

railway companies. The traffic at the port of St Paul in 1884 was—tons landed, 45,800; tons shipped, 13,300; passengers carried, 34,625. Two lines of steamers ply between St Paul and St Louis and intermediate points. The average season of navigation lasts six and a half months. The city has within its corporate limits, but removed some miles from the city proper, two colleges—Macalester (Presbyterian) and Hamline (Methodist)—both only partially endowed or supplied with buildings. There are twenty-two public school buildings, built at an aggregate cost of \$663,000. There are also several academies and seminaries under private or denominational management. The public park system of St Paul is as yet undeveloped, but an area of 250 acres has been secured near Lake Como to be laid out as pleasure-grounds. Rice Park and Smith Park are public squares in the central portion of the city, tastefully adorned with walks and shrubbery. The population of St Paul, according to the United States census, was 840 in 1850, 10,600 in 1860, 20,300 in 1870, and 41,473 in 1880 (males 22,483, females 18,990). According to the State census, it was 111,334 in 1885.

St Paul is a commercial rather than a manufacturing city. The jobbing trade for the year 1884 reached a total of about \$65,000,000, an increase of 50 per cent. in four years. In the same year manufactures valued at \$20,000,000 were produced, the principal items being agricultural implements, boots and shoes, machinery, sash, doors, and blinds, waggons and carriages. There is a large flour-mill, capable of producing 700 barrels daily. The lack of water-power and the high cost of fuel are drawbacks to the growth of manufactures. The main thoroughfares have recently been paved, for the most part with blocks of white cedar, and stone sidewalks are rapidly replacing wooden ones. The water-supply is obtained from a group of small lakes lying north of the city limits, and the works are owned and managed by the city. The drainage is excellent. For governmental purposes the city consists of eight wards, each of which elects three members of council. The chief of police and all subordinate members of the force are appointed by the mayor, who is elected by popular vote in May of each alternate year. The aggregate assessed valuation of real and personal property in St Paul was \$60,463,000 in 1884. The total bonded debt of the city on 31st March 1885 was officially stated at \$3,027,141.

The first settlement on the site of St Paul was in 1838, when an unimportant trading-post was established there by adventurers. In 1841 a Jesuit missionary built a log chapel and dedicated it to St Paul (whence the name of the hamlet). The site of the future city was surveyed and laid out in 1849-50. About this time (1851) the Sioux Indians ceded to the United States all lands held by them between the Mississippi and Big Sioux rivers. Prior to this cession the white population in the then Territory of Minnesota had not reached a total of 6000, but the removal of the aborigines was promptly followed by a notable influx of white settlers. With a population of some 2800 in 1854 the town obtained a fully organized city government. Upon the admission of Minnesota to the Union in 1858 St Paul was designated as the capital. The city was originally confined to the east bank of the river, but in 1874 by popular vote a portion of Dakota county was transferred to Ramsey county, and West St Paul on the west bank of the Mississippi, then containing some 3000 inhabitants, became a part of St Paul proper. In 1884 an Act of the State legislature extended the geographical boundaries of the city so as to embrace all territory in Ramsey county westward to the line of Hennepin county, and virtually to the corporate limits of the "sister" city Minneapolis, 10 miles distant.

ST PAUL, a remarkable volcanic island which, along with the island of New Amsterdam, is situated in the Indian Ocean about midway between Africa and Australia, a little to the north of the ordinary route of the steamers from Plymouth (via Cape Town) to Adelaide. Its exact position as determined by the Transit of Venus Expedition in 1874 is 38° 42' 50" S. Lat. and 77° 32' 29" E. Long. Though the distance between the two islands St Paul and New Amsterdam is only 50 miles, they belong to two separate eruptive areas characterized by quite different products; and the comparative bareness of St Paul is in striking contrast to the dense vegetation of New Amsterdam. St Paul is 1½ miles long from north-west to south-east and its coast-line is estimated at 5 nautical miles. In shape it is almost an isosceles triangle with a circle inscribed

