Volume 7

AGRICULTURAL RUSSIA
AGRICULTURAL RUSSIA
On the Eve of the Revolution

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PREFACE

Some of the ground covered by the present study has long been a favourite battlefield of conflicting schools of Russian economists and politicians. The strife over the Agrarian Problem, which had reached its climax about the time of the Revolution of 1905, far from having subsided when, in 1906, Stolypin came forward with his scheme of agrarian reforms, had actually increased in violence, and the new policy was fiercely assailed. Yet, while this struggle had been proceeding, the Russian countryside had been gradually settling down and, without paying heed to the clash of arms among the warring sections of the intelligentsia, was grasping at the opportunities offered it by the reform with eager hands. Forces have been, indeed, at work in the social and economic system of twentieth-century Russia, which were pulling the Russian peasant out of his rut and driving him forward, in the direction in which the way had been cleared for him by the agrarian legislation of Stolypin. It is these economic forces, which influenced the agricultural evolution of Russia in the early part of the current century that I shall endeavour to study in the present work, with a view to thus filling a gap in the extensive literature of the subject. I must be excused for dealing throughout rather with facts than with opinions. The conflicting views of such schools as the Narodniki, or the Marxians, are, indeed, better known to the public from numerous writings than the actual facts of the agricultural evolution of Russia and of its causes; but opinions change and are often disputed and disproved, while the forces of evolution do their work relentlessly and without fail, even when, in times of revolutionary upheavals, human will makes a determined attempt to divert them from their course.

Accordingly, I limit the scope of my work to the positive presentation of the evolution of Russian farming, as it appears to me from the study of the statistical and other records at my disposal, as well as from personal observation of the Russian countryside throughout the period dealt with below.

Various faults of omission and commission are sure to be found in this work and pointed out by its critics; and no one is better
aware of its many shortcomings than its author. The necessity of writing a monograph on this subject abroad, even with the abundant resources of the British Museum Library at hand, was responsible for many gaps. Though everything has been done to avoid, as far as possible, the use of second-hand data, and the whole groundwork of this study is the result of original research, it will be seen that, on many occasions, I have been compelled to quote figures and passages on the authority of earlier writers. Errors may also have crept in, for which the writer must bear the blame.

In conclusion, it is my pleasant duty to express my sincere gratitude to all those who have so willingly helped me in various stages of my researches. To the London School of Economics and Political Science and to its Director, Sir William Beveridge, I owe the possibility of submitting this book as my thesis for the Ph.D. Degree of the London University. To Baron A. F. Meyendorff and Mr. R. B. Forrester I am deeply indebted for their assistance and valuable advice throughout the time of its writing. To Sir Bernard Pares, Director of the School of Slavonic and East-European Studies, King's College, my thanks are due for the interest and encouragement I have always had from him in my work. To Mr. A. A. Rittich, formerly Russian Minister of Agriculture, who, as Deputy Minister during the period of agrarian reforms, had been mainly responsible for the planning and the actual carrying out of the peasant enclosure movement, I wish to express my thanks for his help in reading through the chapter on enclosures. To Miss Winefride Hunt, of the London School of Economics, and Miss Dorothy Wilford, of the Stockwell Training College, I am much indebted for the excellent maps made from my rough sketches. Last, but not least, I should like to thank my wife for her assistance in the large amount of statistical work involved in the compilation of the various tables which appear in this book.

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G. P.
RUSSIAN WEIGHTS AND MEASURES

One _dessiatin_ = 2·7 acres

One _verst_ = 3,500 feet = 0·66 mile

One _pood_ = 40 Rus. lb. (_funt_) = 36 Engl. lb

One _funt_ (Rus. lb.) = 0·9 Engl. lb.

RUSSIAN PRE-WAR CURRENCY

One _rouble_ = 100 _copecks_ = 2s. 3d. = 27d.
Agricultural Russia on the Eve of the Revolution

INTRODUCTION

Within the short space of some two decades immediately preceding the Great War was compressed one of the most important epochs in the history of Russian farming. Not even the period of the Emancipation of Peasants, far-reaching as have been its social, economic and political consequences, could be compared with these momentous few years in its effects on the agricultural industry, its organization and its progress.

