aside for seed. Of the remaining approximately 1.0 million quarters, at least half (and probably more) was needed for domestic consumption. Therefore, New Russia was apparently capable of exporting less than
half a million quarters of grain annually during years of moderately

good harvests. This is the major reason why probably half of the grain

shipped abroad from Odessa originated in Volynia and Podolia and not

in New Russia.

While the Russian settlers adopted the techniques and the practices

of the earlier inhabitants of New Russia, they also introduced two highly

significant modifications in the rural economy. The Cossacks and the

Tatars had both practiced a diversified economy which combined grain

farming with livestock raising, vegetable growing, orchards and some

fishing and trade. The Russians, however, concentrated on cultivating

grains, neglected vegetable gardening, and made livestock raising into

an independent activity separated from farming (see Chapter V). They

thus became almost completely dependent on grains for their livelihood.

The second modification was that much of the grain was raised for export

abroad and for use in liquor distilleries and the best types for these

purposes, i.e. winter wheat and rye, were not the most reliable crops in

the marginal environment of New Russia.

The relative importance of various crops at the beginning of the

period studied is illustrated by the following data from Yekaterinoslav

Province:

Grains in Yekaterinoslav Province, 1769-68

<table>
<thead>
<tr>
<th>Grain</th>
<th>Quantity Sown (quarters)</th>
<th>Quantity Harvested (quarters)</th>
<th>Returns (fold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rye</td>
<td>146,342</td>
<td>274,272</td>
<td>1.9</td>
</tr>
<tr>
<td>Wheat</td>
<td>115,199</td>
<td>167,488</td>
<td>1.5</td>
</tr>
<tr>
<td>Barley</td>
<td>80,782</td>
<td>100,941</td>
<td>1.3</td>
</tr>
<tr>
<td>Oats</td>
<td>73,997</td>
<td>116,463</td>
<td>1.6</td>
</tr>
<tr>
<td>Buckwheat (?)</td>
<td>56,660</td>
<td>138,316</td>
<td>2.4</td>
</tr>
<tr>
<td>Millet</td>
<td>23,234</td>
<td>91,028</td>
<td>3.9</td>
</tr>
</tbody>
</table>

68. Skal'kovskii, Opyt, II, 27. The question mark for buckwheat is in

the original document.
These figures show that rye, the most traditional of all Russian crops, was sown more frequently than wheat, and that these two grains were the most important ones cultivated. Their dominance reflected both the traditions of Russian farmers and the government's need for food to support the military and naval forces. Most of the rye and wheat was probably fall sown.

The most interesting bit of information here is that the smallest crop sown was millet, but it produced the highest returns. 1789 was a year of drought and the data demonstrate that millet was the most productive grain under such conditions. As indicated earlier, it was also one of the grains cultivated by the Nogay Tatars and yet it never became widespread. The reason was that the government wanted rye and wheat to make bread for its soldiers in the eighteenth century, the export market of the nineteenth century required wheat, and the peasants were not accustomed to eating millet. The European countries that bought New Russia's agricultural products were large consumers of winter wheat, and therefore the Russians cultivated this grain in the forest steppe and even in the southern portions of the wet steppe where spring sown wheat was actually a more reliable crop. However, as the years passed, more and more spring sown wheat and rye were planted because the people learned that the lack of snow cover and the frequency of winter cold spells made fall sown grains difficult to grow in the wet steppe and almost impossible in the dry and coastal dry steppes.

There was one type of spring wheat that enjoyed a good foreign

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69. This probably was bread or proso millet (*Panicum miliaecceum*), a type which is extensively grown in Russia and Central Asia and which probably is the ancient millet of the Swiss lake dwellers (Robert W. Schery, *Plants for Man*, New York, 1952, p. 395). Proso is the Russian word for millet. Millet's great advantage is that it is drought resistant.
This was the so-called Arnaut wheat (Triticum durum) of the Azov lowland. It had been grown by the Nogay Tatars. The Greeks of the Mariupol' region and the Germans along the Molochnaya river continued to cultivate it. It was more frost resistant than other types of spring wheat, and so could be planted in March, and produced a hard grain that was suited to the making of macaroni. For this reason, it was successfully exported to Italy (especially Naples), Spain and Greece beginning in the 1790s. The existence of this unusual crop largely explains why Taganrog was able to be an export port of some consequence in spite of Odessa's competition. Arnaut wheat was not grown elsewhere in New Russia. Perhaps it required physical conditions that were not duplicated outside the Azov lowland, but more probably the clever Greeks and Germans just realized its value better than the Russians. As far as is known, the government never encouraged settlers to adopt this crop.

The extensive system of grain cultivation resulted primarily from the fact that settlers and landlords lacked the capital required to pursue intensive farming. Furthermore, the system did utilize the one resource they possessed: plenty of land, and it recommended itself to landlords who lacked both money and secure title to their estates. In addition, it had been developed by the previous inhabitants of the region and was therefore readily available and easy to adopt. Yields, however, were low, and by concentrating on wheat and rye the peasants were left with no alternative food supply if the harvest should fail, as frequently happened in the marginal environment of New Russia. These liabilities were perhaps unavoidable in the eighteenth century, but it

70. Skal'kovskiy, Opyt, II, 79-82.
is more difficult to understand why they continued to be tolerated in the nineteenth century. The basic reason for the absence of change was that the system was unable to produce sufficient profits to permit landlords or peasants both to pay their taxes and accumulate the capital required to make improvements. The best way to demonstrate this is to describe another way of farming that also existed in New Russia but which produced profits and gave those who followed it a secure and prosperous life. The Germans, although few in number, showed that a different approach was entirely possible.

4. German Colonists

The Russian government invited various groups of Germans to settle in New Russia because it recognized that these people would have to be loyal and because it hoped that Russian settlers would follow their example and learn improved techniques of farming. There were two periods of German immigration: in the late 1780s and early 1790s and in the first years of the nineteenth century. The first Germans were originally settled near the confluence of the Dnepr and Konkaya rivers, but they soon moved to the island of Khortitsa, the old headquarters of the Zaporozhian Cossacks located near the southern end of the Dnepr rapids. Others were situated along the Samara river. Not all of these settlements were successful. One established at Staryy Kodak in the middle Dnepr suffered from want and disease and so was moved to the environs of Yekaterinoslav. Another group of 900 came

71. Information for this section has been taken from: Skal'kovskiy, Ony, I, 257-259, II, 23-22, 52-59; Bagaley, P. 79-102; Tegoborskiy, I, 435-437; Hommire, p. 73-81; Shmidt, II, 19; KohI, p. 433-439; Tooke, I, 504, 622-627; A. Klaus, Nashi Koloni, St. Petersburg, 1859, pp. 116-118, 149-150, 149-157, 171-174, 239-240. More is filled with information on the German colonies along the Molochnaya during the 1850s.
from Gdansk in 1787, but more than half of them either returned to Germany or "died from the change in climate and from poverty." 72

The second immigration occurred principally in the years 1803 and 1804. These people were established in colonies along the Molochnaya river in the Azov lowland and on the banks of estuaries near Odessa. Another smaller group was apparently settled at about this time near Feodosiya in the eastern Crimea, but the colony was not successful, its villages were decimated by disease and their inhabitants became, according to one English observer, "the least civilized inhabitants of the Crimea." 73

The location of the successful colonies was favorable. The island of Khortitsa was well-watered, had moist meadows and contained groves of trees. The colonies in the Samara valley and near Yekaterinoslav were in the forest steppe and close to an urban market. The groups near Odessa and in the valley of the Molochnaya had the advantage of being in the proximity of important export ports and enjoyed some of the best sites for farming in the dry and coastal dry steppes. There were Russians, however, who also received land in locations just as favorable to farming but who never became as prosperous.

The Germans were supposed to receive houses and agricultural implements from the Russian government. Those who came to Odessa, however, found only a "few poor reed huts" and some unsatisfactory implements. Many settlers died during the cold winter before they learned to follow the Russian custom and build (or rather dig) sod houses. 74 No doubt the same conditions existed in most of the other colonies because funds

72. Skal'kovskiy, Opyt, I, 261.
73. Holderness, p. 162. Clarke also makes a similar comment, Clarke, p. 444.
74. Kohl obtained this information from one of the original colonists. Kohl, p. 433-439.
assigned to help settlers had an amazing capacity of disappearing into the pockets of civil servants.

The Russian settlers also found themselves in this situation during their first years in New Russia. The differences begin to emerge when one realizes that the Germans brought implements, horses, cattle, seed and other necessary articles from Germany. The Russian settlers were mostly runaway serfs who were unable to bring many such items with them. The government assisted the Germans. It gave them complete freedom from all taxes during the first ten years. For the subsequent decade they paid lower taxes than the state peasants who received only a 3 year exemption. In addition, the Germans were freed "perpetually" from military service, work in the post system, and troop quartering.* All of these obligations were borne by the Russians and were a significant burden especially during the period of conquest. Finally, the government loaned each family 300 rubles which were to be repaid without interest within ten years. No Russian settler ever received any remotely comparable sum.75 The money was loaned directly to the colonies so that no official had the opportunity to divert it for his own use. The Germans therefore had capital and implements at their disposal and were free to devote all of their time, resources and labor to farming. Their situation was further improved in the year 1800 when a special office was organized to supervise the colonies in New Russia. It was headed by a man of great personal integrity, Cotenius, who assured them an honest and efficient administration, something the Russians never experienced.

Such advantages gave the Germans an opportunity to become prosperous but did not dictate their farming system. It largely resulted

75. Bagaley, p. 87.

* These privileges remained in effect throughout the period studied.
from the stipulation that they could neither buy nor sell land. Each family received a parcel 160 acres in size, the same as that given to the Russians, but as population increased the Germans were unable to acquire additional land, and so really had no alternative but to adopt intensive farming. The Russians and particularly the landlords were under no such restrictions.

The German system involved dividing the cultivated land into four fields. One was planted to barley, one to wheat, one to rye or oats and one was left fallow. The Germans manured the fields, rotated the crops and used horses instead of oxen as draft animals. It further appears that the Germans generally planted one fall sown and one spring grain every year. They could farm intensively because their labor force was kept on the farms during the summer months and because they used horses which were much faster than oxen. They made capital improvements with the loans from the government and built good barns and sheds for sheltering livestock and storing grain. The Russians, lacking capital, left their livestock on the steppes throughout most of the winter and landlords stored grain in uncovered stacks which caused a portion of it to spoil. With labor and horses available the Germans could do their farm work on time, and so avoid dangerous delays, and cut and cure sufficient quantities of hay to feed their animals. The principal advantage of the intensive system was that it was diversified. If the winter was snowless and cold and so destroyed the fall sown crop, the farmer still had a spring sown crop to fall back on. If the summer was hot and dry and he lost the spring sown crop, he could still survive

76. Klaus, p. 162.
by consuming barley which matures in a short growing season. Finally, by having sufficient labor the farmer could also grow adequate quantities of vegetables and fruits to prevent scurvy.

The final difference was that the Germans were literate, well-disciplined and followed the orders of their leaders. This made them responsive to new crops and new techniques. They were the first people of New Russia to grow potatoes and were the only ones to plant and maintain groves of trees successfully. In the decades after 1837 this asset and the capital they were able to accumulate enabled them to engage in some irrigated agriculture and to be among the first inhabitants of New Russia to import and utilize mechanical farm machinery. Finally, the Germans became the best tax-payers in New Russia. They were seldom in arrears, paid their taxes promptly and repaid the loans extended to them on time. They did not succeed, however, in teaching the Russians improved methods of farming.

The reasons why the Germans had little impact on the Russians are not hard to find. Communication between the two peoples was limited since neither spoke the other's language with any facility. Moreover the Germans were not distributed amongst the Russians but rather lived in their own closed societies, and in any case there were few Russian farmers near the colonies in the Odessa and Taganrog areas. The bulk of the Russians were farther north, in the wet and the forest steppes. Besides these factors, the Russians could not have adopted the major

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77. No figures for the period studied could be found. Klaus gives some data for the colonies along in the Molochnaya in 1865 which indicate that the Germans then planted winter and spring wheat, Arnaout wheat, spring rye, oats, barley, millet and potatoes and harvested large quantities of hay and straw. Klaus, p. 164.
features of the German system because they lacked the requisite knowledge
and capital, were burdened with obligations in both money and kind to the
state, used oxen instead of horses and lost a significant portion of their
labor force to non-farm activities during the critical summer months.

There was also an economic reason why the Russians did not make
improvements. The superiority of the German system was widely acknowledged,
and many landlords recognized clearly that the extensive system had
severe drawbacks. The desire for change reached its peak in the years
immediately following the Napoleonic Wars when Europe was suffering
from severe food shortages and was willing to pay practically any price
for the grains produced in New Russia. Then for the only time in the
history of New Russia the landlords had money, and many of them began
to invest in capital improvements. The attempt, however, ended in the
early 1820s when Europe's agricultural production recovered and export
prices declined catastrophically, causing a crisis not only in New Russia
but throughout all of European Russia. 78 Money was no longer available,
and the individual landlord could find no alternative except to produce
as much as he could at the lowest possible cost. 79 The more grain
he sold at low prices the more profit he made as long as his outlays
were held to a minimum. The best way to do this was to refrain from
making expensive changes and instead to continue the old system of
extensive, low-yield agriculture, which with all its deficiencies was
still the cheapest way to farm in New Russia. Furthermore, in the 1820s

78. P. I. Lyashchenko, Ocherki agrarnoy evolyutsii Rossii, Leningrad,
1924, p. 120-122 (hereafter cited as Lyashchenko). See also N.
Dzhinin, p. 206.

79. Lyashchenko, p. 111.
and 1830s the people had to use their resources just to survive during the harvest failures of 1820, 1821, 1824 and 1832, 1833, 1834 and 1835 and were prevented from exporting any grain at all during the years 1828 and 1829 because of war with Turkey. In other words, there was little or no opportunity to accumulate the capital needed to build good barns and sheds and to pay labor for cultivating the fields in an intensive fashion and for harvesting enough hay to feed the livestock. This is the basic reason why the Russian system failed to show signs of significant change during the period studied.

5. Summary

Some aspects of the settlement of New Russia need to be emphasized before discussing the problems of initial development. The system of grain farming and the adaptations the settlers made to the physical environment were essentially the same as those of the previous inhabitants of the region, the Zaporozhian Cossacks and the Nogay Tatars. What happened was that the new settlers adopted the previous system of land-use, spread it over a larger territory and modified it to emphasize the production of rye and wheat needed to support the armies and navy in the eighteenth century and to export to foreign countries in the nineteenth. Furthermore, the Russians removed the diversified elements from the old system by separating livestock raising from grain farming and by failing to cultivate sufficient vegetables and fruits to prevent scurvy. Because of the demand for wheat and rye they also ignored millet, the most reliable grain they could have raised. In making these modifications, the Russians increased the risks of harvest failure and of famine.

The German colonists demonstrated that an intensive system involving crop rotation, fertilization and the cultivation of a variety of different
grains was both a more reliable and a more profitable way to earn a living in New Russia, but the Russians could not adopt these improvements because they lacked the capital required, were burdened with obligations to the State, and suffered from a labor shortage in the summer. The attempts made to improve agriculture in the years after the Napoleonic Wars were halted by a catastrophic decline in grain prices and by harvest failures.
CHAPTER V: PROBLEMS OF INITIAL DEVELOPMENT

1. Livestock Raising

New Russia was clearly and inalienably part of the Russian Empire by the years 1817-1819. Its people were no longer on the frontiers of an expanding nation and almost 40 years were to pass before a hostile soldier would set foot on their soil again. The land had been filled, and the approximately million and a half inhabitants were settled and supporting themselves primarily by a system of extensive grain farming. The people had ignored the possibilities of livestock raising during the eighteenth century because they were occupied with other matters, but in the early years of the nineteenth century they turned to this activity to find articles for export. The principal and the most valuable animal they raised was the sheep.

Sheep

Sheep raising was ancient to the steppes of New Russia. It had been the most important element in the economy of the Nogay Tatars and earlier indigenous peoples. The nomads moved into the steppes when the grasses were succulent in spring, early summer and fall, and then retired to the river valleys in the heat of late summer and during winter blizzards. The Tatars raised the Kirgiz or Kalmuck sheep which was noted for its large, fat tail that weighed as much as 30 to 40 pounds.

1. For information on sheep, see: Pallas, Travels, II, 159; Reimers, III, 91; Kohl, p. 496; Holderness, p. 300-301; Skal'kovskiy, Opyt, II, 353-362; Schmidt, I, 71, II, 224-230.


