

**AN ACCOUNT OF THE FORESTS
OF RUSSIA AND THEIR PRODUCTS
IN COMPARISON WITH THE
TERRITORIAL AREA AND WITH
THE POPULATION**

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P. N. WEREKHA

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BY

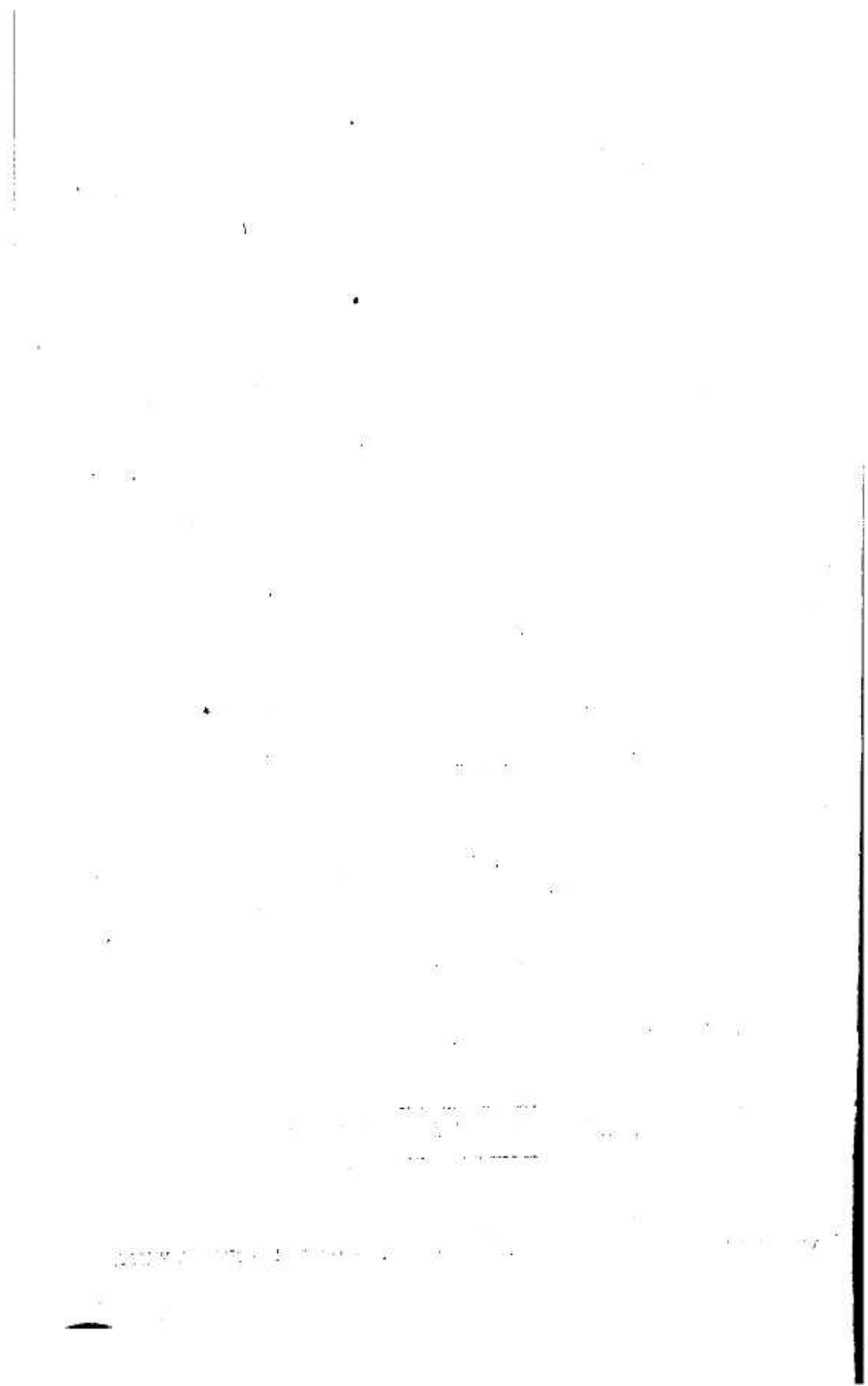
P. N. WEREKHA,

Member of the Forestry Society of St. Petersburg.

1873.