It is, indeed, more or less generally assumed that the Act of 1861, which abolished serfdom, had inaugurated the capitalistic system in Russia. The beginning of the "industrial revolution" in Russia is accordingly, as a rule, referred to the 'sixties, and Russia, from that time onwards, is considered as living under conditions of capitalism, less advanced than those of her Western neighbours, but essentially the same. As a matter of fact, this view, by antedating capitalism in Russia, did much to confuse certain important aspects of her recent social and economic evolution and had the most disastrous effects upon the interpretation of those processes, which have been developing in the Russian countryside since the Emancipation. By the Manifesto of February 19, 1861, no such instantaneous transformation either was or, indeed, could be effected, and for several decades after the Emancipation Russia had lived under a hybrid sort of social and economic organization, in which survivals of medieval forms were rather incongruously blended with numerous anticipated elements of a future system, towards which the country was painfully feeling her way. And nowhere had the hybrid nature of the existing organization been more strongly felt than in the agricultural industry, on which the great bulk of the population depended for their living.

The basic fact of Russia's modern economic history was that when, in 1861, she crossed its threshold, she did so with only one
of the elements necessary for the building-up of the capitalistic system, namely free labour. The other essential element of that system, the one, indeed, from which its very name is derived, was practically non-existent. Russia possessed no capital worth its name, and this had to be created, before the new social organization, with its inherent advantages of economic efficiency, could come into being. The bulk of the very limited capital resources of Russia, in the middle of the last century, was engaged in internal trade and, under the conditions of trade and transport characteristic of the pre-railway age, was generally tied up in the business. In the first half of the nineteenth century, a beginning had, indeed, been made in the development of large agrarian capitalism, based on serf labour, in the black-earth belt of Russia, which could eventually have resulted in the accumulation in the hands of landowners of more or less considerable balances seeking investment; but this process of capital accumulation came to an end with the Emancipation which, by abolishing serfdom, struck at its very roots. Foreign trade, perhaps the most important single source of capital accumulation in medieval Western Europe, played too small a part in the economic life of Russia before the second half of the last century to be of any real service in this respect. The credit system was only just beginning to develop and could not be relied upon for decades to come for the concentration and making available for investment of the scattered savings and reserves of the general public and of business. Thus, in the 'sixties, Russia had plentiful hands and large natural resources, to whose development these hands could be turned; but she lacked capital to set them in motion. Throughout the rest of the nineteenth century, she had been struggling, often against great difficulties, with the task of accumulating or attracting capital and of building up a national industry, based either on the exploitation of her natural wealth or on the extensive home market ensured by her numerous population. The important problem was to start the process of capital accumulation, following the maxim that, given the first hundred, the second is easy to make. Such starting, however, necessitated the immediate investment of large sums into railways, factories, mines, steamers, etc. In a country rich in capital, the latter would of itself have found profitable investment in anything for which there was sure to be a pressing need; in Russia, with no balances eagerly on the lookout for investment, and with any prospects of attracting capital from abroad only in the case of the most obviously and immediately profitable concerns, the position was different. The only means
by which most developments, especially in transport and in anything pertaining to the countryside and to farming, could be started, was the direct intervention of the State, which planned them, provided the necessary funds, generally by borrowing abroad, and put the plans into execution or, alternatively, in the case of railways and of some important heavy industries, secured the co-operation of private interests, to whom it guaranteed either profits or orders. Accordingly, in the building-up of the economic system of modern Russia, the State had played a far greater part than had their own governments in the economic evolution of her Western neighbours: a phenomenon due, in the first instance, to the extreme shortage of capital in Russia, as a country up to the close of the nineteenth century almost entirely agricultural. With the constant assistance of the State, all through the second half of the last century Russia had been building up gradually, if slowly, the elements of capitalism and evolving an economic system powerful enough to support the social and political structure of a modern State. The immense size of the Russian Empire and its position in the foremost rank of the Great Powers involved financial burdens which, indeed, no purely agricultural country, devoid of the more profitable branches of national industry and trade, could possibly bear. While, however, this made industrialization imperative, it also imposed on Russia’s immature economic system a financial strain she could not easily bear without detriment to the rapidity of her progress towards ultimate economic transformation. The growth of modern capitalism, therefore, has been necessarily slow, and Russia’s actual transformation into a capitalistically-organized country had been delayed until the twentieth century. It was not until the last fifteen to twenty years before the Great War that the real “industrial revolution” in Russia started for good and began rapidly to transform the country and to do away, one by one, with those survivals of medievalism in the social, economic and political system which, hitherto, had appeared to some extent necessary or even indispensable. In the economic history of Russia, therefore, the early years of the twentieth century form an important chapter; a chapter, however, whose full importance in Russia’s economic development would be far better known and far more appreciated, had it not been cut short by the war and the revolution, which the war brought in its wake.