3. Tooke, III, 100.
The Cossacks kept Wallachian or Gypsy sheep which had small tails but produced larger amounts of wool. Both these animals were well-suited to life in the steppes. They provided wool, meat and tallow, could go without water for several days, ate a fairly wide range of different grasses, thrived on saline grasses, and drank the brackish water generally found in the dry and coastal dry steppes. The native sheep were thus ideal for a subsistence economy, but their wool was very coarse and could not compete with that of the Merino which was slowly spreading throughout Europe in the late eighteenth and early nineteenth centuries.

The government realized that a better product was required not only for export but also for consumption in Russia's own textile mills. In 1794, St. Petersburg imported woolen goods to a value of over 3 million rubles, while its exports of raw wool were insignificant. Even the ports of New Russia were net importers during the 1790s. The government desired to save foreign exchange and obtain export markets by breeding Merino sheep with the native animals. It was hoped that the resulting cross-breed would be able to survive in the marginal climate of New Russia and also produce fine wool. The first concrete step taken was the purchase of 194 Merinos in Vienna at an outrageous price in 1804. In this same year a foreigner by the name of Miller brought 1,200 Merinos and 25 trained sheep herders to Odessa. The government gave him 32,000 acres of grazing land near Odessa, a 20,000 ruble subsidy

4. Tooke, III, 103.
and the 194 sheep from Austria. In addition, a Frenchman, Rouvier, managed in some unexplained but no doubt illegal fashion to get 100 rams out of Spain and landed them in Sevastopol. He received a subsidy of 100,000 paper rubles (probably 30,000 silver rubles), 13,500 acres of land in the mountainous part of the Crimea and another 67,000 acres of the island of Dzharylgach, located on the north shore of Karkanitskiy Gulf. Other foreigners and some Russians followed the example set by Miller and Rouvier and received money and estates until the government ceased granting free land in 1817. In exchange for such substantial gifts, the owners of Merino herds were required to sell some of their surplus animals at reasonable prices, permit others to use their rams for breeding purposes, and instruct a few Russians in the art of sheep raising. In one instance, the government took a hand in cross-breeding Merinos with native sheep. In 1808 it purchased 4,000 animals from Miller at prices ranging from 40 to 80 silver rubles a head and distributed them without charge among the foreign colonists and state peasants. Rouvier was successful and by 1820 had 37,000 Merinos thriving on the saline grasses of Dzharylgach island. Others also increased their herds so that the total number of Merinos in New Russia reached 44,900 by 1823. By 1841 the Government of Kherson alone was reported to contain 49,932 of these fine animals.

6. Rouvier was a talented, imaginative and honest man. His sons followed in his footsteps and also became owners of quality Merino herds. Rouvier is said to have learned about sugar-cane in America. He tried to raise it without success near Feodosiya (Skal'kovskiy, Opyt, II, 125). Evidently he misunderstood the climate of the coastal part of the Crimea or else hadn't learned too much about sugar-cane, but the attempt does show that he was a man of ideas.

7. Shmidt, II, 249.
The Merinos were haphazardly bred with the Wallachian sheep which was believed to be of a similar type. The resulting cross-breeds were called "mixed" or "improved" animals. Their numbers increased very quickly, suggesting that their wool was somewhat better than that of the native sheep.* By 1837 the "improved sheep" were estimated at about 2 million head, and in 1843 reached 3.5 million, constituting more than half of all the sheep in New Russia. It would be fair to estimate that the total number of all sheep rose from about 1 million in 1800 to 1.5 million in 1812 and probably 4 million in 1837 and approximately 5.5 million by the mid 1840s. The amount of land used for grazing purposes also increased. Authorities believed that half a desyatina, or 1.4 acres, was required to support one animal. Multiplying this factor by the total number of sheep, it is possible to estimate that the area used in sheep raising increased from 1.4 million acres in 1800, to 2.1 million in 1812, 5.6 million in 1837 and about 7.7 million in the mid 1840s, or approximately 15% of the total area of New Russia.

Exports lagged somewhat behind this expansion. The first known shipments from Odessa occurred in 1813 and were valued at 3,000 rubles. At this time all of Russia exported only about 360 tons of wool annually. Trade increased steadily in the 1820s but did not become significant until the 1830s. In 1831 New Russia exported more than 1,500 tons of wool. By 1834 exports reached 2,300 tons, and a decade later they

7. Shmidt, II, 249.
9. Skal'kovskiy, Opyt, II, 341, 354-362; Shmidt, I, 71, II, 224. Few attempts were made to estimate the numbers of native sheep.

* There is no information indicating that the wool was in fact of a higher quality, although some improvement seems probable. It was definitely much inferior to that of the pure Merino. The percentage of Merino blood in the average "mixed" sheep was very low because little control was exercised over breeding.
exceeded 8,700 tons valued at over 5 million silver rubles and constituted about half of the total wool exports of the entire Russian Empire. Thus, by the end of the period studied New Russia's sheep were unquestionably earning significant amounts of foreign exchange. They were probably also producing large quantities of wool for Russia's own textile mills.

The situation was, however, to change dramatically in the second half of the 1840s. In the early 1840s, England was New Russia's best customer. In 1845 over 11% of all English wool imports came from Russia, and probably more than half of these came from New Russia. By 1848, Russia's share of the English market declined to 3.3%. In the short space of three years, Australia emerged as the major competitor. The Australians, living in a similar physical environment but in a vastly different cultural milieu, raised fine sheep, cut, sorted, washed and packed wool carefully, and sold a product that was excellently suited to the textile mills of the time. New Russia could compete in both quantity and price, but not in quality. In spite of cross-breeding Merinos with native sheep, New Russia continued to produce inferior wool because it failed to adopt improved methods of caring for sheep.

Essentially, the Russians adopted the techniques of sheep raising followed by the Tatars and Cossacks, but they used the animals not to support a subsistence economy but rather to produce an article for export. Sheep were tended by a special class of herders. Usually five men were employed by the owner of a herd to care for 1,200 to 2,000

12. Tegoborskiy, I, 324, 333.
13. Tegoborskiy, I, 324.
sheep. The animals were kept in the open steppes almost the entire year and were driven slowly from place to place in search of good pasture land. The Russians appear to have taken them to the river valleys less frequently than did the Cossacks and Tatars. In the worst part of winter, the herders sometimes placed the sheep in pens surrounded by fences built of steppe bushes. A small amount of hay made from the natural grasses was then provided, but it was merely strewn on the ground and a large part was trampled into the soil by the sheep. Feeding troughs were recognized as being better, but they were seldom utilized. In spring the sheep were moved into the steppes just as soon as possible. During the hot summer months they often suffered from a shortage of forage, and then the herders took them to the steppe depressions where grasses were able to survive longer. The herders' main tasks were to protect the animals from wolves, watch out for prairie fires and prevent stampedes during blizzards. They also cut the wool. Shearing usually began in May. Little care was given to removing dead hair, burs and thistles, or to sorting. Rarely was the wool ever washed or cleaned. Even as late as the 1840s Kherson Government had only nine wool washing establishments. Some owners mixed the wool of dead animals with that of live and even added dirt in order to increase the total weight.


15. The Russians followed the Tatar practice of placing a few goats among the sheep. The goats turned their heads into the wind and usually (but not always) the sheep followed their example. E.g., Holderness, p. 300-301.


17. Tegoborskiy, I, 324-325.
Sheep raising thus was an extensive undertaking involving little capital investment. The animals were not provided with shelter and winter feed, proper breeding was ignored, and practically nothing was done to shear, clean, wash, sort or pack the wool correctly. The result was an extremely low quality product which sold for less than half the price of German wool and which by the end of the 1840s could only be used to manufacture coarse clothing and ship caulking. The fine wool that the government expected from the introduction of Merinos simply failed to appear. The reason why New Russia failed to develop a better product, however, was that the existing system with all its drawbacks produced a good return.

The way to make a profit in sheep raising as in grain farming was to keep costs as low as possible. The grazing lands were those that were not then used for grain farming, i.e. the interfluves in the wet steppes and the dry and the coastal dry steppes. The major cost was the initial purchase price of the sheep. Skal'kovskiy estimated that a herd of 2,000 head could be obtained for about 7,000 rubles in the 1840s. The principal annual expense was the 200 to 300 rubles paid to the herders. Estimating a yearly increase of 10% in the number of animals, averaging costs over a decade, and assuming heavy, periodic losses from drought, blizzards and epidemics, an owner could still make a profit of anywhere from ten to fifty percent a year. This was a

19. Although data are lacking, travelers reported seeing sheep herds primarily in the dry and coastal dry steppes of the Governments of Tauride and Kherson. Evidently few were raised in the Azov lowland. It appears highly probable that most of the sheep that produced wool for export were maintained by the landlords of Kherson Government and that most of the wool was shipped from Odessa.
20. Skal'kovskiy, Opyt, II, 368; Shmidt, II, 242-245.
highly attractive proposition to landlords who suffered from repeated harvest failures in the 1830s. Moreover, an owner could make money even in bad years if he kept a large number of animals and so was able to get some wool even if many of them died. The returns were good, however, only as long as the smallest possible sums were invested in breeding rams, pens, building, medicines, etc., and low wages were paid to the herders.

Merinos were unquestionably superior wool producers, but they had to be watered daily, required good feed in both winter and summer, well-built pens, and protection from natural enemies. The native and "improved" sheep could survive without these things. Furthermore, to make a profit at all commensurate with the investment, the owner of a Merino herd had to insure that the wool was skillfully and properly cut, cleaned, washed, sorted, packed and shipped. This required knowledge and trained help, which was both difficult to secure and expensive. People like Miller and Rouvier could raise quality sheep at a profit because they already possessed the requisite knowledge before they came to New Russia, employed experienced foreign rather than Russian labor, and received substantial subsidies and good grazing land gratis from the government.

The average Russian landlord, however, did not know how to raise and care for fine sheep and how to prepare quality wool. Furthermore, he took a greater chance of losing the expensive Merinos during bad weather since the herders in his employ knew little or nothing about these animals. Finally, the Russian owners were making a ten to fifty percent return on their investments anyway, and so saw little reason for attempting the costly, complex and risky changes required to develop profitable Merino herds.

Cattle

Cattle were the second most numerous animal in New Russia. The only data available on their numbers came from the late 1840s when they were
estimated to reach about 2 million head. The so-called Cherkassk breed was raised for draft purposes and for meat. It was named after the capital town of the Don Cossacks and apparently originated in Little Russia and was brought to New Russia by the Zaporozhian Cossacks and the early settlers of Novaya Serbia and Slavyano-Serbia. These cattle were raised by the grain farmers for draft animals and were, therefore, concentrated in the forest and wet steppe zones. They attained their greatest numbers in Yekaterinoslav Government. The Cherkassk breed gave little milk, but was "strong, tall, suitable for fattening and for agricultural work," ate a wide range of natural grasses, pulled heavy loads, cost little to purchase and could be sold for meat when no longer suitable for farm work.

Another animal was used for tallow making. This was the steppe breed which was "small, reddish, weak and as equally little suited to grain farming as it is poor in meat and milk." It had, however, long horns and could fight off wolves and survive and reproduce without much care. The steppe cattle were most common in Kherson Government and in the dry and coastal dry steppes. Their only use was to be sold to merchants who boiled their carcasses to make tallow.

24. A third type of cattle was also known in New Russia. These were raised by the Crimean Tatars in the mountainous portion of the Crimea for use as draft animals. They were small, active animals "accustomed not only to trot like those bred in the environs of the Caucasus, but also to climb up and down the rocks, in the manner of mules" (Pallas, Travels, II, 159). Some travelers found them "ugly" (Holderness, p. 297).
Probably many of them were driven north in the late eighteenth and early nineteenth centuries to be slaughtered in the tallow factories of the forest steppe Governments. Tallow was made into candles and was also exported. In the 1790s it was Russia's third most important export, exceeded in value only by pig iron and hemp. The industry did not come to New Russia, however, until the end of the 1820s, and first produced significant exports during the droughts of 1833 and 1834. Owners then sold their starving animals to local factories, resulting in the export of 14,300 tons of tallow. By the late 1830s, seven establishments had been built near Kherson and Odessa, and an estimated 25,000 cattle and numerous sheep were slaughtered in them during each year's three month working season. Between 1835 and 1845 they produced 7,000 to 9,000 tons of tallow for export annually.

The price of cattle sold for draft animals or for meat or tallow was low, and so there was no economic justification for giving them decent care. They were left to graze in the open steppes almost the year around. During the worst parts of winter, however, they were driven into small corrals surrounded by earthen or dung fences and containing poorly built three-walled sheds constructed of clay and

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24. Continued from p. 151
but they were ideally suited to the mountainous terrain of the Crimea where they could haul wagons over hills that other types of cattle could not climb. Interestingly, they were the only animals of New Russia which were ever shod with iron shoes, and then only the Tatars shod them, (e.g., Sumarokov, I, 123). They produced little meat or milk.

25. Clarke, p. 205.
27. Kohl, p. 503; Skal'kovskiy, Opyt, II, 361.
straw. Then they were usually fed "the worst there is on the farm." The feed was simply thrown on the ground, and much of it was blown away by the winds or trampled into the earth. By the end of winter most of the cattle were extremely weak from undernourishment. They were put out to pasture just as soon as possible, and then many of them would die because their shriveled stomachs were unable to digest the green spring grasses. The people hired to watch the cattle were the cheapest labor available. They did not form a special class like the sheep herders, but instead were usually old men, boys or people with some mental or physical handicap who were willing to work for extremely low wages. The high losses that inevitably accompanied this system were offset by raising as many cattle as possible.29

The owners made profits because their costs were low and because the cattle were raised on lands that could be used for nothing better. Cattle were sold to middle-men who drove them to the tallow factories. The factories themselves obtained the funds they needed in the form of advances from the export merchants of the port towns. In these ways, the entire system functioned with a minimal use of investment capital.

Taking the estimate of 2 million head of cattle for the late 1840s and assuming in the absence of better data, that one desyatina* of


* 1 desyatina equals 2.7 acres.
grazing land was required per head, it is possible to estimate that about 2 million desyatinas or 10% of the total area of New Russia was probably then being used to support cattle. As indicated previously, an estimated 15% of New Russia was being used for sheep. These two figures together suggest that livestock raising utilized about 25% of the total area of New Russia by the 1840s.

Horses

The Tatars had raised horses, but used them primarily for military purposes. The Cossacks had horses for their armed men and also sold them in the forest steppe and forest Governments to the north. The dominant type of horse in New Russia was a small scraggily animal which could not pull heavy loads for long distances, but which was fast, sure-footed, able to fend for himself, and, because of his heavy coat, able to withstand very low temperatures. However, this horse ate a narrower range of steppe grasses and so was not as well suited to the steppes as were cattle.

With the exception of those used in the post system and in the irregular cavalry units, most of the horses of New Russia were raised to be sold in Russia proper where they were bought by farmers and by the regular cavalry. However, selling prices remained constant after the mid-1820s, while the ruble depreciated. In effect, real prices declined, and therefore horse raising became less important and owners did their utmost to keep costs low.

30. No estimates are available for the amount of grazing land required for one head of cattle. The use of one desyatina (2.7 acres) is merely a convenient guess and is probably too low. Cf. W. R. Chapline and C. K. Cooper, "Climate and Grazing," U.S. D. A., Climate and Man Yearbook of Agriculture, Washington, D.C., 1941, p. 463. The only traveler to comment on cattle raising outside of the mountainous portion of the Crimea was Kohl, suggesting that cattle herds were kept away from the main highways.
The horses were kept in the open steppes and grazed on land that was unsuitable for farming. It appears that they were given winter feed and shelter even less frequently than were sheep and cattle. A man was hired to watch the herds, but his responsibilities were only to keep the herds together and prevent losses. Many horses died during the winter and late summer months when both feed and water were difficult to find. The owner sold them to middle-men who drove them north, and as long as enough horses were raised to compensate for the high losses and the only expense was the wages paid to hired hands, he could make a small profit.31

A few attempts were made to raise improved breeds, but these animals were expensive and required good care. They needed well-built winter quarters, protection from wolves, adequate feed and water throughout the year and large amounts of oats, a grain which would not grow well in the dry soils of New Russia. In short, they required capital, and the profits that could be derived from selling them steadily decreased because prices declined. This situation was most clearly marked in the 1840s and 1850s and caused, for example, the total number of improved horses in Kherson government to decline from 47,857 in 1841 to 9,428 in 1858.32 As was the case with Merino sheep, it was less hazardous and much simpler to raise a low quality low cost animal than to try to make improvements.