(TRANSLATED BY A. KIRKWOOD.)

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AVANT PROPOS.

It is the duty of the State to manage and exploit the public forests, systematically, by a trained staff of scientific officers and skilled workmen; and to encourage the development of their industrial resources.

The forests of Russia, exclusive of those of Central Asia, Caucasia and Finland, extend over a space of 177,159,000 square déciatines, or 193,544,105 hectares,* corresponding to nearly 40 per cent. of the total superficies of the Empire in Europe. Comparing the extent of country occupied by the forests with the number of inhabitants, there are about 2.03 hectares to each inhabitant.

If the proportion between the extent of forests and the population was everywhere uniform, it might be said that the requirements of the country were more than completely assured; but in Russia the forests are very unequally distributed; so that of the whole area of the forests there are 97,930,000 déciatines, or 106,964,797 hectares situated in the four governments of the north: Arkhangel, Vologda, Olonetz and Perm; which make about 65 per cent. of the total superficies of the forests and more than 26 déciatines (28,398 hectares) for each inhabitant. In the ten most thickly populated governments in the centre of Russia, those of Moscow, Riazan, Penza, Kalouga, Toulá, Tambow, Orel, Koursk, Voronége and Kharkow, the forests occupy only a space of 7,938,000 déciatines, or 8,670,330 hectares, which make about 18 per cent. of the total area, and scarcely half a déciatine or 54 ares for each inhabitant. In the seven governments of the south: Bessarabia, Kherson, Ecaterinoslaw, Taurida, Podolia, Poltava and Astrakhan, these proportions are still much less. In these seven governments of the south the wooded lands (1,795,000 déciatines, or 1,960,602 hectares) represent only 3½ per cent. of the total forest area and not more than 0.1 déciatine or 11 ares to each inhabitant. The very dense population of the ten governments of the Kingdom of Poland, which occupy a space of 122,266 square kilomètres, has, altogether, 3,053,000 déciatines or 3,334,663 hectares of forest, making 22.27 per cent. of the total area. In these ten governments there is but one-half a déciatine, or only 54.56 ares of forest to each inhabitant.†

Such an unequal disposition of forests, as well in regard to the total forest area of the Russian Empire in Europe, as to the population; the immense distances that separate the thinly wooded governments of the south; the rich forests of the northern governments; the want of water communications between many localities; and the cost of carrying wood long distances by rail;—all these circumstances have compelled the inhabitants to seek methods of reforestation,

* 40 hectares=99 acres, nearly. 1 déciatine=109,248833495648894 ares. † 1 are=119.6 square yards.

as well for building purposes as for fuel. And all the while, the people of the wooded districts of the north suffer more as they do not profit from their abundance of forests, because they obstruct the communication between localities so thinly populated.

As to territorial ownership the forests are distributed as follows:

The state forests occupy 110,726,000 déciatines or 120,966,840 hectares.

Forests appertaining to the mines of the Crown occupy 5,394,000 déciatines or 5,892,880 hectares.

The appanage forests of the Crown extend over 5,487,500 déciatines or 5,995,028 hectares.

Forests appertaining to towns, churches, monasteries, different institutions and private individuals extend over 55,551,500 déciatines or 60,689,354 hectares.

Private individuals and institutions owning forests have the absolute right to cut the timber and clear them up. It follows from this that all calculations and guarantees as to the future forest wealth of the country can only be based on those forests which are under the immediate guardianship of the Government, or special forest administration. This is why the guarantee of the needs of the population in forest products and traffic really depends upon the administration of the state forests by the Government.

Of the whole extent of the forests of Russia, the most considerable part, as well of the state forests, as those belonging to individuals, is situated in the northern governments. In Arkhangel the state forests represent 41 per cent. of the whole forest domain; in Vologda, 82 per cent.; in Olonets, 86 per cent.; in Perm, 43 per cent.; in the centre the proportion is 10 per cent., and in the south it is below 1 per cent.

VARIETIES OF TREES AND THEIR USES.