The Russian agricultural industry was one of the branches of the country’s economic life most profoundly affected by both the conditions of the period of transition and those of the “indus-
trial revolution," inaugurating the final triumph of modern capitalism. Farming, in any country whose population consists mostly of peasants, is more than a mere industry. It is, indeed, rather a mode of life and, as such, is so closely and intimately interwoven with other aspects of existence, with traditions and prejudices, that it does not easily lend itself to drastic modifications, except under pressure of urgent necessity, when its existing forms fail to answer the requirements of the situation. This explains the proverbial conservatism of the peasant mass, which is so difficult to move out of the rut in which it had stuck. Any established system of cultivation, accordingly, is liable to persist for centuries, as did the three-course cropping in most parts of Western Europe, which ruled the countryside for roughly a thousand years, from about the time of Charlemagne to the beginning, and in many cases down to the middle, of the nineteenth century. That system, along with open-field tenure, involving compulsory cropping and thus hindering individual progress, throughout Western Europe, had ultimately been defeated and replaced by modern scientific rotation in one or other of its numerous forms, by the triumph of modern capitalism. Generally speaking, the influence of capital upon farming was brought to bear in one of two ways, namely either by the direct investment of capital in the agricultural industry, involving, to a greater or lesser extent, the substitution of large estates for peasant holdings and of large capitalistic farming for peasant husbandry, or by the less direct means of the influence of the growing wealth of the towns and industrial centres on agriculture in all its forms, which left the actual distribution of land and the size of farms either wholly unaffected or only partially modified. The former of these two courses was followed by the agricultural evolution of England since the later part of the seventeenth century, when the capital accumulated in trade began to seek investment in landed property and agriculture, and farming entered the most brilliant period of its technical progress. In some parts of Germany, more particularly to the East of the Elbe, in the region of predominant patrimonial organization (Gutsherrschaft) and of serfdom, the evolution, since the close of the Thirty Years' War, had followed somewhat similar lines and involved wholesale evictions of peasants (Bauernlegen) and the substitution of large farming for peasant cultivation. In various constituent States of Germany, the results of this consolidation of holdings were different, according to the extent to which their several rulers were successful in protecting the peasants against evictions, but in some of them it had gone very far and had
involved the disappearance of a large part of the former peasant class. Thus, in Mecklenburg, like in England after the enclosures, the independent peasantry had been almost completely done away with, and their remnants converted into agricultural labourers on large estates. In those countries, in which the accumulated capital had been seeking investment, on a large scale, in the agricultural industry, it had succeeded, indeed, in greatly raising the standards of farming, but only at the expense of the more or less far-reaching extinction of that class of independent peasant farmers which is a source of physical and moral health for the nation. More beneficial, in the present writer's opinion, was the indirect influence of capitalistic development on the agricultural industry, exercised through an increased and more varied demand for agricultural produce, higher prices and the possibility for the farmer of investing some of his growing receipts in the improvement of cultivation. These being the natural effects of the growth of capital and of industrial and trading centres, it is by no means surprising that it was Holland, the foremost trading and capitalist country of the sixteenth and seventeenth centuries, that had been the pioneer of modern agriculture in Europe, and that it was from there that the English "spirited landlords" of the seventeenth and eighteenth centuries had imported many of the most important farming innovations. It was from Holland that Germany, in the second half of the eighteenth century, had learned the cultivation of clover and that many other improvements in arable and stock farming had spread. The early growth of trading capitalism in the industrial and commercial cities of Western Germany, on the Rhine and the Main, had certainly contributed to a great extent to the prosperity of the local peasant farmers, who, in that part of the country, formed the backbone of the agricultural industry. Wherever one turns, one can see that the stimulus that had roused the agricultural industry of Europe to new life, after a protracted period of stagnation which had lasted through the Middle Ages, originated from the capitalistic development of the countries concerned, whose growing wealth brought about a large extension of the agricultural markets and raised the prices of the products of farming. One can easily imagine, therefore, the position of the Russian agricultural producer, whether large or small, who, during the long period of transition which followed the abolition of serfdom, had been faced with conditions which neither permitted him to revert to a system of isolated natural economy, in which his ancestors had formerly lived, nor afforded any of the advantages of the still non-existent capitalistic organization, of which the
principal substance, namely capital, was still lacking. It is hardly surprising, indeed, that throughout the second half of the last century Russian farming had lived in a state of utter depression, and that an acute agrarian overpopulation had developed in many a locality of Russia. The only way out of the difficulties, with which Russia in general, and her agricultural industry in particular, had been faced, lay through a final triumph of capitalism over the hybrid system in which the country had lived since the Emancipation. That triumph, which manifested itself in a rapid expansion of industry and trade, in the accumulation at home of increasing capital resources and in the influx of large amounts of capital from abroad for investment in Russia, had been the outstanding characteristic of the early years of the twentieth century. Then, and more particularly during the decade immediately preceding the Great War, the "industrial revolution" in Russia was in full swing, and Russian farming, at last, felt on itself the effects of those stimuli to development, which had hitherto been lacking. The traditional forms of tenure and cultivation, inherited from the days of serfdom and of isolated natural economy, to which the Russian peasant had been clinging during the preceding decades, but which stood on the way of progress under modern conditions, had to be discarded, and the agricultural industry, in all its branches, had entered a stage of transformation, with a view to adapting itself to the requirements of the new economic era.