The distribution of horses can be derived from the estimates of the total numbers of horses in New Russia. In 1808 the region was

31. Kohl, p. 489-495; Shmidt, II, 201-203.

32. Shmidt, II, 207. Shmidt states that the decline was caused by falling prices. He does not suggest that it was a result of the Crimean War.
believed to contain about 400,000. During one bitterly cold month at the beginning of the year 1813, more than 100,000 died and there were estimated to be only 250,000 horses still alive in all of New Russia. In the late 1840s, there were reportedly 466,000 in New Russia, not much of an increase over 1808. Of these, 134,000 were in the forest steppe zone of the upper Ingul and Ingulets river valleys. They evidently belonged to the military agricultural colonies established in this area in 1817. Another 100,000 horses were in Tauride government. Half of them were in the Azov lowland and along the lower Dnepr, and apparently belonged to the German colonists who preferred horses for farm work. The other horses in Tauride were kept by the Tatars in the mountainous portion of the Crimea. The remaining 160,000 were in Yekaterinoslav Government, most of which lay in the forest and wet steppes.

Thus livestock raising became an important activity by the mid-1840s and probably utilized about a quarter of New Russia's lands. Another quarter was involved in the grain farming cycle, so that half of the area of New Russia was used for some form of agriculture by the end of the period of study. In both activities, however, the Russians followed the techniques originally developed by the Cossacks and the Tatars but altered the goals. Sheep were raised to produce wool for export, not to provide food in a subsistence economy; cattle were raised for tallow and for sale as draft animals, and horses were sold in Russia proper. In addition, livestock were separated from farming. Sheep and steppe cattle were concentrated in the dry and coastal dry steppes, and were not available to the grain farmers who lived primarily in the forest-and wet steppes. Animal products did not supplement
the people's diet during years of harvest failures.

The way in which animals were raised showed no significant change. The systems were extensive rather than intensive, involved the least possible use of capital, and were based on animals that could survive with little care, although they produced low quality products. Some attempts were made to raise Merinos and quality horses, but they failed to have a significant impact because owners had little incentive to change and even less of the capital required to make improvement. Moreover, they were satisfied with the returns they were receiving, and any modifications would have required an upgrading of skills and the acceptance of greater risks from natural catastrophes.

The government's only important contribution was to subsidize the owners of Merino herds. As a result of the government's largess and their own skills, these men did enjoy a comfortable life, but their efforts did little to improve the livestock raising industry as a whole, just as the prosperous German colonists had little influence on the mass of Russian farmers. The government obviously failed to realize that a much larger effort was required to enable the people of New Russia to raise better types of animals and produce quality products that could compete in the markets of Europe. The government, however, made one other significant attempt to alter a branch of the rural economy of New Russia: it encouraged an expansion of wine production in the Crimea.

2. Crimean Vineyards

The Crimean Tatars cultivated grapes and made wines for their own consumption. The Sudak area, however, produced wines which the
Zaporozhian Cossacks purchased and then sold in Russia proper. This area continued to be the major center of commercial wine production until the first decades of the nineteenth century. The climate here is hot, dry and sunny, water is available for irrigation, and the clayish-sandy soils of old, well-drained marine benches are fertile. Such factors drew Potemkin's attention to Sudak in 1785. He constructed an elaborate wine press, built huge storage casks and other facilities, imported foreign plants and experts and established state owned vineyards. Interest declined after his death, the facilities were left unused, and many of the vineyards were destroyed, apparently by Russian soldiers.* Some, however, continued in operation, and in 1794 a wine dresser from Champagne, Mr. Fierfort, was managing them and instructing twelve young Russians in the arts of grape cultivation and wine-making. The small number of trainees was typical of such programs. For some inexplicable reason, the government would hire foreigners at high salaries to teach such things as wine-making, sheep herding, silk cultivation and even farming, and then assign but a pitiful handful of persons to receive instruction.  

The government encouraged the cultivation of foreign grapes in the Crimea. Potemkin planted Tokay vines in Sudak, evidently with success. Rouvier, the same man who imported Merino sheep, received a loan of

34. Reimers, III, 57-61.

* See page 89.
12,000 rubles and free land to start Madeiran and Malagan cuttings in 1805, but the plants failed. In 1812, the government established a botanical garden near the village of Nikita, about four miles east of Yalta. Pallas was appointed supervisor and he selected the English botanist Christian Stevens as director. The garden became a great tourist attraction and produced excellent experimental wines, but few people availed themselves of the opportunity to obtain cuttings and cultivate the improved plants.

The reason generally given for attempting to introduce new grapes was that the traditional ones used by the Tatars produced a wine which soured rather quickly. Whether it was the plants, the Tatar methods, the fact that it took a long time for the wines to reach markets in northern Russia, or just malicious gossip is not known, but there is no doubt that Crimean wines had a very bad reputation and were extremely difficult to sell at a decent price. Probably the government hoped that improved vineyards would result in better wines that might replace those being imported and thus save foreign exchange. Unfortunately, the government adopted another policy that created hardships for the Crimea. Russia wished to curry favor with the peoples of the Aegean and so permitted wine from this area to enter almost duty free.

37. Skal'kovskiy, Opyt, II, 125; Tegoborskiy, I, 369.
38. Skal'kovskiy, Opyt, II, 115-118; Holderness, p. 311.
Even when the protective tariff system was adopted in 1821 and 1822, the Aegean wines were still subject to very small duties. They were of the same quality as the best Crimean products and sold for lower prices not only in northern Russia, but even in Odessa. This competition was so severe that the producers of good wines in the Crimea could only sell their products at a loss, and therefore few owners of vineyards were interested in planting foreign grape plants and making improvements.

Instead, like the grain farmers and the owners of livestock the Russian landlords adopted the Tatar techniques and produced inferior products at the lowest possible cost. The wines were bought by middle-men immediately after they were made, were transported overland in fall and winter, and were usually frozen solid when they reached the northern cities. Here they were sold by weight rather than volume, thawed and used to adulterate better imported wines. No attempt was made to export wines from the Crimea, and strange as it seems there is no evidence to suggest that any efforts were made to ship them by sea to Odessa or the other ports of New Russia. A contributing factor was that most of the Crimean ports were closed to foreign commerce. That this low-cost system produced very small profits is illustrated by the total estimated revenues from the sale of wines. The only remotely reliable figures come from the 1840s. In 1846, total

42. Semenov-Tyan-Shanskiy, p. 316.


44. Skal'kovskiy, Opyt, II, 295.

45. Tegoborskiy, I, 371; Lyall, I, 356.
revenues reached 181,000 silver rubles, in 1847 they fell to 114,000, in 1848, a year of drought, to 14,700 and then rose to 46,000 silver rubles in 1848. When compared with production estimates, these figures suggest that prices ranged from 0.06 to 0.03 rubles per gallon, absurdly low even for the 1840s.

There was thus little economic incentive for expanding winemaking in the Crimea. In spite of this, however, production increased markedly, as indicated by the following figures.

<table>
<thead>
<tr>
<th>Year</th>
<th>Wine Production in the Crimea</th>
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<tbody>
<tr>
<td>1825</td>
<td>143,400 vedros (one vedro is (3\frac{1}{3}) gallons)</td>
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<tr>
<td>1826</td>
<td>212,100</td>
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<tr>
<td>1830</td>
<td>330,000</td>
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<td>1834</td>
<td>402,000</td>
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<td>1837</td>
<td>438,000</td>
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<tr>
<td>1849</td>
<td>680,000</td>
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The number of grape plants rose from about 5.8 million to 12 million during the 1830s and reached 35.6 million by the end of the 1840s. These estimates indicate that production tripled between 1825 and 1837 and that the number of vines doubled during the 1830s and almost tripled during the 1840s. Such a rate of expansion in an activity that produced very low profits made little economic sense. However, it can be explained.

47. Skal'kovskiy, Opyt, II, 291. For different estimates, see: Tegoborskiy, I, 161; Sumarokov, I, 171; Reimers, III, 62; Iyall, I, 337; Hommaire, p. 418-419. Sumarokov's figures are probably grossly exaggerated (Skal'kovskiy, Opyt, II, 121). All the sources agree that a large-scale expansion in vineyards and wine-making did in fact occur.
The motivating force behind the wine industry was the commanding personality of M. S. Vorontsov, governor-general of New Russia from 1823 to 1843. He personally acquired several estates along the southwest coast (Alupka, Gurzuf, Ay-Daniil' and Massandra) where he established superior vineyards. He built a very picturesque and charming manor house at Massandra. Vorontsov used his properties to publicize the beauties of the coastal fringe lowland and convince others that this was an ideal location for vacation residences. He furthermore arranged with the government to grant land free-of-charge to any noble who established vineyards along the southwest coast and in the intermontane valley. Nobles were quick to seize the opportunity to acquire estates in this delightful area through the simple expedient of planting grapes. Some probably hoped to derive a substantial profit from selling wines, but the real motivation was to obtain some income no matter how small from the vineyards that had to be established anyway in order to obtain title to land. A little money was better than none and helped defray part of the costs of their expensive manor houses. The success of Vorontsov's policy is indicated by the fact that the number of nobles possessing estates along the coast between Yalta and Foros increased from only 5 in 1823 to 105 in 1837. More obtained vacation residences in the middle ridge which forms part of the intermontane valley.

The expansion caused a change in the distribution of commercial

49. Skal'kovskiy, Opyt, II, 129; Oliphant, P. 236.
production. Prior to 1822 most of the wine was sold by small proprietors in the Sudak area. By 1832, however, this area was being out-produced by the intermontane valley, and by 1840 it was surpassed by the south-western coast. From a climatic and edaphic point of view, Sudak was obviously the most favorable region for wine-making. In addition it was close to the excellent harbor of Feodosiya, and so might have been able to ship its produce to Odessa. However, Sudak was not a pleasant vacation area, and for this reason it was ignored by the nobility.

A sidelight to the artificial wine industry is that the only decent roads built in New Russia were constructed in the western part of the coastal fringe lowland and in the intermontane valley. The first proposals were made in the 1820s, and in the 1830s and 1840s paved roads were built from Sevastopol' to Simferopol', from there over the mountains to Alushta and along the coastal fringe lowland from Alushta through Yalta to Bakakhla. By 1851 a third "excellent" road completed the circuit by connecting Balakhla with Sevastopol'. Significantly, the route between Sudak and Alushta remained completely unimproved and was very difficult to traverse. The road system made it easier for the nobles to reach their estates, lowered the cost of shipping wine from the coast to the intermontane valley and made Sevastopol' more accessible from the land. The wine trade, however, produced very small revenues and Sevastopol' had no commercial significance. The government was willing

50. Hommaire, p. 418-419.

51. Skal'kovskiy, Khron., II, 282-287; Hommaire, p. 417; Oliphant, p. 243-246; Semenov-Tyan-Shanskiy, p. 438. Semenov-Tyan-Shanskiy implies that these were the only paved roads built in New Russia during the entire nineteenth century.
to invest substantial sums in these roads, but failed completely to provide good access routes to the economically vital ports of Odessa and Taganrog. Even as late as 1851, not one paved road connected the suburbs of Odessa with the warehouses. This illustrates better than anything else the government's failure to understand New Russia's problems and to invest money in projects that might have been of genuine economic value.

3. Transportation Problems

The liabilities of the transportation system affected every aspect of life in New Russia. The difficulties of moving goods was one of the main logistical problems faced by the armies in conquering the region. High transportation costs were a significant drawback to the successful development of the grain trade, and the large number of men required to operate the system was one of the major causes of the shortage of farm labor. These problems became progressively more acute with every year that passed, and by the end of the period studied they constituted the most important handicaps to the further economic development of New Russia.

Overland Transportation

The vast bulk of all the goods transported across New Russia went overland because the rivers were unsuitable for navigation. Indeed, they were a major obstacle to communications. Their ice cover in winter was generally too weak to support wagons, and so they could not be used as highways as were the rivers of Northern Russia. During spring and late fall, they frequently contained floating ice which prevented the use of ferries and pontoon bridges. A mild winter with frequent thaws made movement exceedingly difficult and
hazardous because the rivers could not be crossed. During spring floods, permanent bridges could be destroyed, ferries were inoperable, and in effect practically all communications ceased for as long as 6 weeks. The transportation season really began when the floods subsided and ferries and pontoon bridges were put into service. It ended in late summer when the hot, dessicating winds caused the grasses to die and rivulets to dry up, so that there was an extreme shortage of forage and water for the draft animals. It was possible to move goods during this part of the year, but losses of animals were high.

The wagon trains followed the river valleys in order to find water for the oxen, and so they were forced to cross the frequent gullies at the deepest points. The gullies were steep and their sides slippery after a rain. They sometimes suffered from flash floods during thunder storms which carried away wagons, animals and even people. Those with rivulets flooded in the spring time, causing the earthen dams that served as bridges to be damaged and often destroyed. In places the valley routes went along the flood plains, the swampy, sandy soils of which made progress very slow. The soils on the higher areas have a high clay content, and so become very muddy after rains. During spring and winter thaws mud was often so deep that movement was impossible. Winter cold spells, on the other hand, could freeze the ruts and make the roads look like a "petrified ploughed field." Winter blizzards were extremely dangerous, and frequently animals and even experienced drivers lost their way and froze to death.

52. Guthrie, p. 235.
54. For information on the physical obstacles to overland transportation, see: Webster, p. 226; Hume, pp. 90, 116; Kohl, p. 410; Pavlovich, p. 55;
The government's first attempt to develop communications was to extend the post system to New Russia as soon as the region was conquered. It consisted of relay stations placed about every 10 to 15 miles along the major routes connecting the most important towns. Each station was managed by a peasant or Cossack family which, in lieu of paying taxes, was required to maintain and furnish horses and drivers to pull the carriages of government couriers and officials and others who had purchased a travel book (podorozhnaya). Using this system, travelers could cover long distances with astonishing speed. They changed horses frequently, slept in the carriages, and moved at a normal rate of 200 miles a day. Regular couriers were said to require only 6 to 7 days to cover the distance from Odessa to St. Petersburg. The postal routes were called highways, but actually they were nothing but tracts 100 to 200 feet wide marked on either side by shallow ditches and by black and white posts supposedly located at an interval of one verst. The areas on either side were left as free pasture land for draft animals and livestock in transit.

There is no question but that the post system was extremely effective, and the officials, nobles and others wealthy enough to own a carriage and purchase a travel book had no cause for complaint. This may explain why the government never understood New Russia's transportation problems: the officials traveled fast and literally never

54. Continued from p. 165
Semenov-Tyan-Shanskiy, p. 53; Rikhter, pp. 93, 100-104; Shmidt, I, 145-146, 173-174, 248-252; Hommaire, p. 47.

55. Holderness, p. 191; Lyall, I, 154; Clarke, p. 591.

56. Tooke, I, 80.
saw the need for improvements.

The only other important measure the government took was to arrange for ferry service across the rivers and to build pontoon or boat bridges at the most important crossings. They were emplaced after the spring floods and removed before ice formed in the fall. Bridges existed at Kremenchug, Yekaterinoslav, Nikopol' and Berislav on the Dnepr, Arkhangelsk on the Sinyukha, Yelizavetgrad, Nikolayev, and across the Ingulets just north of Kherson. It appears that ferry service and bridges were provided at all the necessary places. However, the major crossing points, like Berislav, became bottlenecks when traffic was heavy and extensive delays resulted. The worst reported ferry service was across the estuaries and particularly between Kherson and Aleshki on the main post road to the Crimea. A high-ranking official with special credentials could cross the Dnepr here in a couple of hours, but others found that the trip took from 4 to 12 hours. Contrary winds sometimes delayed passage for long periods of time.

Beyond arranging for ferries and pontoon bridges, the government did nothing to facilitate the movement of goods. The main vehicle used to carry cargo was the Chumak or carter's wagon. It was simply made with bark for sides, rough planks for a bottom, and wheels and axles of wood. Iron tires were never used and the axles and

57. Skal'kovskiy, Opyt, I, 103, 104, 107, 126.
58. Iyall, I, 213.
wheels frequently broke, but otherwise it was a relatively sturdy vehicle able to carry more than a ton. This was about twice as much as the horse-drawn troika could take and three times as much as the peasant's cart (telega). The main weakness was not the wagon, although it was criticized, but rather the ox team that pulled it. Oxen were strong, inexpensive, could eat a wide range of grasses and were well suited to the environment, but they were extremely slow and required large amounts of forage and water. When roads were in good condition, the ox-drawn wagon could at best make about 15 miles a day. A man could walk faster than this! When roads were muddy and difficult, the oxen moved only 7 miles or less a day, and during wet weather the wagon would have to halt because of mud and to keep the animals from becoming sore from pulling wet traces. The horse-drawn troika, on the other hand, could travel 60 miles a day without changing horses, and carriages using the postal system moved 200 miles in twenty-four hours. In other words, a government official traveled the same distance in a day and a night that a wagon train took two or three weeks to cover.