Russia in Europe, with few exceptions, possesses all the trees indigenous to western Europe. The principal of these that are the object of forest management, are the following:

The wild pine (*Pinus Sylvestris*). In the north, this variety pushes almost to the limit of vegetation. To the south, having been subjected to prolonged destruction for several centuries, the limits of its growth have gradually receded towards the north, and now form a broken line setting out to the west of Volhynia in the district of Ostrojki, about the 50° of north latitude. From there towards the south, the limit of vegetation cuts the Government of Kiew, Poltava and Kharkow, and falls in this last government to the basin of the Don, about the 49° of latitude. Farther on, the southerly limit of its growth turns sharply to the north of the Don, cuts the governments of Koursk, and of Orel on the Oka, crosses the Government of Kalouga, scarcely touches the Government of Toula, especially in the districts of Alexinsk and Bielewsk, describes a curve

round Toula, and by way of Riazan and Tambow, descends to the district of Bobrowsk, in the Government of Voronega, thence across the governments of Tambow, Penza, Saratow, Simbirsk, Samara and Orenbourg, extends to the Oural, cutting the river about the 51° of north latitude. In Russia this pine forms compact masses in many places, particularly on healthy lands and gravel, called Bór, or pine lands; but also grows freely intermixed with birch, or spruce, or larch, or poplar, and other species.

This pine is chiefly used for building purposes, as beams, planks and boards. A large trade in these materials is carried on between Germany, France and England. The pine for these markets comes from the Governments of Olonets, St. Petersburg, Tver, Novgorod, Orel, Smolensk, and the northern governments, and is known by the name of Riga pine. Large dimension pine is used for the masts of vessels and in the construction of ships for sea and river navigation, and very considerably for railway ties. Its use in the manufacture of casks is also of some importance. All the resin dispatched from the northern governments abroad, as well as that sold in the markets of the interior of the Empire, is carried in barrels made of this wood. It is also used in the manufacture of small wares and in carpentry, but in this respect it gives way to harder species of wood, as the oak, the ash, the maple, the birch and other broad-leaved kinds. In the peasants' houses of the north countries this pine, cut in thin boards and re-split is used in the manufacture of matches. Inferior qualities are used for firewood. The stumps, roots and knots make tar, pitch and turpentine, commercial articles for home use and export. For construction purposes this pine is exploited by cuttings from 100 to 150 years old, and by cuttings of about sixty years for fuel.

The Red Spruce fir (*Pinus Picea*: Lin. *Pinus abies du Roi*). This is the European spruce (*Picea Europæa*), which Ledebour distinguishes from the *Picea obovata*, which extends on this side and beyond the Oural, and is, in reality only a variety of the *Picea Europæa*. The northern limit of growth of the spruce is the same as that of the other *Conifera*. Its southern limits coincide with those of the pine; but in consequence of the destruction of the forests it has pushed back to the north in many places. Its southern limit, like that of the pine, commences on the west in the Government of Volhynia. Steering towards the east it cuts the Government of Kiew, and the northern part of Tchernigow, enters into Kharkow, turns like the pine into Toula, crosses Riazan, Tambow and Saratow, and scarcely touches Penza; then bends by the Volga and the Kama towards Oufa, then straight to the east to the chain of the Oural mountains.

The spruce is generally consumed in the interior of the country. Girders, joists and rafters are exported in inconsiderable quantities, and some boards, by Baltic and Black sea ports. In the interior of the country, in many districts, spruce is used in place of pine, for building purposes, and, although it does not

possess the solidity of pine, it is used by the middle classes because it is 35 per cent. cheaper. Spruce, like pine, is used in considerable quantities in the manufacture of laths and battens, and shingles. The roots, forming almost a right angle with the trunk of the tree, are made use of, in considerable quantities, as knees in the construction of river boats. For this purpose the trees are rooted up without being cut. In some localities the stumps, the roots and also the trunk are mixed with those of pine for the extraction of resin; but this medley considerably alters the quality of the product, and the tar obtained is used for greasing the wheels of the peasants' carts. It is not so very long ago that, for the purpose of extracting tar from spruce, it has been treated, in some localities, in the same manner as pine. This process is the same as that introduced under the administration of Colbert in 1658 by Swedish instructors in the Landes of France, for the gemmage and fabrication of tar from the maritime pine.