This period of transformation of Russian farming, which involved far-reaching changes in the systems of tenure, in the methods of cultivation and in all the economic organization of the Russian countryside, formed, indeed, one of the most interesting chapters in the economic history of Russia. Not only, moreover, do the developments of the years immediately preceding the war present considerable interest in themselves, but they throw much needed light on the evolution of Russian farming and agrarian relations in the course of the past few decades, whose interpretation had often appeared difficult and highly controversial. Only by looking back from the twentieth into the nineteenth century and projecting the pre-war developments against the background of Russia’s agrarian organization and evolution since 1861, it is possible to understand the characteristics of the Russian agrarian system, which to many observers and students have appeared as inherent peculiarities of the people, a manifestation of some essentially national spirit, but which, to the present writer, were no more than features of a passing stage of adaptation, doomed to disap-
It is my purpose in the present study to deal with the economics of Russian farming during the early part of the twentieth century, and to analyse, in the first instance, those economic influences which were at work and were bringing about its transformation. Starting from a sketch of the agricultural geography of European Russia, as it had been shaped by natural conditions, historical and economic factors and other influences, I shall proceed to the study of the organization and conditions of Russian farming during the period dealt with, and finally deal with Russia's agricultural production, her characteristics as an agricultural producer and the origins and disposal of her available surpluses of agricultural products.
PART I

THE AGRICULTURAL MAP OF RUSSIA

CHAPTER I

NATURAL CONDITIONS

The agricultural geography of a country is the product of the combined influence of natural conditions, historical development and economic factors. Natural conditions impose certain territorial limitations on farming in all its branches, and though the progress of agricultural science tends, indeed, to expand those boundaries, agriculture is so essentially dependent on the forces of nature that, in the main, the limits thus fixed may be considered as practically rigid. The elaborate design of the agricultural map, on which the hand of history never ceases to work, sometimes nursing a single detail for generations or even centuries, and sometimes bringing about drastic changes in the course of a few short years, has nature for its background. In any attempt to analyse and describe the agricultural conditions of Russia, a brief outline of the natural background on which they developed, is therefore absolutely essential.

European Russia is a vast plain, intersected only by slight undulations of the ground. Changes in the relief of the territory, which exercise so marked an influence on the character of farming in most other countries of Europe, play, therefore, practically no part in shaping the agricultural map of Russia. The natural environment to which farming has to adapt itself depends mainly on two elementary geographical factors, namely latitude and longitude, which determine climatic conditions and, through the latter, to a considerable extent, also the properties of the soil.

Except for a relatively narrow fringe along its Western frontiers, European Russia possesses a climate which can be described as typically continental. This character is especially pronounced in the South and the East of European Russia, owing not only to the geographical position of these parts, far removed from the influence
of Atlantic air currents, but also to the special atmospheric regime of the Russian plain. Indeed, the distribution of atmospheric pressure is such that, as a rule, the Northern and Western parts of the country are open mainly to the influence of South-Western winds, especially common during the winter, while the Southern and Eastern districts, protected from the West by the double barrier of the Alps and the Carpathians, are mostly swept by the arid winds of the Asiatic steppes. Accordingly, the severe winters of the North-West of European Russia are somewhat moderated by Atlantic air currents, as well as by the relative proximity of the Gulfstream. Both contribute to the abundance of moisture in the atmosphere, resulting in plentiful rain—and snowfall. While, on the whole, the abundant summer rains in the North-West may, to some extent, be harmful to agriculture, the presence of a thick coat of snow throughout the winter is favourable to farming in these regions, since it enables the cultivation to be extended very far North, into latitudes which, otherwise, would have been agriculturally barren. Indeed, according to the eminent Russian meteorologist and geographer, Professor Voieikov, "were it not for the cover provided by snow, the cultivation of winter crops would be impossible in two-thirds of European Russia."¹

The farther East, away from the moderating influences of the Atlantic air currents and the Gulfstream, the colder and the drier becomes the climate in the same latitudes. Roughly speaking, the area of European Russia over which the Atlantic atmospheric regime exercises a predominant influence does not extend beyond an imaginary line drawn approximately from the White Sea near Archangel, along the Northern Dvina, to some point in the Urals, between Viatka and Perm. The country East of this boundary climatically belongs rather to Asiatic than to European Russia. The central belt of Russia, down to the steppes, on which it borders in the South and the East, is also accessible to Western air currents, whose influence, however, naturally diminishes from West to East, the continental character of the climate tending to assert itself increasingly both in the amount of atmospheric precipitations and in the extremes of temperature.