Carter invariably traveled in wagon trains usually containing 30 to 40 vehicles, although as many as 100 to 400 were observed.

The working day began at two or three o'clock in the morning when the carters would catch the oxen, harness them and proceed to "plod away" for eight or nine hours "in a very leisurely manner" until they found

61. Shmidt, I, 283.
64. Clarke, p. 264; Kohl, p. 410.
a spot with water and pasture. Then they stopped, collected fuel for fires, prepared breakfast and let the oxen graze. After this halt they continued onward, making another short stop in the afternoon, until sunset when they made camp for the night, drew the wagons into a square, grazed the oxen, repaired the wagons and greased the axles. They might have to stop for several days when the roads were bad or when the river crossings were overburdened with traffic. This was quite different from the post system which permitted travelers to keep moving even at night. Furthermore, there were no facilities such as way-stations where the carters might find food and shelter. They had to bring everything they needed with them and so both wagons and cargoes had to be abandoned if a serious accident occurred or if the oxen went lame and the carters lacked spare parts or reserve animals.

This system was exceedingly slow and required large numbers of men and oxen and huge quantities of forage and water. A good illustration of what was required is the Crimean salt trade. The salt in the lakes near Perekop began precipitating in July and was usually collected in August. The trade was profitable and so thousands of wagons came to load salt in the driest and hottest part of the summer. As early as 1800 there were enough wagons involved to stretch without interruption all the way from Perekop to Berislav. In the late 1840s Skal'kovskiy estimated that about 125,000 wagons with 30,000 drivers and pulled by 300,000 oxen came every summer.

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66. Clarke, p. 598.
67. Skal'kovskiy, Opyt, II, 503-504.
of traffic overloaded the bridge and auxiliary ferry service at Berislav causing extensive delays. The shortages of water and fodder also caused the death of many animals.  

The traffic to Odessa was also great and with expanding grain exports it continued to grow almost every year. Congestion on the approach roads created a shortage of both fodder and water. A study in the mid-1840s showed that 700,000 wagons then entered the city annually, and most of them came in the spring and summer months. The importance of Odessa's export trade was obvious, and so the government did try to improve the roads somewhat and in 1839 appropriated the paltry sum of 80,000 silver rubles for this purpose. As the number of draft animals increased, there was greater need for pasture land and water and consequently transportation costs almost doubled between the mid-1820s and the mid-1840s:

For a long time three but not more than four paper rubles were paid for the transport of a quarter 5.75 bushels of wheat from 500 verst 300 miles to Odessa, and now for two or two and a half silver rubles 6 to 7 paper rubles it is difficult to get it transported, and then only in the spring when the steppes still provide fodder for the oxen. The reason for this is simple. It lies in the absence of free steppes; one must already pay for overnighting livestock and for watering them, when about twenty years ago it was possible to feed and water them without charge.

The problem was apparent by the late 1830s and caused a French engineer

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68. Sumarokov, I, 62-63.
69. Iyall, I, 169.
70. Shmidt, I, 269.
71. Shmidt, I, 289.
72. Smal'kovskiy, Opyt, II, 390. A contributing factor was the use of the formerly free steppes as pasture land for sheep and steppe cattle.
The wheat sent to Odessa from Khnia /Kiev/, Volhynia, Podolia, and Bessarabia, arrives in carts drawn by oxen. The journeys are tedious, the extreme rate of travelling being not more than fifteen miles a day; and they are costly, for the carriage of a tchetvert of seven bushels of corn varies from four to six /paper/ rubles; moreover, the transport can only be effected between May and September in consequence of the deplorable state of the roads during the other seven months of the year.\textsuperscript{73}

Such costs acquire significance when one realizes that they represented more than a quarter of the total price of grain sold in Odessa in the late 1830s. They amounted to an even higher proportion when prices were low.

Farmers correspondingly received a smaller profit than they would have if transportation had been cheaper. Furthermore, the difficulty of sending grain to Odessa in the late summer and fall months meant that farmers had to store a large part of the harvests until the following spring. They were unable to derive any income from this grain until a year after it was planted. Because of poor storage, a portion would spoil during the winter. In addition, the slowness of the system prevented farmers from taking advantage of periods when prices were high and increased the risk of grain being damaged by rainstorms while in transit. Apparently a significant amount of grain was actually sprouting by the time it reached Odessa.

These factors indicate that the overland transportation system of New Russia was a considerable burden to the economy and needed to

\textsuperscript{73} Hommaire, p. 19.
be improved in the late 1830s. By the 1850s the situation had become critical:

It may be positively asserted that the routes of communication. . . remaining as they are in their primitive condition, in all their unimproved state, are nevertheless in much better condition than the means of transportation. The primitive condition of the means of transportation of the region has not improved at all since the first settlement of the area, and with every year that passes meets more and more obstacles. . . and is in sharp dissonance with the primary needs of the area. History could hardly show another area which so needed improved means of communication, but manages with primitive means of transportation which paralyze the possible significance and development of the /productive/ forces of the region. . . 74

When Shmidt wrote of improved means of transportation he was not thinking of railroads, but rather of horse-drawn wagons and specifically of those used by the German colonists. These had iron axles and iron tires, were pulled by a team of four horses and carried as much cargo as the Chumak wagon drawn by two oxen, but at a much greater speed. 75

Therefore, the amount of water, fodder, labor and time the Germans required to move a ton of cargo was less than that needed by the Russians and consequently their immediate costs were lower.

The Germans really did have the answer to New Russia's transportation problem, and it was deceptively simple: use horses instead of oxen. The season when goods could be safely hauled was short, and what was needed was a technique that would move as much cargo as possible during this period at the lowest cost. The way to accomplish this was to increase the speed at which wagons traveled. The Russians

74. Shmidt, I, 247.
75. Shmidt, I, 278.
already had a fast technique at their disposal, the post system, and what they needed to do was adapt it to the needs of goods traffic by assigning more horses to the stations and using them to pull the Chumak wagon or, hopefully, a better constructed vehicle. If horses could be used in relays to transport people they could also be used to haul cargo. A horse system would have permitted a farmer to ship his grain a distance of three hundred miles to Odessa in a few days rather than weeks. The total cost for fodder, water and labor per ton-mile would correspondingly have been lower and there would have been less danger of spoilage. Grain harvested in July could have been in Odessa awaiting shipment abroad in the first half of August instead of the following spring.

This would have utilized an available resource: New Russia had over 400,000 horses, less than 1% of which were officially assigned to the relay stations.* It could have been established by simply expanding the existing facilities to include goods traffic. Furthermore, horses were not strange to the people of New Russia; they knew how to handle the animals, so that no change in technology was required. The only drawback was that horses ate a narrower range of grasses than oxen and to be efficient required a certain amount of oats. 76 In all

* In the 1840s only 3,200 horses were officially assigned to New Russia's 231 postal relay stations. However, the station managers usually maintained larger numbers of horses which they rented out at extra fees to travelers who did not have official status. The extra fee was small and foreigners never objected to it, but they were profoundly irritated by the lengthy haggling required to get the horses. Skal'kovskiy, Onyt, II, 377.

76. To be efficient, a horse in the US Army required on the average about 10 to 12 pounds of hay, 12 quarts of oats and 8 gallons of water a day. The horses of New Russia, however, were accustomed to a much
probability, however, the difficulty could have been overcome. In point of fact, a proposal along these lines was made, but the government ignored it. On balance the government appears to have made a major mistake when it failed to encourage the greater use of horses in the transportation system.

Instead of attempting to improve the existing system, the government looked towards the new techniques available as a result of the Industrial Revolution. During the first decades of the nineteenth century the Western World was going through a remarkable change in transportation techniques. The macadam road and the steam powered railroad had been invented and were being applied in England and the United States. The Russian government knew about these inventions. It built a good macadam road from St. Petersburg to Moscow between 1816 and 1830 and extended it to Nizhny Novgorod by 1852. It also constructed a small railroad to run from the Tsar's summer residence to St. Petersburg in 1838 and a more important one connecting Moscow with St. Petersburg in the years from 1841 to 1851.

76. Continued from p. 173.

poorer diet, and probably could have been fed barley or millet grain as a partial substitute for oats during part of the summer. Horses require no more water than oxen. U.S. D.A. Bureau of Animal Husbandry, Special Report on Diseases of the Horse, Washington, D. C., 1907, pp. 34, 40.

77. Schmidt, I, 298.

78. Blum, p. 283; Oliphant, p. 14. Hansteen, a Norwegian geophysicist, reported that the road from St. Petersburg to Moscow was only half completed in 1828. To understand the significance of this road, compare: J. G. Seume, A Tour through Part of Germany, Poland, Russia, etc., London, 1808, p. 30-32, with C. Hansteen, Reise Erindringer, Christiania, Norway, 1859, p. 106.

Macadam roads were never suggested for New Russia, probably because of the shortage of gravel and the difficulty of building permanent bridges over the numerous gullies. Attention was, however, given to proposals to build railroads. In the early 1840s governor-general Vorontsov wanted the government to construct a horse-drawn railroad between Balta and Odessa. The idea was tentatively approved and 30,000 silver rubles were allotted for surveying purposes with the stipulation that the plan provide for the use of steam engines instead of horses. Surveys began in 1845 under the direction of a Belgian engineer, and sometime between then and 1848 the final estimates were submitted. They called for the construction of a railroad between Olivopol and Odessa at a cost in excess of 12 million silver rubles. The amount of cargo the line might carry was suggested by a study which showed that 300,000 wagons entered Odessa annually from the direction of Tiraspol and another 400,000 from the direction of Kherson, indicating that 220,000 tons of goods came to Odessa from the west and another 290,000 from the east.

The proposals were not adopted and the actual construction of a railroad did not begin until 1865, almost 20 years later. They demonstrate, however, that the leaders were seeking to solve New Russia's problem by utilizing expensive modern techniques rather than by improving the existing roads and means of transportation. The 30,000 rubles used for surveys was one-third of the total amount of money allotted to highway projects in 1839. Furthermore, the leaders were concentrating on the major routes serving Odessa and were ignoring the possibilities of expanding the trade of areas like the forest-and wet steppes of Yekaterinoslav Government which were unable to realize their true potential because they lacked good communications with the ports.

80. Shmidt, I, 292.
81. Shmidt, I, 289.
82. Semenov-Tyan-Shanskiy, p. 44.
River Transportation

The major rivers of New Russia were possible transportation routes. They were navigable, however, only during the two to three months of spring high water. During the rest of the year they were either too shallow and contained many shifting sand bars that impeded and in most cases prevented navigation or were filled with floating ice which stopped all shipping. The Dnestr and (Severnyy) Donets had winding channels that made distances by river much longer than by land. The Bug below its rapids flowed in the wrong direction. Goods going from the area around Voznesensk to Odessa could be sent more rapidly by wagon train than by boat. The Bug was used only to ship small cargoes of timber and salt upstream from Nikolayev to Voznesensk.

The Don was the one major river which was not blocked by rapids. Its period of highwater lasted from the end of March until June, and then boats carrying 700 to 800 tons of cargo sailed down the river. During low water shallow draft vessels carrying from 30 to 200 tons of cargo were employed. Unfortunately, the vessels had to sail through the winding channels of the delta, over the bar at the river mouth and then through the shallow Sea of Azov. The high cost and the difficulties of moving goods through so much shallow water limited the value of the Don as an artery of communications.

The major obstacle on the Dnepr was the rapids or cataracts that stretched from south of Yakaterinoslav to just north of Aleksandrovsk. In addition, the river below Aleksandrovsk contained sand banks, shifting channels and logs stuck in the muddy bottom which made navigation

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83. Krasnov, p. 96-98.
very slow and more expensive than overland transportation. These other hindrances, however, were ignored and the government attempted to build canals around parts of the rapids and channels through the rest, probably to permit the floating of timber to the naval base at Kherson during a longer period of the year. Without improvements, timber rafts could only be sent during the few weeks of spring floods and then only at considerable risk to the river men.

The first projects started in the year 1780 under the direction of Potemkin's trusted assistant, M. L. Faleyev. He built a canal and channel somewhat more than 1,000 feet long around and through the worst part of the rapids, the Nenasytetskiy cataract. Work was possible only during summer low water and was reported to cost 10,000 rubles a month. The undertaking was halted at the outbreak of the Turkish War of 1787-1791. The completed canal turned out to be worthless because it was too shallow to float anything in summer and its locks were submerged and thus inoperable during spring high water.

Paul I ordered additional "hydrotechnical works" to be undertaken in 1797. It appears, however, that they were not completed. Alexander I started the projects again in 1805, but they were delayed by a destructive flood in January 1806. By August of 1809, when funds ran out, canals or channels had been built through or around three of the major rapids. New surveys and plans were made in 1825 and 1826, but actual work did not begin again until 1833 and apparently stopped in the late 1830s. More work was done in the decade after 1843, but the

85. Hommaire, p. 20; Skal'kovskiy, Khron., II, 272.
86. Zuyev, p. 254-255; Skal'kovskiy, Opyt, I, 111.
channels were too shallow and so narrow that if a boat deviated only slightly from the prescribed course it was in danger of being wrecked.

Thus, in spite of sporadic efforts over many years, the rapids continued to prevent navigation on the Dnepr and to constitute great hazards for the river men. In point of fact the canals and channels were no improvement whatsoever. The attempt to blast channels through the hard granites of the cataracts with the primitive technology of the time was probably impossible anyway, and the time, energy and resources devoted to these projects were simply wasted. An alternative, however, did exist. In the 1820s, Vorontsov supported a proposal to build a by-pass canal about 50 miles long around all the rapids at an estimated cost of about 3 million silver rubles. It was rejected. Undoubtedly a by-pass canal would have been difficult to construct, but it would not have been as dangerous as trying to blast channels through the rapids and with the proper use of locks would probably have been navigable for a considerable part of the year.

The introduction of steam powered tug boats in the 1830s and 1840s marked the end of the period of initial development because they represented the adoption of a product of the Industrial Revolution and presaged later industrialization and major river improvements. The first sign that they were to become important was the establishment of the Black Sea Steamship Company in 1833. The first known use of tugs occurred in 1834 when they were introduced on the Dnestr and used to

88. Pavlovich, I, 60-61; Semenov-Tyan-Shanskiy, p. 421-422.
89. Semenov-Tyan-Shanskiy, p. 460.
tow barges laden with timber, fire-wood and winter wheat to Odessa.\footnote{Skal’kovskiy, Opyt, I, 88-91.} They had little lasting impact, and the Dnestr trade remained small because of the winding river channel and the difficulties of crossing the bar at the mouth of the estuary.\footnote{Hommaire, p. 19.} What these tugs could mean was illustrated in 1840 when one of them began providing regular ferry service from Akkerman to Ovidiopol' across the Dnestr estuary. It reduced the time normally required for the trip from 22 to 2 hours and cut passenger fares to one-tenth of what they had been previously.\footnote{Skal’kovskiy, Opyt, I, 90-95.} One should note, however, that the route had no particular commercial significance.

The most dramatic application of steam tugs occurred on the (Severnyy) Donets in 1837 when, under the sponsorship of Vorontsov, barges filled with coal were pulled down the river. Shipments continued in the following few years, but they proved uneconomical because the distance from the coal mines to Taganrog by river was much longer than it was overland and because the channel was shallow and contained numerous sand banks, tree trunks, water mills and old plank bridges which hindered navigation. The coal itself was used to heat the homes of a few wealthy people. Attempts to use it in the boilers of the steam boats failed, and it continued to cover but a minor fraction of New Russia's fuel needs during the following decades.\footnote{* Coal was first brought from the Donets area during the 1790s when experiments were conducted in Nikolayev. The smiths were unable to utilize it in their forges, and about the only one who benefited was Admiral Mordvinov who used coal to heat his private residence in 1795 and 1796 (Guthrie, p. 9). Subsequently coal was ignored until Vorontsov did something...}
A steam tug was brought from England in 1841 for the Donets coal trade and to maintain communications between Rostov and Taganrog.

Another one was purchased in 1843 to serve as a passenger vessel between these two towns. Interestingly, none of the tugs was used to haul cargoes on the Don, the one really navigable river in New Russia. The main task given them was not to transport goods but rather to improve communications. They were primarily used as an adjunct to the postal system.*

The introduction of steam tug boats was unquestionably an event of considerable importance, but its economic impact in the 1830s and 1840s was slight. What New Russia needed was an efficient overland transportation system: what its leaders tried to do was improve a river transportation system that was of limited potential value.