For the purposes of fuel spruce was used as well as pine, but being less valuable than pine, it was about 3 per cent. cheaper where it was cut in the woods. Spruce bark, in the northern governments, takes the place of lime-tree bark for the sheating of wagons and sledges; as a material for tanning, the bark is largely used in localities where willow or other trees richer in tan are scarce. Large forests are frequently entirely composed of this species of tree, especially in moist and argillaceous soils, but it is often mixed with other kinds of wood, as pine, birch, poplar, and in the north with the white spruce of Siberia. Spruce is exploited in the same order of cutting as pine. Siberian spruce (*Abies-Sibirica*), Ledeb (*Abies Pienta*), Forbes, forms forests mixed with common spruce, and pure, grand, massive forests, in some places, in the north and north-east, and beyond the Oural. Technically, the Siberian fir is equal in value to the European or silver fir, and is exploited in a similar manner, in the true light of economic forestry. The European fir (*Abies taxifolia*, or *A. pectinata*) flourishes in the western governments, near the Carpathian mountains.

The Siberian Larch (*Larix Sibirica*) extends over the north-east part of Russia in Europe, and farther in an eastern direction. Its limits to the west and south are denoted by a line commencing a little west of the Bay of Onega, on the White Sea, thence south to the district of Kargopol in the Government of Olonets and easterly across Kostroma to the district of Sémečovsk, in the Government of Nijni-Novgorod; then turns the Government of Kazan (where it is only found in isolated patches), cuts the Government of Viatka, and heads towards the Oural, by the northern district of Oufa. Over this expanse of country, almost entirely covered by forests, the supplies of larch are very considerable. Larch is dispatched abroad by the mouths of the Petchora and Mezene, and in the same way to Cronstadt for the uses of the Russian fleet. At present the use of larch is very limited, attributable, in part, to the difficulty of procuring it from ports situated on the Northern ocean. But the remarkable solidity of the wood of this species,

its flexibility, the large dimensions of the trees, and the important fact that the wood of the larch is rarely attacked by insects, all lead to the supposition that as time goes on, the larch will not occupy the last place among woods for naval construction. During recent years the Minister of Marine has taken from the forests of Arkhangel, 100,000 feet, or 2,832 cubic meters of larch annually. The larch in these northern regions grows very slowly, the soil being shale and the sub-soil stony. This is why, if timber of large dimensions is required, these forests can only be exploited at the age of 180 to 200 years. But when larch grows in a marly soil or a calcareous sub-soil its vegetation is much more rapid, and the quality of its wood superior.

The birch (*Betula alba*) is one of the most prevalent forest trees in Russia. Mixed with pine, Norway spruce, silver fir of Siberia, *Pinus cembra* (called also the cedar of the north), birch reaches almost to the limit of northern forest vegetation. It is found on the south at the 45° of north latitude. Isolated trees are found farther south, or groves arising from artificial cultivation. The tree grows in small quantity in the Crimea and the Caucasus, on the northern slopes of mountains, where pine and spruce are usually found. Sometimes it forms forests unmixed with other varieties, sometimes it is mixed with pine, and occasionally with spruce and poplar. Its principal use consists in the manufacture of small pieces of carpentry, as a material in carriage-making, and as firewood, for which purpose it is highly appreciated in Russia. The exterior bark yields by dry distillation the empyreumatic oil of birch, called pure "Diogott"; it is also used for tanning leather, particularly the kind known as Russian leather. The bark used for this purpose is stripped either from felled or standing trees; in the last case the operation is not essentially injurious to the trees, if carefully done without deterioration of the inner bark. In five or eight years the bark is renewed and can be taken from the tree again. Birch bark is also employed in making utensils of different kinds used by the peasantry instead of boxes, baskets and basins for dry articles as well as to hold liquids. In the northern districts, where the linden is not abundant, birch takes the place of the latter in the manufacture of "Lapti," a kind of shoe or slipper made of bark for the peasantry. Although birch bark lasts longer, and is less subject to decay, yet in drying it becomes brittle, and slippers made of it are less solid than those made from the linden or the willow.

Birch is exploited or felled as coppice, and high forest, in revolutions of thirty to sixty years. In forests composed of birch and coniferous trees, the first are exploited in two cuttings, whilst the conifers are cut only once if intended to be used for the purposes of construction.

The linden tree, lime-tree (*Tilia parvifolia*). Commencing in the most southern countries of Russia, the lime tree is found as far as Saint Petersburg and Lake Onéga. Setting out from there, its northern limits cut the governments of