In the steppes, subject mostly to Eastern atmospheric influences, climatic conditions are entirely different. In the course of the summer months, especially from June to August, conditions here are generally favourable to the predominance in the steppes of Western and South-Western winds, but their beneficial effects are

¹ *Russland*, von Prof. Dr. A. v. Krassnow und Prof. A. Woieikow, Leipzig & Wien, 1907; p. 149.
mostly confined to the Western part of the zone. Before these air currents reach the South-East, they have practically lost their moisture in the arid atmosphere of the sun-baked steppes. Yet, they come at the right time. Indeed, in the South, approximately up to the latitude of Kiev (51–52° N.), the greatest amount of rainfall is registered in June, while about 35% of the total annual precipitations fall in the course of the months immediately preceding the harvest. The absolute amount of precipitations, however, is far from sufficient, even in the most favoured parts of the zone. In the late spring the Southern steppes are often swept by strong North-East winds, which, originating in the cold wastes of Siberia, overrun the greater part of European Russia, but are especially violent in the vast open spaces of the South. Another enemy of the farmer in the steppes, more particularly in South-Eastern Russia, is the wind from the deserts of Central Asia and the Caspian shores which, though fortunately not frequent in summer, is disastrous in its effects on ripening crops.

The extreme South-East of European Russia, adjoining the Caspian Sea, removed as it is from Western atmospheric influences, climatically belongs rather to Asia than to Europe.

To sum up this preliminary outline of the atmospheric conditions of European Russia, whose closer consideration must be postponed till the description of the natural zones, it may be said that in every latitudinal belt, as it runs eastwards, the differences between the extremes of summer and winter temperatures tend gradually to increase, while the amounts of precipitations decrease continually. In other words, the farther East, the more continental becomes the climate.

Passing now to the properties of the soil in various parts of European Russia, it is essential to bear in mind that a division based on this principle, registering the transitions from one type of soil to another, corresponds very closely with that into belts according to climate and natural vegetation, thus giving an adequate outline of the natural background of the agricultural map of Russia. This connection between climate, vegetation and soil is due to obvious causes, but in Russia it is especially marked owing to the general flatness of the country, which contributes to the uniformity of conditions over very vast territories. In other countries, whose surface is broken by mountains, no such uniform belts would be met, horizontal and vertical zones being mingled and giving the general effect of patchwork to the map. In Russia, the natural zones stretch over thousands of square miles without interruption, going over into each other along their borders by imperceptible stages.
European Russia may be divided, according to climate, soil and natural vegetation, into the following principal zones, shown on map No. 1:

1. Arctic zone;
2. Zone of Northern Forests and Marshes;
3. Zone of Mixed Forests;
4. Middle-Russian (intermediate) zone;
5. Black-earth zone;
6. Zone of Southern Steppes;
7. South-Eastern Arid Zone.

The two mountainous districts on the Southern fringe of European Russia, namely the Crimea and the Caucasus, though they certainly possess very marked characteristics of their own, are too small to be considered as separate zones. Moreover, nationally, as well as with regard to their farming, they are distinctly non-Russian, and thus fall outside the scope of the present study, dealing with the agricultural industry of Russia proper only.¹

The Arctic zone, which occupies the extreme North of Russia, lies mostly beyond the limit of cereal cultivation. This limit passes approximately through the 65° N. in European Russia, the 59° in Siberia and the 51° in the Far East (Kamchatka). Only in some parts of the Murman Coast, exposed to the moderating influence of the Gulfstream, the cultivation of coarse barley is practised occasionally as far North as the 69°, actually beyond the Arctic Circle.² The farther East, the more severe the conditions, and the wider the zone inaccessible to the farmer.

The extreme North of the zone consists of Arctic barrens (tundra), with practically no vegetation, except mosses and lichens growing on a ground permanently frozen to depths varying from some 20 to about 42 inches. Owing to the frozen condition of the ground and the extreme scarcity of vegetation, the Arctic barrens have no soil in the strict sense of the word, the superficial layers of the subsoil being only slightly tinted with coarse humus to a depth not exceeding two inches or so.³

¹ The usual practice, however, is to consider these two mountainous districts as separate zones (Anisimov, Oganovsky, Viner and others). This, indeed, is the right course to take in attempting a detailed survey and dividing the country into relatively small natural zones, but does not fit into the scheme of the present work, which deals only with natural conditions in a general way, and with reference only to Great, Little, White and New Russia. Farming in the Baltic or Lithuanian provinces, as well as the native agriculture of the Caucasus, the Crimea or Central Asia, entirely different from that of Russia, is not considered here.