The Russian government displayed a kind of invincible ignorance towards the transportation problems of New Russia. It invested money in the hopeless task of blasting canals and channels through the granitic rapids of the Dnepr, built good roads to help the nobles of the Crimea get to their summer manors, purchased steam tugs to improve

* Continued from p. 179 -- brought two French engineers, Hommaire, and Le Play, to New Russia in the late 1830s. They recommended that the anthracite deposits at Grushevka be developed. Grushevka was about 20 miles from the lower course of the Don in the Lands of the Don Cossacks, and it became the principal source of the coal consumed in New Russia. Coal appears to have been important only in the town of Rostov where it was used to fire 3,000 domestic stoves in the 1840s. Total production even in the 1850s was small. The coal was mined from surface outcrops and neither deep shafts nor any complicated mining technology was employed. (Pavlovich, pp. 66-69, 323; Krasnov, pp. 339-344, 356.)

93. Pavlovich, p. 66-69; Skal'kovskiy, Opyt, I, 138-139.

* With the exception of boats used to transport goods from the mouth of the Don across the Sea of Azov to Taganrog and Kerch' and timber rafts floated through the Dnepr-Bug estuary to Nikolayev and by sea to Sevastopol', the Russians neglected coastal shipping. The reason was that overland routes were shorter and more direct than coastal routes. As discussed in Chapter III,
the post system along the sea coast, spent money and energy planning a railroad which was not built, and employed its dredge solely to keep the channel to the naval base at Nikolayev clear for warships. All these projects, as desirable as they may have been, were of marginal value to the region as a whole and diverted resources away from the central problem: how to build and operate an effective, efficient, rapid and low cost overland transportation system. The government never attacked this problem, and as time passed more and more slow-moving oxen kept eating more and more grass and drinking more and more water, causing transportation costs to rise and depriving the farmers of the profits they might have made and preventing the full development of the grain producing areas of Yekaterinoslav Government.

The best solution to this problem was to use horses instead of oxen to make the system function more rapidly during the few months of the year when secure overland transportation was possible. With the example of its own horse-powered post system in front of its eyes, however, the government and the leaders of New Russia failed to adopt this solution. Instead they looked to inventions of the Western World in the search for a solution, to iron rails and steam engines which were extremely expensive and which the people of New Russia did not know how to utilize. But they failed even to adopt these in any really meaningful fashion until the Crimean War forced the decision on them.

* Continued from page 180 — the government did not wish to develop the Crimean ports. The Russians also failed to develop a sea-going merchant marine. Most of the Russian flag ships were actually owned and manned by foreigners, principally Greeks. The author was unable to find sufficient information on this subject to hazard an explanation. There is evidence that the Russians were poor sailors. See Craven, Journey, p. 194-197, Skal'kovskiy, Opyt, I, 96-97. In the late 1830s the steamship Peter the Great carried passengers from Odessa to Yalta once every two weeks, but apparently took little cargo. Kohl, p. 446.
4. Foreign Trade

In New Russia's foreign trade, exports greatly exceeded imports, so that the region earned foreign exchange needed to pay for articles imported to the northern cities. The best way to describe New Russia's foreign trade is to examine the exports of its most important article, grain. Only three ports were significant: Odessa, Taganrog and Rostov. By the late 1830s, Odessa accounted for about 75% of all New Russia's exports and Taganrog and Rostov for most of the remainder.

Odessa

The immense advantages of Odessa were described in Chapter III. It was closer to the Dardanelles than any other important port, and had water deep enough to permit large ocean-going vessels to dock close to shore. In addition the quarantine system favored Odessa and the town's sagacious leadership was able to obtain the funds necessary to construct by 1820 good facilities and a breakwater to protect the harbor from storms.

Odessa's population growth reflected expanding foreign trade. The number of inhabitants increased from some 2,400 in 1795 to 9,000 in 1803 and 12,500 in 1807. Between 1807 and 1813 the town's population almost tripled. In 1835 it reached 53,000 and by 1844 was estimated at approximately 70,000. These 70,000 people probably constituted more than half of the total urban population of New Russia.

94. Information on Odessa's foreign trade has been taken from: Geographical, p. 19-21; Hommaire, p. 24-26; Lyall, I, 163-168, 186; Semenov-Tyan-Shanskiy, p. 462; Shmidt, II, 490, 571-573, 833-840, 843. The statistics on foreign trade are, like all other data, subject to large margins of error (see Pallas, Travels, I, 491; Tooke, III, 452; Lyall, I, 186-187).

As indicated in Chapter III, Odessa captured the foreign trade of Kherson, Nikolayev and Ochakov during the 1790s. By 1803 it had become the most important port in New Russia. In that year, out of a total of 815 ships arriving in New Russia, 552 came to Odessa, 210 to Taganrog, 23 to Feodosiya, 19 to Yevpatoriya, 7 to Sevastopol' and only 4 to Kherson. The Napoleonic Wars and Turkish War of 1806-1812 hindered the development of Odessa's foreign commerce. They halted all exports in 1799 and 1800 and again in 1810, 1811 and most of 1812. The plague epidemic of the fall of 1812 stopped all trade. New Russia's potential, however, was illustrated during the first decade of the nineteenth century by shipments abroad from Odessa of about 3.5 million bushels of grain in both 1803 and 1804 and 4 million in 1805. Real exports, however, did not develop until after the Battle of Waterloo. Europe's farmers were then unable to satisfy domestic demands for foodstuffs because of the ravages of war and harvest failures. The European nations desperately needed grains and were willing to pay almost any price to get them. Odessa profited by this situation. In 1815 grain to a

96. Shmidt, II, 571.

97. Anthoine, Baron de Saint Joseph, Essai Historique sur le commerce at la Mer Noire, Paris 1805 (reprinted 1826), p. 207. Anthoine was the first French businessman to establish an office in Kherson (hereafter cited as Anthoine).
value of over 4.1 million silver rubles was exported. In 1816 almost 6 million bushels left Odessa. At one point during 1816 the price of a bushel of wheat rose to almost 2.3 silver rubles, a level it was never again to reach, and the total value of all grain exports was almost 10 million silver rubles. In 1817 it exceeded 11 million silver rubles.

These were prosperous years, and some of the profits were used to build modern warehouses, docks and quarantine facilities and improve the breakwater. Europe's farms recovered and good weather brought bountiful harvests in 1818. Odessa's export boom ended in this year when the price of wheat fell to less than 1 ruble a bushel and the value of all grain shipments was only 5.3 million silver rubles. The decline continued in 1819, and prices dropped to less than 0.70 rubles a bushel and total earnings were but 3.8 million silver rubles, a third of what they had been in 1817. Prices fell further in the 1820s but the quantities shipped increased. In 1825 Odessa exported almost 4.2 million bushels of grain. In 1826 exports rose to 4.7 million and in 1827 reached 6.9 million bushels, valued, however, at only 3.8 million silver rubles. Thus from 1819 to 1827 Odessa managed to maintain its earnings not because of a rise in prices but because of a greater volume of exports. Another war with Turkey then stopped all trade in 1828 and 1829.

Demand was high in 1830 because of war shortages, and this caused an export of over 6.9 million bushels. 1832 saw only 2.9 million bushels shipped abroad, and the following three years were a period of severe drought which caused Odessa to become a grain importer. The world market, however, was changing in a way that was soon to favor Odessa. By the
mid-1830s many of the nations of Europe realized that they could not feed themselves. Therefore, they abolished uniformly high tariffs on imported grains and instead adopted systems of sliding tariffs under which duties remained high until all the domestically produced grain was consumed and then were reduced to low levels in order to facilitate imports. Merchants were quick to take advantage of the new situation. They purchased Odessa's grain in the summer, when ships could sail safely on the Black Sea, took it to bonded warehouses in Trieste, Livorno, Genoa, Marseilles and Amsterdam. Here it remained until the following spring when domestic supplies were exhausted, tariffs fell and it could be sold at a profit.

The new trading pattern made exporting more expensive because of the increased storage and handling costs, but it also provided Odessa with a more secure market than the city had ever enjoyed before and, moreover, brought some stability to prices. They had, naturally, to be low, but did not fluctuate as much as in previous years. These changes were reflected in the exports of the late 1830s. In 1836 Odessa sold almost 5.2 million bushels of grain abroad, and by the end of the 1830s exports exceeded 6 million bushels valued at over 9 million silver rubles. Further changes in the 1840s increased the security of Odessa's grain trade. From 1842 to 1849, England, Belgium, Holland and even Switzerland repealed their grain import laws and became new markets. Thus by the end of the period studied the most important export article New Russia possessed had obtained good, reliable foreign markets and was earning significant amounts of foreign exchange, indicating that the stage of initial development was over. The problem of the future was how to hold markets in the
face of American and later Canadian competition.

The farmer's income, however, did not increase as much as the value of the grain exports. For one thing the ruble depreciated, and for another transportation costs almost doubled between the mid 1820s and 1840s. Furthermore, the cost of handling cargo, processing the necessary papers and arranging sales was high and further decreased net earnings. The farmer who received half of the price for which his crop was sold was probably fortunate.

A large portion of the exports did not originate in New Russia. Europe wanted winter wheat which was grown primarily in the forest- and wet steppes. Yekaterinoslav Government contained the largest extent of these zones, but it lacked adequate transportation facilities. The only area that could export large quantities of winter wheat was the northern half of Kherson Government, and it was not big enough to satisfy Odessa's requirements. Therefore, probably half of all the wheat shipped to Europe came from the western forest steppe Governments of Volynia and Podolia. This was reported by many travelers and was reflected in the proposals to build a railroad to connect these areas with Odessa.

Taganrog and Rostov

Taganrog was the second most important export port. It had, however, only two advantages: it was the closest harbor on the Sea

98. Webster, p. 345.
100. Kohl, p. 409; Hommaire, p. 196.
of Azov to the mouth of the Don, and the region around it produced the Arnaut spring wheat which enjoyed a good market in Italy. Taganrog's physical liabilities were described in Chapter III. In brief, the water at the port was very shallow, so that ocean-going vessels had to anchor ten miles off-shore and receive cargoes from lighters, and ice floes blocked the harbor during winter. In addition, the quarantine requirements on the Sea of Azov were more restrictive than those at Odessa. The government encouraged trade by establishing the only customs house on the Sea of Azov at Taganrog in 1776. Because all exported goods had to clear customs, vessels coming down the Don were compelled to come to Taganrog. This resulted in a rather peculiar transportation pattern. River boats came first to Rostov where many of them transferred their cargoes onto larger vessels able to sail on the Sea of Azov. These vessels in turn passed through the Don delta and discharged their goods at Taganrog. After clearing customs, the cargoes were placed on lighters and loaded on ocean-going ships. A portion had to be off-loaded again at Kerch' to enable the ships to pass through the Straits. All this loading and unloading was very expensive.

In spite of such drawbacks, trade did increase. This was reflected in the growth of Taganrog's population. In 1793 it contained 6,000 people, half of whom were military personnel. By 1822 its population had risen to about 9,000 and during the summer navigation season an additional 3,000 persons came to the town to work as carters and long-shoremen. By the end of the 1830s its inhabitants probably numbered

101. Pallas, Travels, I, 487.
102. Lyall, II, 281.
about 16,000\textsuperscript{103} and reportedly increased to 22,000 in the mid-1850s.\textsuperscript{104}

Taganrog exported pig iron which originated in the foundaries of the Urals, was shipped down the Volga, overland to the Don, down the Don through Rostov and thence to Taganrog to clear customs. Apparently about 18,000 tons of pig iron\textsuperscript{105} were exported every year until the end of the 1830s. The amount decreased in the 1840s and 1850s.\textsuperscript{106}

In addition to Arnaut spring wheat, some grain was also exported from the forest steppe Governments and from Yekaterinoslav Government. In the 1840s Taganrog acquired yet another novel product. The farmers of the Azov lowland then began growing a hard, red winter wheat called Girka which was exported successfully to England.\textsuperscript{107} Actual figures on Taganrog's trade are very contradictory, and about the best that can be said is that it probably exported about 3 million rubles worth of goods annually during the late 1830s.

Taganrog lost its monopoly as the only customs house in the area in 1835 when another establishment was opened in Rostov. Goods could now be transferred from river boats to larger vessels at Rostov and sent directly to Kerch' for transshipment to ocean-going ships. This was a far more efficient system and resulted in a rapid expansion of Rostov's exports. They increased from only 103,000 rubles\textsuperscript{108} in 1836

\textsuperscript{103} Hommaire, p. 84.
\textsuperscript{104} Geographical, p. 37; Pavlovich, p. 335.
\textsuperscript{105} Clarke, p. 330; Pavlovich, p. 233.
\textsuperscript{106} Pavlovich, p. 233.
\textsuperscript{107} Pavlovich, p. 232.
\textsuperscript{108} These are probably silver rubles. Pavlovich states that the total value of Rostov's exports in 1835 was 1.2 million rubles (Pavlovich, p. 320), a figure which seems much too high. This may be a typographical error or perhaps Pavlovich was thinking of total trade turnover in paper rubles. A paper ruble was equivalent to about a third of a silver ruble.
to 485,000 in 1837 and then doubled in 1838. By 1845 they exceeded 3 million rubles and surpassed the value of Taganrog's exports by almost one-third.

The new trade brought sudden prosperity, and the town's citizens used part of their money to build a casino and pursue a type of cosmopolitan life which made some think that Rostov was more exciting than Odessa. Its population reached 10,000 by the mid-1840s. The rapid increase in trade suggests that the original decision to have a custom's house only at Taganrog was unfortunate and indicates that Rostov should have been opened to foreign commerce at a much earlier date.

By the end of the 1830s, therefore, the foreign trade of New Russia was significant and had obtained fairly secure markets. The sliding tariffs of the European countries enabled Odessa to look forward to continued growth, and the demand for Taganrog's specialized spring wheats meant that it too had a good future. Furthermore, New Russia was probably exporting about 20 million silver rubles' worth of goods a year.* Its imports were small, and so most of this money represented earnings of much needed foreign exchange. One does wonder, however, what this figure would have been if the government had improved the overland

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110. Hommaire, p. 93.

* This estimate is derived as follows:

Grain from Odessa - 10 million silver rubles
Wool from Odessa - 3 million silver rubles
Grain, pig iron, etc., from Taganrog and Rostov - 3 million silver rubles
Miscellaneous and other ports - 4 million silver rubles

Total - 20 million silver rubles.
transportation system, developed the excellent natural harbor of Feodosiya, established a more selective and efficient quarantine system and permitted Rostov to have a customs house in the early 1820s. Such measures would at least have decreased export costs and correspondingly increased farmers' profits and perhaps have enabled them to make improvements in the agricultural systems.

5. Summary

The stage of initial development ended in the late 1830s when New Russia demonstrated that it could produce and sell large quantities of goods that Western Europe was willing to buy. The signs of a new stage were apparent in proposals to construct railroads, the first use of steam tug boats, and Europe's new tariff laws which gave New Russia fairly reliable foreign markets. The agricultural and transportation systems failed to change significantly in the three decades before 1837. The Russians expanded the area sown to grains, increased the numbers of sheep and probably cattle, and overburdened the overland transportation system, but they continued to use the same techniques.

By the 1840s and 1850s this failure was to have serious consequences. The overland transportation problem became critical, and in the late 1840s New Russia's wool exports suddenly faced severe Australian competition. The government's efforts to effect changes did little to solve the basic problems. The introduction of Merinos did not improve the quality of the wool, the attempts to blast channels through the Dnepr rapids did not solve the transportation problem, and the encouragements given to vineyard owners in the Crimea did not result in better wines. These and other examples demonstrate that the government quite simply did not understand the primary economic needs of New Russia.
Despite the shortcomings described in the preceding chapters, one must conclude that the policies adopted by the government were on the whole successful because they did enable Russia to conquer, settle and develop New Russia between 1780 and 1837. With New Russia subdued, the surplus grain producing regions in the forest steppes were secure from all foreign attacks and from Cossack and Tatar raids. With the establishment of ports on the Black Sea, Russia was able to build a fleet which, in spite of its many handicaps, was able to defeat its enemy, Turkey. New Russia became an inalienable part of the Russian Empire when its lands were filled with people who were loyal to the Tsars and when the indigenous inhabitants had either been removed or brought under control. Settlement was sufficient to provide the Army with the assistance it needed to secure the region. Development too was successful, for by the end of the 1830s New Russia was earning probably 20 million silver rubles of valuable foreign exchange every year through the export of grain, wool and tallow, was sending wool, tallow, wine, cattle, horses and salt north to Russia proper, and was using about half of its total area for agriculture.

These goals were achieved, however, without changing the basic techniques of living in New Russia. The Russians continued to follow the extensive, low-yield type of grain farming practiced by the Cossacks and the earliest settlers and the extensive, low investment system of livestock raising developed by the Tatars. With the exception of introducing some Merino blood into the sheep, the Russians even continued to raise the same animals as their predecessors. The wine of the Crimea was produced in the same way as the Crimean Tatars had made.
it for centuries. These older systems were indeed "seeds of change,"
which the Russians adopted, separated from each other, and used to
produce grains, wool and tallow for export and wine, oxen and horses
for sale in Russia proper. But they made no substantial changes in the
systems themselves.

By the late 1830s, the failure to make improvements became most
obvious in the transportation system which, with its slow moving ox-
drawn wagon trains, was no longer able to meet the requirements of
the region. Increasing traffic on inferior roads overburdened the
available free pasture lands and caused the price of shipping goods to
rise. This, in turn, decreased the already small profits derived from
the export of grain. The lack of change became critical in the 1840s
when New Russia's inferior wool began suffering from Australian compe-
tition and the sheep raising system was unable to meet the demands of
its consumers for a high quality product. These developments and
also the introduction of steam tug boats and the growing exports of
grain were "seeds of change" that would influence the following stage
of New Russia's historical geography.

Examples of the types of improvements needed existed within the
region itself. The German colonists clearly demonstrated that intensive
farming in which fields were rotated, manure was used and most signifi-
cantly a variety of different grains was grown, was the most reliable
and also the most profitable way to farm. Men like Rouvier proved that
high quality Merino sheep could be raised successfully. Governor-
genral Vorontsov and the director of the Nikita botanical garden
showed that excellent wines could be produced in the Crimea. Furthermore,
the government's own post system demonstrated that rapid, efficient transportation was possible by using horse-relay stations instead of slow ox-drawn carts.

In spite of the need for changes and the existence of improved techniques, the people of New Russia continued to follow the systems of farming, livestock raising, wine-making and transportation that they inherited from the eighteenth century. There are many reasons why change did not occur, but perhaps the most important was that the existing systems had some real advantages. The most significant advantage was that they were known to the people and had worked for a long time, whereas the improved techniques were new and for the mass of the people untested, and required a substantial upgrading of human skills, something difficult for an illiterate peasantry to achieve.

The old systems, moreover, used what New Russia had in abundance: land and grass, and required little in the way of capital investments. The animals were well adjusted to the physical environment and required little care. The vehicles were simple and inexpensive to construct, and the main beast of burden, the ox, was cheap to buy, easy to feed and could be sold for meat when his working days were over. Improved horses and Merino sheep, on the other hand, required good care and were not nearly as able to survive winter blizzards and summer droughts as were the native animals.

Furthermore, the improved techniques required large amounts of initial capital and relatively skilled labor, neither of which was readily available. Real prices for grain and horses declined, prices for wool and tallow were low, and quality Crimean wines could be sold
only at a loss because of foreign competition. Taxes were high, and what surplus the individual did manage to acquire was consumed during the periodic droughts and other natural catastrophes that were common in the marginal, sub-humid climatic environment of New Russia. In addition, most of the new techniques (intensive farming, Merino sheep raising, quality wine-making) were complex rather than simple, and they required a whole series of changes. For example, a landlord could not just buy a herd of expensive Merinos to become successful. He also had to build good pens, find a daily water supply and secure enough good fodder to feed the animals during the winter and the dry part of summer. Moreover, he also had to learn new ways to cut, sort, wash, pack and ship wool, and then teach these techniques to his employees. If he failed to adopt the new system in its entirety, he risked losing the investment. The very complexity of the changes required made them difficult if not impossible for an uneducated people to adopt. Although beyond the scope of this study, it should be noted that social and political factors were also important. This is suggested by the fact that the best representatives of the new techniques were either atypical Russians like Vorontsov or else foreigners like Rouvier, Miller and the German colonists.

Perhaps the greatest obstacles to change, however, were the policies pursued by the government. The government never really understood the needs of New Russia. Only in one area did it make what might have been a substantial contribution. It subsidized the importation and establishment of Merino sheep, but then failed to follow through and insure that these valuable animals were properly bred with the native sheep and that the resulting wool was cut, cleaned, washed, sorted, packed and shipped properly so that it would bring the maximum price. All it really
accomplished was to permit people like Rouvier and Miller to make a good living. The government tried to develop a quality wine-making industry in the Crimea, but nullified this effort by permitting the importation of low-cost wines from the Aegean. It wished to encourage foreign trade, but imposed a severe quarantine system which inhibited commerce in the Sea of Azov, closed Feodosiya, the best natural port site in the eastern half of New Russia, and refused until 1835 to let Rostov have a customs office. Instead of building good roads to the major ports it built them in the mountains of the Crimea where they had no commercial value. It bought one dredge, which was used only to keep the channel to the naval base at Nikolayev clear, but failed to procure another to improve navigation across the Dnepr and Don bars and in the harbor of Taganrog. The government ignored the one obvious solution to the transportation problem, using horses instead of oxen, and instead occupied itself with making plans for railroads that were not to be built for twenty years, expending funds in the hopeless task of blasting channels through the rapids of the Dnepr and purchasing tug boats that were used primarily in the postal system.

The government failed to understand the region's requirements even in smaller things. It knew that malaria came from marshes and was killing people in Kherson every summer, and yet it took fifty years to fill in the swamps right next to the town. Everyone was aware of the fact that bad water caused disease. The government, however, did not attempt to provide even the vital naval bases with water supply systems. Instead of following the Tatar example and building aqueducts, it permitted the remaining ones to be torn asunder. The quarantine system is another
example. In retrospect it seems almost incredible that nothing was
done to help the people shut off behind the quarantine lines.

Of course from a twentieth century vantage point one can criticize
the leaders of the past with impunity. But this is not really very
important. What matters here is that the policies the government
followed, however, well-intentioned they may have been, demonstrated
conclusively that it did not understand and did not know how to solve
the problems that were facing the people of New Russia. It spent
money trying, but the money was spent in the wrong places and for
the wrong purposes.

This conclusion should not, however, be taken as a harsh criticism.
The Russian government was grappling with complicated problems that had
never been faced before, and was attempting to introduce techniques and
programs which were still new even in Western Europe and the United
States. In this connection one ought to remember that there are many
countries in the world today which are not having much more success in
promoting development than did the Russia of a hundred and forty years
ago and that the American people do not exactly have an enviable record
in their treatment of the indigenous peoples and the farm lands of the
sub-humid parts of the United States. One should also recall that the
period of initial development corresponded with most of the reign of
Nicholas I (1825-1855). The fact that his government introduced steam-
boats, invested money in canals, and planned railroads in New Russia
shows that it did in fact encourage change.* It simply did not know

* This refutes Riasanovsky's statement that the reign of Nicholas I
"meant an attempt, for three decades, to freeze growth and impose stag-
nation." N. V. Riasanovsky, Nicholas I and Official Nationality in Russia
1825-1855, University of California Press, Berkely and Los Angeles, 1959:
p. 270.
how to do so rapidly and effectively enough to keep pace with the needs of the time, and this was largely because it did not understand New Russia's problems and requirements.

The story of New Russia illustrates the problems involved in settling and developing a sub-humid landscape. The people's experiences teach certain lessons that others have also learned in similar environments in other parts of the world and at other times. Perhaps the most important of these is that diversification is the key to finding a successful life in such areas. The Cossacks and Tatars recognized this when they combined sheep herding with limited grain farming, vegetable gardens, orchards and some fishing and trade. The Germans also learned this and therefore raised different types of grains, one of which was almost sure to succeed even in years of drought. The second lesson is that the part of the year which is favorable to farming and to transportation is extremely short. In New Russia it lasted only for about 90 to 100 days. This is spring and early summer, and during these months everything has to be done, there is no time for delays. It is the time when labor must be available and must be equipped with the most efficient tools available. The third lesson is that successful settlement requires the use of large amounts of initial capital. The settlers need to be supported during the first years, especially if a drought occurs, and they must have enough resources to follow improved methods of farming and livestock raising if they are to be able to produce a marketable surplus. The inhabitants of New Russia never enjoyed this advantage, and as a result suffered grievously from disease and want.
The people of New Russia also showed that homes can be built of sod, that grain can be stored underground for fifteen years, that steppe bushes, reeds from the flood plains and dung can be used for fuel and to construct fences and animal shelters, that the wooden saban plough can cut virgin sod and that the most favorable locations for human settlement in an environment like that of New Russia are in the gullies, along the water courses and on the banks of the coastal estuaries. They demonstrated conclusively that man can survive and multiply in a sub-humid environment even though his economy is primitive, lacks diversification and is deficient in capital and even though he himself is uneducated and has to perform obligations for his government and has to fight human as well as natural enemies. For in spite of all the obstacles they faced, the people of New Russia not only survived but increased in number. They are indeed to be admired and admired far more than the educated rulers who showed so little concern for the welfare of their subjects but so much for their own personal comforts.
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## Appendix I

### Conversion Table for Measurements

<table>
<thead>
<tr>
<th>Russian</th>
<th>Linear</th>
<th>Metric</th>
<th>English</th>
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</thead>
<tbody>
<tr>
<td>1 verst (verst)</td>
<td>500 sazhens</td>
<td>1.06 km.</td>
<td>0.66 miles</td>
</tr>
<tr>
<td>1 sazen (fathom)</td>
<td>3 arshin</td>
<td>2.134 m.</td>
<td>7 feet</td>
</tr>
<tr>
<td>1 arshin</td>
<td>16 vershok</td>
<td>0.71 m.</td>
<td>28 inches</td>
</tr>
<tr>
<td>1 vershok</td>
<td>1/16 arshin</td>
<td>4.4 cm.</td>
<td>1.7 inches</td>
</tr>
<tr>
<td>1 dyuym (inch)</td>
<td></td>
<td></td>
<td>1 inch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pud (pood)</td>
<td>40 funt</td>
<td>16.38 kg.</td>
<td>36.1 pounds</td>
</tr>
<tr>
<td>1 funt</td>
<td>96 zolotnik</td>
<td>409.5 gm.</td>
<td>12 ounces</td>
</tr>
<tr>
<td>1 zolotnik</td>
<td>1/96 funt</td>
<td>about 4.26 gm.</td>
<td>1/3 ounce</td>
</tr>
<tr>
<td>1 oka (oko)</td>
<td>3 funt</td>
<td>1.23 kg.</td>
<td>2.7 pounds</td>
</tr>
<tr>
<td>1 kantar</td>
<td>132 funts</td>
<td>541 kg.</td>
<td>1,210 lbs.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Volume</th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
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<td>1 bochka (barrel)</td>
<td>40 vedro</td>
<td>about 480 liter</td>
<td>12.5 gal.</td>
</tr>
<tr>
<td>1 vedro (pail)</td>
<td>1/40 bochka</td>
<td>12.25 liter</td>
<td>3.25 gal.</td>
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<tr>
<td>1 chetvert' (quarter)</td>
<td>8 chetverik</td>
<td>about 210 liters</td>
<td>5.75 bu.</td>
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<tr>
<td>1 chetverik</td>
<td>1/8 chetvert'</td>
<td>26.24 liters, dry</td>
<td>3 pecks</td>
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<table>
<thead>
<tr>
<th>Area</th>
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<tr>
<td>1 square verst</td>
<td>104.16 desyatins</td>
<td>1.12 sq. km.</td>
<td>0.43 sq. mi.</td>
</tr>
<tr>
<td>1 chetvert'</td>
<td>1.5 desyatins</td>
<td>1.6 hectares</td>
<td>4 acres</td>
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<tr>
<td>1 desyatins</td>
<td>2,400 square sazhens</td>
<td>1.1 hectares</td>
<td>2.7 acres</td>
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<th>Money</th>
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<tr>
<td>1 Silver Ruble</td>
<td>0.35 Paper Rubles</td>
<td>(rate fixed in 1839)</td>
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209
## Place Names

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<td>Zaporozh'ye</td>
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<td>Olebski</td>
<td>Aleshki</td>
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<td>Arkhangel'sk</td>
<td>Novo-Arkhangel'sk</td>
<td>Arkhangelsk Novo-Arkhangel'sk</td>
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<tr>
<td>Berdyansk</td>
<td></td>
<td>Berdyansk</td>
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<tr>
<td>Berislav</td>
<td>Berislavl, Kyzikermen</td>
<td>Berislav, Kyzikermen</td>
</tr>
<tr>
<td>Bug River</td>
<td>Yuzhnyy Bug</td>
<td>Bug River Yuzhnyy Bug</td>
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<tr>
<td>Chernaya River</td>
<td>Chorgun, Biyuk-Uzen'</td>
<td>Chernaya River Chorgun, Biyuk-Uzen'</td>
</tr>
<tr>
<td>Donets River</td>
<td>Severnyy, Severkiy Donets</td>
<td>Donets River Severnyy, Severkiy Donets</td>
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<td>Novyye Dubossary</td>
<td>Dubossary Novyye Dubossary</td>
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<td>Kafa, Theodosia</td>
<td>Feodosiya Kafa, Theodosia</td>
</tr>
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<td>Grigoriopol'</td>
<td>Chernyy</td>
<td>Grigoriopol' Chernyy</td>
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<tr>
<td>Karasubazar</td>
<td>Belogorsk</td>
<td>Karasubazar Belogorsk</td>
</tr>
<tr>
<td>Kerch'</td>
<td>Pantikapei</td>
<td>Kerch' Pantikapei</td>
</tr>
<tr>
<td>Konskiye Vody</td>
<td>Konskaya River</td>
<td>Konskiye Vody Konskaya River</td>
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<td>Marianopol', Mariyanopol'</td>
<td>Mariupol' Marianopol', Mariyanopol'</td>
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<td>Molochnyye Vody</td>
<td>Molochnaya River</td>
<td>Molochnyye Vody Molochnaya River</td>
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<td>Nikitina</td>
<td>Nikopol' Nikitina</td>
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<td>Khadzhibey, Gadzhibey</td>
<td>Odessa Khadzhibey, Gadzhibey</td>
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<td>Orlik, Ogliopol', Orel Yekateriniskoy Shanets</td>
<td>Ol'viopol' Orlik, Ogliopol', Orel Yekateriniskoy Shanets</td>
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<tr>
<td>Orlov Government</td>
<td>Orel Government</td>
<td>Orlov Government Orel Government</td>
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<tr>
<td>Ovidiopol'</td>
<td>Adzhider</td>
<td>Ovidiopol' Adzhider</td>
</tr>
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<td>Rostov</td>
<td>St. Dmitriy Rostovskogo</td>
<td>Rostov St. Dmitriy Rostovskogo</td>
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<tr>
<td>Swastopol'</td>
<td>Akhhiyar</td>
<td>Swastopol' Akhhiyar</td>
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### Appendix II. Place Names (Cont.)

<table>
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<th>Used in Text</th>
<th>Other Names</th>
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<td>Akmechet'</td>
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<td>Tor</td>
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<td>Staryy-Krym</td>
<td>Eski-Krym</td>
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<tr>
<td>Taman'</td>
<td>Panagoriya</td>
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</tr>
<tr>
<td>Tiraspol'</td>
<td>Fort Srednaya</td>
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<td>Ural River</td>
<td>Yaik River</td>
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<td>Voznesensk</td>
<td>Sokoly</td>
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<td>Dnepropetrovsk</td>
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<td>Kramatorskii</td>
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<td>Port St. Yelizavet</td>
<td>Kirovograd</td>
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<tr>
<td>Yevpatoriya</td>
<td>Kozlov</td>
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</tr>
</tbody>
</table>
THE CLIMATIC RECORD OF NEW RUSSIA

1778 Grain harvest was good, about 3.7 fold.

1779 Grain harvest so good that grain exports were permitted. Yield reported as 2.8 fold.

1780 Harvets poor because of locusts and drought. The drought was so bad that even the bushes used for fuel failed to sprout. Grain exports were prohibited. Severe floods occurred on the Dnepr. Grain yields were reported as being 1.9 fold.

1781 Bad harvests reported in Novomoskovskiy circle, located in the basin of the Samara river.

1782 Grain yields reported as being 4.5 fold, but bad harvests occurred in Novomoskovskiy circle.

1783 A severe cold wave struck the Crimea just before Christmas, 1783.

1784 and 1785 No information.

1786 The harvests were good in some parts of the Crimea and bad in others. The winter of 1786-1787 was especially long and severe in the Crimea.

1787 The winter of 1787-1788 was so severe that temperatures dropped to -22.5°C in the Crimea, and many bays along the Black Sea coast of the Crimea froze over. The harvests of 1787 in the Crimea were good.