² Krasnov & Voieikov, op. cit., p. 151.

³ P. Ototzky, section on "Soil" in the volume Russia of the Russian Encyclopædia of Brockhaus & Efron.
To the South of the Arctic Circle, the barrens change into mossy marshes with sparsely scattered undersized Northern conifers, forming the Northern fringe of the forest belt, into which they go over gradually. The cultivation of the most hardy and quick-ripening cereals, such as barley and, occasionally, rye and oats, becomes possible, and is actually practised to some extent, mainly on forest clearings, approximately on the latitude of Archangel, about the 65–66° N. Here, South of the White Sea, begins the next natural zone—that of Northern forests and marshes.

The zone of Northern forests and marshes is a very wide belt, stretching approximately from the latitude of Archangel down to a line drawn roughly from Petrograd through Vologda and Nizhny-Novgorod to the South of the province of Perm in the Urals. Thus, the Southern boundary of this zone runs through about the 60° N. in the West and descends to the 56–57° in the East of European Russia. The natural conditions of the zone, though they vary considerably from North to South, with regard to climate and soil, decidedly represent variations of the same type. The average temperature of the year in Archangel and the North of the zone generally is about zero C., while on the latitude of Petrograd it is about +4°C. The period of vegetation in Archangel does not exceed 125 days; in the South of the zone it increases to about 155 days. From the agricultural point of view, this difference is one of enormous importance. The natural vegetation in the North of the zone is very poor. The forests consist mainly, if not exclusively, of conifers, growing on swampy ground covered with mosses, rough species of grass and an abundance of Northern berries. The conditions are not favourable to the formation of humus, and the natural fertility of the soil is accordingly low. Both climate and soil, therefore, make the North of the zone little suited to agriculture, and the latter is practically confined to the part of subsidiary occupation. In the South of the zone, namely the provinces of Petrograd, Vologda (Southern part), Novgorod (North-Eastern part), Kostroma, Nizhny-Novgorod (Northern part), Viatka and Perm, the natural conditions are more favourable to farming. Here, the area of mossy marshes is considerably smaller, while the richer vegetation and warmer climate allow the formation of more fertile soil. The predominant type of soil is, indeed, the same throughout the zone, but it differs in the proportion of humus and the thickness of the superficial layer enriched by it. The typical soil of the zone is known in Russia under the name of podzol: a word having no exact equivalent in other languages. The podzol is a thoroughly washed-out soil of rather coarse granular
structure, varying in its mineral contents according to the nature of the underlying rock. Its superficial layer, generally whitish-grey in colour, contains distinctive streaks of darker substance representing the humified strata. Owing to rapid washing-out, the mixing of humus with the basic soil, which is mostly sandy, is never perfect, and most of the humus gets quickly sucked in and dissolved in the lower strata. The result is that the soil in the strict sense, that is the layer containing humus, is very thin and lacks uniformity; it is accordingly poor. In the South of the zone, where the natural vegetation is richer, the climate less severe and the ground not constantly soaked in water, the quality of the podzol is better, and in many places it changes into a transitional kind of soil, known as podzolisty, intermediate between that of the Northern forests and the sand and clay loams of Central Russia. Though, agriculturally, even the South of the Northern zone cannot be considered as favourable, its great wealth in natural meadows and pastures make it well suited for grazing and dairy farming.

It is only after crossing the Southern boundary of the Northern forest zone that one enters the really agricultural part of Russia, in which farming is more than an auxiliary occupation of the people.