1788 No information.

1789 The grain yields were reported as being 1.7 fold. In the spring of 1789 the northern coast of the Black Sea opened late, indicating a long winter. Floods occurred in March. Harvests in the Crimea were poor.

1790 and 1791 No information.

1792 The grain harvest was "indifferent," causing a rise in the price of wheat at Taganrog.

1793 The steppe grasses were blooming in April. The route from Yelizavetgrad to Noyye-Dubossary was filled with verdant grasses.
A severe drought was observed in Yevpatoriya in April and May which killed the steppe grasses. Harvests were poor in Tauride and elsewhere in New Russia because of the lack of rainfall. The grain export, however, was large in spite of the poor harvests and locust plagues.

The winter of 1794-1795 was severe; much livestock was lost. Harvests were poor in the circles of Tiraspol', Voznesensk and Kherson. In November, 1795, the inhabitants of these circles were given permission to move elsewhere in search of food.

The early winter of 1795-1796 was very mild in Nikolayev and to the north of Nikolayev making travel dangerous because of the uncertain nature of the ice cover on the rivers. Plants bloomed in the Crimea until 6 February when a deep snow fell. The snow lasted throughout February but not a single severe frost occurred.

No information.

The winter of 1798-1799 was severe in the Crimea. It lasted from the beginning of October, 1798, to April, 1799. Northerly storms caused temperatures to drop as low as -22.5°C, and snow remained on the Yaylas until May 1799.

In the region of Kherson, Nikolayev and Ochakov the winter of 1798-1799 was warm; in January the steppes were covered with grasses. The last half of the summer was very dry and hot in the Crimea and elsewhere in New Russia. The harvests were so poor that a large portion of the population had to be fed by the government. Grain exports from Odessa were halted and the grain stored there was sold to the town's inhabitants. Famine was widespread.

The winter 1799-1800 was severe in the Crimea; the temperature, however, never fell below -12.5°C.

The harvest of 1800 "surpassed all hopes." The last half of the summer was very rainy in the Crimea, and in October storms along the coast destroyed the vineyards of the Crimea.

No information.

Large amounts of grain were exported from Odessa, suggesting a good harvest.

There was a shortage of 265,031 chetverts of grain for subsistence in Kherson government.
Appendix III. (Cont.)

1804
The harvest was good enough to permit grain exports and the accumulation of grain reserves in warehouses. The grain harvest in Kherson government was somewhat over six fold.

1805
Poor harvests and locust plagues caused the town of Odessa to purchase a large quantity of flour for distribution at reasonable prices to those inhabitants who were without food.

1806
The harvest exceeded all expectations.

1807
The winter of 1806-1807 was unusually warm with plenty of rain. The harvests were good.

1808
Blizzards occurred during the winter of 1807-1808. The government of Tauride reported a 4.8 fold grain harvest.

1809
The winter of 1808-1809 was one of extreme cold.

1810
The grain harvest was good.

1811 and 1812
No information.

1813
The winter of 1812-1813 was so severe that about half the livestock wealth of New Russia was lost.

1814
The winter of 1814-1815 was extremely cold.

1815, 1816 and 1817
Large grain exports from Odessa suggest that harvests were good.

1818
Almost fifty ships and many lives lost from spring floods on the Dnepr.

1819
No information.

1820
The government had to feed a large number of people especially in the steppes of the Crimea because of bad harvests and locust plagues. Catastrophic floods in the spring inundating many towns. More than 100 residences were destroyed in the town of Yekaterinoslav alone. The floods on the Dnepr were the worst since 1780.

1821
The government had to feed a large part of the population especially in the steppes of the Crimea because of bad harvests.
Appendix III. (Cont.)

1822  The winter of 1822-1823 was very severe in the Crimea: the rivers froze, snow fell to a depth of two feet, temperatures dropped to zero Fahrenheit and much livestock died in the Crimea steppes.

1823  The winter of 1823-1824 was very mild.

1824  The harvest was unusually poor.

1825  The winter of 1824-25 began very mildly; flowers were blooming before Christmas in Odessa. Frosts began on 12 January 1825 and a severe winter lasted until the end of March.

1826  No information.

1827  The winter of 1826-1827 was exceptionally warm and hardly any snow fell.

1828  This was an unusually productive year. The winter of 1827-1828 was surfeited with snow and frosts.

1829  In December 1829 the temperature fell to -26°C in Nikolayev and to -30°C in Yelizavetgrad. The country from Nikolayev to Yelizavetgrad was "one unvaried sheet of snow" in December, 1829.

1830  The harvest were exceptionally good. The winter of 1830-1831 was extremely moderate.

1831  This was a fruitful and productive year. The winter of 1831-1832 was extremely moderate.

1832  A year of bad harvests.

1833  The winter of 1832-1833 was very moderate. A severe drought occurred in summer causing harvest failures. Odessa was so short of grain that it had to import over 42,000 chetverts from abroad.

1834  The winter of 1833-1834 was very mild. Bad harvests caused a famine in Odessa.

1835  The winter of 1834-1835 was very mild. Harvests were very bad.
Appendix III. (Cont.)

1836
The winter of 1835-1836 was very mild.

1837
The year was remarkable for its humidity. Harvests were good.

1838
The winter of 1837-1838 was unusually long, cold and wet. The harvests were very good.

The climatic record shows that the following years were ones in which poor harvests were recorded: 1780, 1781, 1789, 1792, 1794, 1795, 1799, 1803, 1805, 1820, 1821, 1824, 1832, 1833, 1834, and 1835. Years of good or very good harvests were: 1778, 1779, 1782, 1800, 1804, 1806, 1807, 1808, 1810, 1823, 1829, 1830, 1831, 1837, 1838. Probably the years 1815, 1816 and 1817 also were ones of moderate or good harvests. This means that during the sixty year period 1778 - 1838 sixteen years were known to have had bad harvests, and fifteen to eighteen years good harvests.
<table>
<thead>
<tr>
<th>Year</th>
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<tr>
<td>1778</td>
<td>Skal'kovskiy, Opyt</td>
<td>11 p. 92</td>
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<tr>
<td>1779</td>
<td>Skal'kovskiy, Khron.</td>
<td>1 p. 137, 140; Opyt, 11 p. 92</td>
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<td>1780</td>
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<td>Khron.</td>
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<td>Druzhinina</td>
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<td>1781</td>
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<td>1782</td>
<td>Skal'kovskiy, Opyt</td>
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<td>1783</td>
<td>King</td>
<td>p. 217</td>
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<td>1786</td>
<td>Pallas, Bemerkungen</td>
<td>11 p. 382; Druzhinina, pp. 134-135</td>
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<td>1787</td>
<td>Pallas, Bemerkungen</td>
<td>11 p. 383; Druzhinina, p. 134</td>
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<td>Golovachov</td>
<td>pp. 143-144; Druzhinina, p. 208</td>
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<td>1792</td>
<td>Pallas, Travels</td>
<td>1 p. 493</td>
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<td>1793</td>
<td>Reimers</td>
<td>1 pp. 36-37, 53</td>
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<td>1794</td>
<td>Reimers</td>
<td>111 pp. 21, 26; Pallas, Travels 11 p. 504; Druzhinina, p. 209</td>
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<td>Skal'kovskiy, Khron.</td>
<td>1 pp. 236,241-242; 11 pp. 108,299; Shmidt, 1 p. 62</td>
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<td>1796</td>
<td>Pallas, Bemerkungen</td>
<td>11 p. 383; Guthrie, p. 235</td>
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<td>1800</td>
<td>Skal'kovskiy, Khron.</td>
<td>11 p. 27; Clarke, 1 pp. 581-582; Pallas, Bemerkungen 11 p. 383</td>
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<td>1802</td>
<td>Lyall</td>
<td>1 pp. 163-164</td>
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<td>1803</td>
<td>Bagaley</td>
<td>p. 102</td>
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<tr>
<td>1804</td>
<td>Bagaley</td>
<td>p. 102; Lyall I p. 166; Skal'kovskiy, Khron. 11 p. 103</td>
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SOURCES FOR THE CLIMATIC RECORD OF NEW RUSSIA (Cont.)

1805  Shmidt, II p. 836; Skal'kovskiy, Khron p. 107.
1806-1807  Shmidt, I p. 375; Skalikovskiy, Khron, II p. 108, 121.
1814-1815  Shmidt, I p. 375.
1815, 1816, 1817  Shmidt, II, pp. 572, 837.
1818  Skal'kovskiy, Khron. II p. 272.
1820, 1821  Skal'kovskiy, Khron. II pp. 299, 290.
1822-1823  Lyall, I p. 324.
1831-1833  Skal'kovskiy, Op'y 11 p. 37, 308; Op'y 1 p. 111;
Shmidt, I p. 377; 11 p. 839;
Kohl, pp. 471-472.
1834  Ribas, p. 97.
Shmidt, 11 p. 575, I p. 375, p. 377;
Kohl, p. 471.
Note on Sources

Travelers' Accounts

James E. Alexander was a young British army officer who traveled, at his own expense, through New Russia to observe the Turkish War of 1828-1829. On his return from the battlefields, he was placed in quarantine in Sevastopol'. The conditions under which he was then forced to live were horrid. Alexander moved fast, but he was an accurate observer.

Edward Daniel Clarke was a world traveler of considerable fame who visited New Russia in 1800. Unfortunately, he was harassed by Paul I's police and did not receive the cordial welcome among the Russian nobility that he had expected. This may have been the reason why he was extremely critical of the Russians. Later travelers commented extensively on Clarke's book and pointed out the mistakes he made. This criticism and the author's own study show, however, that Clarke's bias did not extend to his descriptions of places he visited and the facts he obtained. His conclusions and comments are suspect, but his observations and facts are very reliable. He apparently had some medical background. The suspicions the Russian police entertained about Clarke were probably justified since he obtained in some undisclosed fashion a secret map of Sevastopol' and information on the Black Sea Fleet which he delivered to the British Admiralty. How he procured this information is unknown, but a sound guess would be that he obtained it from a disgruntled British officer serving in the Russian navy. Portions of Clarke's work were written by other British travelers.
Lady Elizabeth Berkeley Craven was a notorious figure in late eighteenth century British society because of her blatant infidelities to her first husband. This social fame caused her book to be widely read by later travelers. Her book actually consists of letters she wrote to her lover during a trip through New Russia in the summer of 1786. For the most part she reported what she saw rather accurately; unfortunately, she didn't see very much. See Broadley for her biography.

Mrs. Maria Guthrie was the French wife of Dr. Matthew Guthrie, an English physician to the court of Catherine the Great. She traveled in New Russia from 1795 through 1796 in order to improve her health and spent considerable time in Nikolayev living with the family of Admiral Nikolay Semenovich Mordvinov, then commander of the Black Sea Fleet. She was particularly attracted by Mordvinov's wife who was the sister of the British general Cobley, then in Russian service. She reported that Mordvinov spoke English "like a native" (Guthrie, p. 11). Her book consists of letters which she wrote to her husband. Although Mrs. Guthrie was mainly interested in ancient Greek monuments, she carefully recorded everything she saw and apparently reported many things that she learned from the Mordvinovs. She evidently knew P. S. Pallas. Dr. Guthrie was the author of a famous article on the Moscow plague of 1771 (Mullet, p. 320).

Karl Ivanovich Gablits (Hablitzl) was vice-governor of the Crimea and a close personal friend of P. S. Pallas. Potemkin asked him to write a geography of Tauride, and he did so based on his own personal travels, observations and on the information he obtained from others. Hablitzl made frequent comments on the economic potential of the Crimea. His work
was published in several translations, but without any indication of the fact that Hablitzl was the author. Most of his writing was done during the period of one month while he lived in a sod hut.

Mrs. Mary Holderness lived in the village of Karagoz in the eastern Crimea from 1816 to 1820. Karagoz is located about five miles east of Staryy Krym in the valley of an intermittent stream. Mrs. Holderness was an extremely astute observer and confined herself to describing what she saw and heard with great accuracy. Her reasons for living in Karagoz have not been satisfactorily explained. She accompanied her husband and had her children with her and enjoyed contacts with many high level Russian officials. A good guess would be that the Holderness family stayed with a Mr. Arthur Young who owned a considerable estate at Karagoz. Young was described as a "great agriculturalist" (Alexander, p. 200).

Xavier Hommaire de Hell was a French engineer invited to New Russia by governor-general M. S. Vorontsov to study deposits of iron ore and coal. He traveled extensively throughout New Russia between 1838 and 1842 and was particularly interested in foreign trade and collected trade statistics in the various towns. As a source he appears reliable. Large portions of his book were evidently written by his wife.

George Hume was an Englishman who came to New Russia as a young man shortly after the Crimean War and stayed there for thirty-five years. He established a business selling agricultural machinery. His best customers in the early years were the German colonists of the Molochnaya river valley. Later he moved to Kiev where he built a factory and became a person of some prominence. The best parts of Hume's book are the first chapters describing his initial impressions of New Russia.

* There is no evidence that this was the famous Arthur Young. However, it is conceivable that he received this estate as a gift from the Russian government. (Dictionary of National Biography, XXI, 1277).
J. O. King is the only author's name given in a little book entitled Observations on Russia and the Crimea, With Observations on the Climate of Russia by J. G. King published in 1788 in Leipzig. King's contribution to the book is minor. The valuable portion consists of a series of unsigned articles. One of them is by a participant in the invasion of the Crimea in 1771 and another is by an army officer, obviously a Russian, who was in the Crimea in 1783. An additional article is ascribed merely to an experienced political commentator, but it contains a penetrating and highly accurate analysis of the motives behind Russia's conquest of the Crimea. These articles appear to be quite authentic. They are probably unsigned because the authors were reluctant to reveal their true identities and face possible Russian displeasure.

J. G. Kohl was a German who visited New Russia during the summer of 1838. He was young, energetic, spoke Russian and had an attractive personality. He got off the usual tourist routes and talked with fishermen, sheep herders, cow hands, settlers and many German colonists. In one summer he acquired an excellent knowledge of both the physical and human problems faced by the peoples of New Russia. In addition to his keen ability as an observer, Kohl also wrote extremely well and gives an extremely accurate and colorful picture of those parts of New Russia he visited.

Robert Lyall was an English doctor who lived in either Moscow or St. Petersburg for many years. Because he spoke and read Russian well, he was asked to accompany some British travelers during a trip through New Russia in the early 1820s. Lyall prepared thoroughly for his trip by reading everything he could find in Russian and in other languages that concerned New Russia. He collected and analyzed information while he was
traveling in New Russia and compared what he saw and learned on the spot with what he had previously read. He repeatedly found gross errors in the official statistics. Lyall is an excellent source, not only for his observations but also for his comments on other sources.

Laurence Oliphant was a callow Englishman who went to Russia originally to do some salmon fishing in the White Sea, but changed his mind and instead traveled down the Volga and Don and through New Russia in the autumn of 1852. He quickly published his notes after returning to England because of the widespread interest in New Russia which developed with the opening of the Crimean War. Oliphant is a good source primarily because he illustrates the impression that mid-nineteenth century Russia made on a person accustomed to the comforts of industrialized life in Western Europe. His descriptions of the steam boats and other vessels on the Volga are excellent.

Petr Semenovich Pallas was a German botanist who came to Russia at an early age and traveled extensively in Siberia and New Russia as the leader of scientific expeditions. Pallas was an extremely astute and accurate observer who knew plants and geology very well. His book on the Crimea was written during the latter years of his life when he had fallen under the disfavor of Paul I and reportedly had family problems. He married a lady much younger than himself whose reputation was said to have been somewhat less than desirable. His daughter by a previous marriage had had difficulties; her husband evidently committed suicide. These problems may have influenced some of Pallas' conclusions. In spite of living in Russia many years, Pallas evidently never learned to speak Russian. He held various positions of responsibility in the government administration and was frequently consulted on economic matters. He appears to have been rewarded
rather handsomely for his services. For more information see: Clarke, p. 441-444, 467, 559, 571, 585 and Lyall, I, p. 249-251.

Louis Philippe Le Comte De Segur was French Ambassador to Russia during the late 1780s. He negotiated a treaty permitting French merchants to establish themselves in Kherson. Segur was young, vigorous and personable and got to know Potemkin rather well. The most useful portion of his memoirs is that which records his observations during Catherine the Great's famous journey through New Russia in 1787.

Pavel Sumarokov was a judge in the Crimea in 1800-1803 and was also a member of the commission appointed to supervise the Crimea evidently in 1783. His book is an attempt to be literary rather than factual. The places he visited are accurately described, but he seems to have shown extreme literary license in giving data from places he did not visit. Sumarokov's book is very valuable but it must be used with caution. This writer was not able to determine whether or not Sumarokov was related to the famous eighteenth century writer of the same name.

Heinrich C. Von Reimers was a Baltic German, educated in Germany and evidently a resident of Reval. He was an interpreting secretary in the large Russian delegation sent to Dubossary to ratify the treaty of Yassy in 1793. After the treaty was signed he served in the Russian Embassy in Constantinople. He traveled twice through New Russia, both times with a small group of friends, and went wherever he pleased. Paul I deprived him of the order of knighthood he had received from Catherine the Great. His book is essentially a reproduction of letters he wrote to a friend during his travels. Reimers was very perceptive and he also had
many friends in the Russian administration of the Crimea. As a Baltic German he was able to take a rather unbiased attitude towards what he saw. Some caution must be exercised in distinguishing between the original letters and information Reimers added later.

Vasily Fedorovich Zuyev was one of the few scientific travelers who was a Russian. He visited New Russia in 1781 and 1782 and described the things he observed very carefully. Zuyev, unlike the German travelers, knew and wrote Russian well. His book is short, easy to follow and pleasant to read. The portion in which he describes the different climatic zones of New Russia could well be considered a classic in geographic analysis.

Interpretive Sources

D. I. Bagaley was a Ukrainian patriot who gave a series of public lectures in Nikolayev in 1888 which were revised and published in Kiev in 1889 under the title The Colonization of the Region of New Russia and Its First Steps Toward Culture. Bagaley argued with great feeling that much of the colonization of New Russia occurred outside the scope of government planning and for this reason received but scanty attention in the historical records. He emphasized the importance of the Zaporozhian Cossacks and sought to correct the hostile attitude which some earlier writers had taken toward them. His book contains an extensive and useful bibliography.

Viktor Filippovich Golovachov was an historian who wrote a history of the Black Sea Fleet prior to the Crimean War. His book, The History of Sevastopol' as a Russian Port, published in St. Petersburg in 1872, is
based on materials obtained from naval archives and from the personal papers of some noble families. It constitutes a reliable, factual history, although Golovachov probably overemphasized the significance of some naval operations.

Captain V. Pavlovich wrote the General Staff survey of Yekaterinoslav Government published in 1863. Pavlovich concentrated his efforts on describing Yekaterinoslav Government in the 1850s and included little information on historical developments. His work is not nearly as useful as Col. A. Shmidt's volumes on Kherson Government, but it is nevertheless extremely important because it is almost the only book available that discusses the northern half of Yekaterinoslav Government.

A. Shmidt, a Lt. Colonel of the General Staff, wrote two volumes on Kherson Government as part of a survey of all the governments of Russia undertaken by the Imperial General Staff. Shmidt's two volumes are very comprehensive and contain a wealth of information -- they are 1,475 pages long not counting appendixes! Shmidt is the only writer who really understood the physical geography of the region and its implications for economic development. He seems to have studied everything that was available in Russian, but apparently did not have much access to sources in other languages. Shmidt must have possessed a superior intellect and capacity for labor, and of all the materials consulted in doing research for this dissertation his books proved to be the most important, comprehensive and reliable. For this reason, Shmidt is cited in the text more frequently than any other source.

Apollon A. Skal'kovskiy spent a lifetime in New Russia and was in actuality the official historian for the region, and as such had access to all the
local archives and statistical offices. For a time he was head of a
government statistical bureau. Skal'kovskiy often recorded his own obser-
vations and reproduced much statistical and archival information. He was,
however, a very patriotic person and oftentimes glossed over or ignored
things that did not redound to the credit of the Russian nobility. For
this reason his writings must be supplemented with other sources. Two
of his books were consulted extensively: A Chronological Survey of the
History of New Russia, two volumes, Odessa, 1838, and An Attempt at a
Statistical Description of the Region of New Russia, two volumes, Odessa,
1850. Where Shmidt and Skal'kovskiy disagree on statistical information
for the period 1830-1860, Shmidt appears to be the more reliable. Skal'-
kovskiy also wrote a History of the New Sech', Odessa, 1846, which des-
cribes the last years of the Zaporozhian Cossacks and is based on archival
materials many of which are no longer in existence.
APPENDIX V: THE MAJOR LEADERS OF NEW RUSSIA

A factor which helps explain why Russia succeeded in conquering, settling and developing New Russia is the fact that many of the region’s leaders were men of genuine talent who had direct access to the reigning Monarch. Grigory Aleksandrovich Potemkin, the favorite and perhaps even the husband of Catherine II, was almost the dictator of New Russia from 1775 to his death on 5 October (16 October) 1791. After his death, Catherine’s new favorite, Platon Aleksandrovich Zubov, became governor-general of New Russia. Paul I acceded to the throne in 1796, and, although he maintained the administrative homogeneity of New Russia, he failed to appoint a governor-general of real stature. This deficiency was corrected by Alexander I who made his close, personal friend, the Duke Emmanuel du Plessis Richelieu, governor-general of New Russia from 1803-1814. The active and talented Richelieu enjoyed the privilege of corresponding directly with Alexander I. His friend and successor, Count Louis A. de Langeron, seemed to have less authority than Richelieu but was still close


3. Most but not all of this correspondence was published in 1886. See A. E. Richelieu, Dokumenty i Bumagi o ego zhizni i deyatelnosty, 1766-1822, Imperatorskoye russkoye istoricheskoye obshchestvo, Sbornik, Vol. 74, St. Petersburg, 1886.

4. For Langeron’s biography see Skal’kovskiy, Khron., II, 250-252.
to Alexander I, and continued as the head of New Russia until 1822. He was followed by a member of one of the most distinguished Russian families, Mikhail Semenovich Vorontsov, a well-educated, articulate and active noble who was governor general for twenty years. Where Potemkin built Yekaterinoslav, Kherson, Nikolayev and the Black Sea Fleet, Richelieu and Langeron concentrated on Odessa, and Vorontsov made the southern coast of the Crimea into a resort area and a region of wine production, introduced steam boats, and began developing iron and coal deposits.

There were others of talent and reputation who contributed to the history of New Russia. The British admirals Samuel Greig, his son, Aleksey Samuilovich Greig, and Foma Fomich MacKenzie contributed greatly to the creation of the Black Sea Fleet and the naval base of Sevastopol. Nikolay Semenovich Mordvinov, an indifferent naval commander but an excellent administrator, educated in England, brought the reputation of another prominent Russian family to New Russia. Fedor Fedorovich Ushakov made his career as a brilliant naval commander while operating in the Black Sea, and Aleksandr Vasilyevich Suvorov displayed his military genius at the walls of Ochakov and Kinburn. John Paul Jones served in the Black Sea Fleet for a short time.

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5. For a source in English which indicates the role played by British officers in the Russian navy, see Mairin Mitchell, The Maritime History of Russia 1648 - 1948, London, 1949, pp. 114, 124. Golovachov discusses in great detail the foreign officers of flag rank who served in the Black Sea Fleet without any bias.
APPENDIX VI

EXPANSION OF GRAIN PRODUCTION IN THE FOREST STEPPES

During the eighteenth century, and especially in its second half, Russian settlers occupied and developed the forest steppes, which were then known as the Black Soil Region because of their podzolized chernozems and fully developed chernozems. This region became the principal source of marketed grain. Evidence for this can be found in: P. I. Iyashchenko, Ocherki agrarnoy evolyutsii Rossii, Leningrad, 1924, pp. 96-100; Tooke, I, 26-34, 61; S. I. Pleshcheev, Obozreniya Rossii v nyneshnem ego novoustrayennom sostoyanii, St. Petersburg, 1786, p. 5-7; and in the following travelers' accounts:

P. S. Pallas, Travels through the Southern Provinces of the Russian Empire in the years 1793 and 1794, second edition, London, 1812, I, 27;

M. Guthrie, A Tour Performed in the Years 1795-6, through the Tauride or Crimea, London, 1802, p. 3-4;

J. G. Georgi, Bemerkungen einer Reise in Russischen Reich in den Jahren 1773 und 1774, St. Petersburg, 1775;

E. D. Clarke, Travels in Various Countries of Europe, Asia and Africa: Part the First Russia, Tartary and Turkey, second edition, London, 1811, p. 190-197;

R. Iyall, Travels in Russia, the Krimea, the Caucasus and Georgia, London, 1825, II, 291-292, 299, 304;


For a very readable account of a noble family who migrated to the western forest steppes, see: Serghei Aksakoff, Years of Childhood, London, 1923.
A map showing the region producing grain for market in the eighteenth century is contained in: Ministerstvo geologii i okhrany nedr SSSR, glavnoye upravleniye geodesii i kartografii, Atlas istorii SSSR dlya sredney shkoly, Moscow, 1960, II, 3.
APPENDIX VII: MAP SOURCES

There was insufficient space to indicate sources on the maps themselves. The base map used was taken from Druzhinina, figure 3, and modified.

Figure 1: New Russia after 1796, is taken from figure 3 in Druzhinina and from word description in Skal'kovskiy, Khron., II, 5.

Figure 2: The Crimea, is modified after the fold-out map at the end of Semenov-Tyan-Shanskiy, Glavnoye upravleniye geodezii i kartografii, "Yug yevropeyskoy chasti SSSR," 1:1,000,000 (Moscow, 1955), and "karta yuzhnogo kryma," 1:200,000 Leningrad, 1936.

Figure 3: Government Boundaries after 1803. Boundaries are drawn in accordance with the fold-out maps at the end of Pavlovich, Shmidt (vol. II) and Semenov-Tyan-Shanskiy.

Figure 4: The Conquest of New Russia. The fortified lines are drawn from information in Skal'kovskiy, Khron., I, 4 (Ukrainian Line), I, 84 (Dnepr Line), and the map "Voyny Rossii v 1733 - 1743 godakh" in: Akademiya Nauk SSSR Institut istorii, Ocherki istorii SSSR period feudalizma. Rossiya vo vtoroy chertverti XVIIIv., edited by A. I. Baranovich, Moscow, 1957. Other administrative boundaries are taken from sources cited in the text and from figure 1 in Druzhinina.

Figure 5: Physiographic Regions of New Russia. The boundaries of the physiographic regions are after Rikhter, fig. 64, p. 273.

Figure 6: Climatic Zones. This map is the author's own. It is supported by the following: the line dividing the forest steppe from the
wet steppe is justified in Rikhter, p. 215. It and the line separating the wet from the dry steppes are identical with those given by M. A. Solntsev in 1956 and V. P. Semenov-Tyan-Shanskiy in 1915. See: Fiziko-
geograficheskoye rayonirovaniye SSSR, edited by N. A. Gvоздetskiy and N. I. Mikhaylov, Izdat. Moskovskogo universiteta, 1960, maps 4 and 7, pp. 30-38. The difference between the coastal dry and the dry steppes is given in detail by Rikhter on p. 84. The boundary between the wet and the dry steppes can also be seen in Tulupnikov, p. 46 (explained on p. 48), where a distinction is made between "droughty" (zasushlivaya) and "very droughty" climatic zones in New Russia and on figure 42, p. 144 in Rikhter.
The term wet steppe itself taken from the textbook by Iyalikov, p. 389.
The division of the mountainous portion of the Crimea into three zones, the coastal region, mountains and the intermontane valley is recognized by all the authorities consulted (e.g., see Moisseiev, p. 8). The term intermontane valley used to include the valleys of the middle ridge is the author's own. As the text shows, these climatic regions have been recognized since the last two decades of the eighteenth century.

Figure 7: Mean Annual Precipitation. This is based on Rikhter, fig. 15, a map of precipitation for European Russia. Rikhter's map is more detailed than that in Tulupnikov, p. 32, but does not include the Crimea. Isolines for the Crimea generalized after Tulupnikov, p. 32.

Figure 8: Precipitation June - August. This is modified after Rikhter, fig. 16, a map showing summer precipitation in southern Russia. Note that the title for this map is corrected in Rikhter, p. 57.

Figure 9: Soils, follows Rikhter's fig. 35, p. 113, a soil map of southern Russia. The location of the carbonate chernozems is based on word descriptions in Rikhter, p. 116 and the map in Tulupnikov, p. 51.
Alluvial soils are not shown outside the boundaries of New Russia. A description of alluvial soils is in Rikhter, p. 120-121.

Figure 10: Population Density of New Russia - 1793 is derived from data given in Druzhinina, p. 198-200, and various other sources. Druzhinina's figures come from the atlas of 1793. This map must be considered preliminary. A better one can be made when V. M. Kabuzan is able to publish more accurate data on the population of individual circles (uyezd). See, V. M. Kabuzan, Narodonaseleniye Rossii v XVII-pervoy polovine XIX v., Moscow, 1963, footnote 85, p. 158.

Figures 11 and 12: Ports on the East and Ports on the West are taken from Glavnoye upravleniye geodesii i kartografii, MVD, SSSR, "Yug evropeyskoy chast SSSR," 1:1,000,000, Moscow, 1955.
APPENDIX VIII: SOURCES USED FOR CHAPTER III

The research for this chapter was completed during the summer of 1962. A great many modern sources were consulted, and the best one found was *Lesostep' i step' russkoy ravlny*, edited by G. D. Rikhter and F. N. Mil'kov, Akademiya Nauk, Institut Geografii, Moscow, 1956 (cited as Rikhter). This book discusses the physical geography of the Russian steppes in terms of physiographic provinces. The sections concerning New Russia are very detailed, and several maps are devoted to southern Russia. This was the most reliable source available as of the summer of 1962.

geodesii i kartografii SSSR Vsesoyuznyy kartograficheskii trest, "Karta yuzhnogo kryma," (1:200,000), Leningrad, 1936.

The portions of the following general texts that concern the area of New Russia were also consulted for supplementary information:

L. S. Berg, Natural Regions of the USSR, New York, 1955, in English, and Priroda SSSR, Moscow, 1955, in Russian;

L. K. Davydov, Gidrofrafia SSSR (vody sushi). Chast' I Obshchaya kharakteristika vod, Leningrad, 1953;

M. I. Davydova, et al., Fizicheskaya Geografiya SSSR, Moscow, 1960;

S. S. Kuznetsov, Geologiya SSSR, Moscow, 1960;

Ya. M. Levites, Istoricheskaya geologiya s osnovami paleontologii i geologii SSSR, Moscow, 1961;

N. I. Iyalikov, Geografiya SSSR, Moscow, 1955;

V. P. Tseplyaev, Lasa SSSR, Moscow, 1961, and others.

There is no significant disagreement among these sources on the location of the physiographic regions and the general geologic history of the area of New Russia that affects the subject matter of this dissertation. Sources do, however, give differing data on the climate of various points, resulting evidently from the use of varying periods of record. An attempt was made to utilize meteorological data from the early nineteenth century given in Shmidt, I, Pavlovich and Semenov-Tyan-Shanskiy. However, much of this information appears to be unreliable. An effort was made to determine whether or not a climatic change has occurred between 1780-1837 and the present. The sources available on the subject of climatic change disagree and no information suggesting a significant change was found. Therefore, the entire subject was deleted from the dissertation. Appendix III contains all the information on the weather of the years 1780-
...that could be found.

The best contemporary sources on climate are Zuyev, Pallas and Hablitzl for the latter eighteenth century and Shmidt and Pavlovich for the early nineteenth. These men had a personal interest in and knowledge of climate. Skal'kovskiy is reliable when discussing the weather of particular years, but his general climatic descriptions must be used with some caution. Kohl's discussion of climate (p. 464-473) is among the best written by a traveler.
During the period 1769-1791 Austria and Prussia were opposed to each other, while England and France were at odds over, among other things, the American Revolution. Austria and Prussia were in addition favorably inclined toward Russia because they had all participated in the first partition of Poland. Austria allied herself with Russia in order, among other things, to facilitate her own expansion into the Balkans. This was one of the reasons why Joseph II felt in 1787 that Russia's acquisition of the Crimea "was productive of immense advantages" to Austria.\(^1\) England was looking for Russian support in combating the disturbances in the American colonies\(^2\) from before 1776 to 1783 and was therefore unwilling to send its formidable fleet to fight for Turkey on the Black Sea.\(^3\) France, the only major power which wished to stop Russia, was unable to do more than give the Turks diplomatic support, military advice and subsidies because of severe losses sustained in the Seven Years War and because of hostile relations with England.\(^4\) Foreign intervention would probably have been most successful during the Russo-Turkish War of 1787-1791. Then, however, France was embroiled in internal difficulties which culminated in the revolution of 1789. England was anxiously...

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watching events in France and later became involved in a controversy with Spain (the Nootka Sound incident)\(^5\) which distracted attention away from the Black Sea. In short the powers that might have defeated Russia were divided amongst themselves and worried about other issues. This created a diplomatic situation which was favourable to Russia's expansion into New Russia and also, one might add, to the success of the American Revolution.

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