South-West of the line Petrograd—Vologda—Nizhny-Novgorod lies the mixed forest zone, which includes the greater part of the provinces of Novgorod, Yaroslav, Kostroma and Riazan, as well as the provinces of Pskov, Tver, Moscow, Kaluga, Vladimir, Smolensk, Vitebsk, Minsk and Mogilev and the Northern districts of the provinces of Chernigov, Kiev and Volynia. The natural conditions of this zone are far more favourable to agriculture than those of the North. The climate is moderated by Western atmospheric influences. The average temperature of the year varies from $+4^\circ$ C. in the North to $+7^\circ$ C. in the South of the zone, and the differences between the extremes of summer and winter temperatures are much less pronounced than in the Northern and Eastern parts of European Russia. The rainfall reaches 20 to 24 inches. The period of vegetation varies from 160 to 180 days, according to locality. The country is wooded, though to a much lesser extent than the Northern zone, and the ground, especially in the Western part of the zone, is often marshy. The nature of the marshes, however, except in the North of the zone, where mossy swamps are common, is different, since here the typical marshes are really peat-bogs, which can be turned by drainage into a soil of considerable fertility. The properties of the soil within the zone vary considerably, though the most typical
is still the podzolisty forest soil of varying humus contents and, accordingly, various fertility. Sands, clays and sand and clay loams of varying qualities are also well represented in this zone, especially along its Southern and Eastern fringes. The agricultural industry of this zone, favoured by the proximity of the principal markets for its produce, including both capitals—Moscow and Petrograd—is well developed and varied. Dairy farming here is developed to a greater extent than in any other part of Russia, and the standards of cultivation are superior to those of the other zones.

The next belt, bordering on the mixed forest zone in its Western half, up to about Nizhny-Novgorod, and from thence eastwards on the Northern forest zone, may be described as the middle-Russian zone, and possesses all the essential characteristics of a transitional or intermediate type. Here, patches of woodland lay scattered among vast open spaces, and the soil, by scarcely perceptible stages, changes from the poor podzol of the North, through a variety of clay and sand loams, into types approaching black-earth in constitution and fertility. The zone is not wide, especially in its Western part, where, in a narrow strip, it crosses the South of Volynia, the North of Podolia and the centre of the province of Kiev. On the left bank of the Dnieper it includes a large part of the provinces of Chernigov and Orel, the whole of the province of Tula, most of that of Riazan, the North of the provinces of Tambov and Penza, the South of the province of Nizhny-Novgorod and parts of the provinces of Simbirsk, Kazan and Ufa. At no point does its width exceed some 200 versets (about 130 miles). The natural conditions of the zone are very favourable to farming. The average temperature of the year varies from about +8 or 9° C. in the West to +4 or 5° in the East. The period of vegetation lasts from 180 to 200 days, the latter figure being reached in the Western part of the zone. The amount of rainfall is sufficient in the West, where it reaches about 20 inches and in the Centre, where it is about 16 inches, but in the East it does not exceed about 14 inches on the average. The typical soils are sand and clay loams, though the forest soils of Northern Russia (podzol) and the lighter varieties of black-earth are to be met occasionally in large patches penetrating deep into the interior of the belt. This zone, together with that of mixed forests, form the bulk of agricultural Russia outside the black-earth.

Immediately South of this zone begins the wide belt of black-earth, which, in its Northern half, still presents the familiar landscape of Middle Russia, while in the South it consists entirely of
open steppes, without a grove of trees to relieve the monotony of the limitless plains. The black-earth runs from the Bessarabian border in a North-Eastern direction in a belt of varying width. Thus, on the meridian of Kishinev it is about 350 versts wide (approximately 230 miles); at that of Kharkov it increases to 600 versts (400 miles); at the longitude of Tambov it reaches 700 to 800 versts (about 500 miles). On the left bank of the Volga it narrows down again to some 350 to 500 versts (230–375 miles), while in Siberia it never exceeds some 150 to 200 versts (100–130 miles).

The Northern boundary of the belt passes through the extreme South of Volynia and the North of Podolia, the South of the province of Kiev, Chernigov, Orel, Tula, Riazan, Nizhny-Novgorod, Kazan and Ufa. The Southern limits run through the South of the provinces of Kherson and Taurida (above the Perekop, joining the peninsula to the mainland), the middle of the Don Cossack territory, the South of the province of Saratov and the middle of the province of Samara. The dividing line between the Northern, wooded, half of the zone and the steppes runs, approximately, from the Dniester through the North of the province of Kherson to Poltava, Kharkov, the middle of the province of Voronezh and the North of the province of Saratov to the left bank of the Volga.

Climatically, the black-earth zone, especially in its Eastern part, is typically continental, the atmosphere being very dry and the extremes of temperature very pronounced. The lack of precipitations is felt, to a greater or lesser extent, throughout the whole belt, but it is especially acute in its Eastern half, the region of the worst droughts and famines in the history of Russia. The average rainfall for the whole of the zone is about 18 inches, the maximum being in the North and West (20–21 inches), and the minimum (14–15 inches) in the South and East. Snow, in these parts, is of little use to the land, since the thaw in the open steppes, with no forests to delay it and make the process gradual, is too rapid. The rush of water from the melting masses of snow is so violent that it is not allowed time to penetrate deep into the soil and to build there a reserve of moisture. Instead of being beneficial to the land, the thaw thus rather serves to ruin the soil by washing away its most fertile strata and digging enormous ravines down the slopes. The average temperature of the year in the West of the zone varies between +7 and +10° C., while in the East, in spite of hot summers, it is as low as +3° C., actually lower than that of the Northern forest zone on the latitude of Petrograd, where it is +4°. The period of vegetation is long, varying from 180
days at Voronezh, in the middle of the zone, to 200 days in the West, and as much as 220 days in the province of Kherson.

The so-called black-earth is a variety of soil which, though naturally not uniform in constitution and mechanical properties, is distinguished by the presence in it of a very high percentage of humus and the thickness of the humified strata, reaching to a depth sometimes exceeding 40 inches. The richest black-earth is found along the central axis of the zone, running from the South-West to the North-East, roughly along the boundary between the wooded half of the belt and the steppes. North and South of this central strip, the soil changes gradually, until ultimately it goes over into the clay and sand loams of Middle Russia in the North and the "chestnut-coloured" soils of the Black Sea shores in the South. According to the thickness of the humified strata and the percentage of humus they contain, the varieties of black-earth may be classified as follows: ¹

1. Northern black-earth, containing 3 to 6% of humus to varying depths, up to about 25 inches;
2. Rich black-earth, containing 6 to 10% of humus in the West and 10 to 13% in the East of the belt, to depths of 40 inches or over;
3. Common black-earth, with 6 to 10% of humus to depths reaching about 30 inches;
4. Southern black-earth, with 4 to 6% of humus to a depth of some 25 inches.

The nature of the soil makes for an exceptional fertility of this zone, but its great drawback is the dry climate, which is responsible for the paradoxical fact that no other part of Russia is more liable to failures of crops and to famines than this belt, commonly referred to as the "granary of Europe." This is especially the case in the Eastern half of the zone, where frequent droughts combine with primitive methods of farming to keep the yield far below the level justified by the quality of the soil.

In the South, the black-earth belt borders on the zone of Southern steppes, with their "chestnut-coloured" soil, representing an inferior variety of black-earth. This zone stretches along the Northern shores of the Black Sea, from the South of Bessarabia, through the Southern half of the province of Kherson, the province of Taurida, the South of the province of Ekaterinoslav, the South-East of the Don territory, practically the whole of the Kuban,

¹ Prof. A. N. Chelintzev, Agricultural Geography of Russia, p. 26; also P. Ototzky, op. cit.
except an isolated island of heavy black-earth in the East, the Western half of the province of Stavropol and the South of the province of Samara. In this zone, the continental characteristics of the climate, present in the black-earth belt in a less marked degree, are greatly accentuated. The summer heat is intense, while the winter, though short, is extremely cold and rough, with violent winds and very little snow to protect the crops. The average temperatures of the year vary from +6 to +7°C. The period of vegetation is long, reaching 225 days at Odessa, in the Western part of the zone. The amount of precipitations is very small, the average for the zone being only 12 to 13 inches. The belt is of great importance agriculturally, mainly on account of its production of high-grade wheat and barley, exported in large quantities abroad, but it resembles the Eastern parts of the black-earth zone in the extensive methods of cultivation generally used.

Finally, in the extreme South-Eastern corner of European Russia, on the Northern shores of the Caspian, lies the arid zone, forming an intermediate stage between the steppes of European Russia and the deserts of Transcaspia and Central Asia. This belt occupies the North-East of the Terek region, the East of the province of Stavropol and the province of Astrakhan. The climate of this zone is extremely dry, the average yearly rainfall varying from 8 to 12 inches, of which only 2 to 4 inches fall in the course of the summer. The difference between summer and winter temperatures is extremely marked: the average temperature of July being +24°C, while that of January varies from -6 to -18°C. The typical soil belongs to the variety known in Russia as "brown-earth," of which the principal mineral constituent is sand. The proportion of humus varies, but is generally rather low, owing to the scarcity of natural vegetation. The soil, however, is rich in nitrogen, which, wherever there is enough moisture, makes for great fertility and rapid ripening of plants.¹ Large tracts of land in this belt, next to the sea-shores, are covered with salt marshes. In its present condition, the agricultural importance of the belt is relatively small, but its productivity can be greatly increased by irrigation.

This short outline of the immutable natural characteristics of European Russia, as far as they affect the agricultural industry, shows how different are the conditions with which the farmer is faced in various parts of the country. It is on this natural background that the historical evolution of Russia and the play of

¹ P. Ototzky, op. cit.
economic forces which accompanied the development of the country from the ninth century of our era onwards, had drawn the contours of Russia’s agricultural map, such as it was on the eve of the war and the revolution.