tangentially to the north-east side,—the circle (3940 feet in diameter) being the volcanic crater which previous to 1780 formed an inland lake, but which, since the sea broke down its eastern barrier, has become practically a land-locked bay entered by a narrow but gradually widening passage not quite 6 feet deep. The highest ridge of the island is not more than 820 feet above the sea. On the south-west side the coasts are inaccessible. According to M. Vélain, the island originally rose above the ocean as a mass of rhyolitic trachyte similar to that which still forms the Nine Pin rock to the north of the entrance to the crater. Next followed a period of activity in which basic rocks were produced by submarine eruptions—lavas and scoriae of anorthitic character, palagonitic tuffs, and basaltic ashes; and finally from the crater, which must have been a vast lake of fire like those in the Sandwich Islands, poured forth quiet streams of basaltic lavas. The island has been rapidly cooling down in historic times. Dr Gillian (Lord Macartney's visit, 1793) mentions spots still too warm to walk on where no trace of heat is now perceptible; and the remarkable zone of hot subsoil extending westwards from the crater has lost most of the more striking characteristics recorded by Hochstetter in 1857, though it is still easily distinguished by its warmth-loving vegetation, —*Sphagnum lacteolum* and *Lycopodium cernuum*.

The general flora of the island is exceedingly meagre. If we leave out of view the potato, carrot, parsley, cabbage, &c., introduced by temporary inhabitants, the list comprises *Umbelliferae*, 1; *Compositae*, 2; *Plantaginaceae*, 2; *Cyperaceae*, 2; *Graminaceae*, 2; *Lycopodiaceae*, 1; ferns, 2; and from 35 to 40 species of mosses and lichens. The only plants really abundant are an *Isoplepis nodosa* (*Cyperaceae*) and one or two grasses. None of the trees (oak, apple, mulberry, pine, &c.) introduced at different periods have succeeded. The cabbage, which grows pretty freely in some parts, shows a tendency to become like the Jersey variety. The pigs mentioned by Hochstetter have died out; but goats, cats, rats, and mice continue to flourish,—the cats, which feed mainly on birds and fish, living in apparent amity and in the same holes with the rats. House-flies, bluebottles, slaters, &c., literally swarm. But nothing is so characteristic of St Paul as the multitude of its sea-fowl,—albatrosses, petrels of many kinds, puffins, penguins, &c. The neighbouring waters teem with life, and, while the various genera of the seal family are no longer a source of wealth, a number of vessels (50 to 80 tons) from the Mascarene Islands still yearly carry on the fisheries of the coasts, where *Cheilodactylus fasciatus* (in shoals), *Latris hecateia* (cabot or poisson de fond), and *Mendesoma elongatum* afford a rich harvest. The stories told about gigantic sea creatures were curiously confirmed by the Venus Expedition finding on the shore a Cephalopod (since named *Moucheis sancti pauli*) which measured upwards of 22 feet from the end of its body to the tip of its longest arm.

The island now known as New Amsterdam was probably that sighted on 18th March 1522 by the companions of Magellan as they sailed back to Europe under the command of Sebastian del Cano; and in 1617 the Dutch ship "Zeewolf" from Texel to Bantam discovered the island which, instead of the name "Zeewolf" then bestowed on it, soon after began to be called on the charts St Paul. The designation "New Amsterdam" is derived from the vessel in which Van Diemen sailed between the islands in 1633. The first navigator to set foot on St Paul was Willem van Vlaming in 1696. Lord Macartney spent a day exploring it in 1793, his guide being a marooned Frenchman, Captain Péron, whose narrative of his sojourn from 1st September 1792 to 16th December 1795 is a document of great value (*Mémoires du Capitaine Péron*, vol. I., Paris, 1824). In 1843 the governor of Réunion took possession of the islands with a detachment of marines,—seal-catching and the fisheries having attracted to them a considerable floating population. In June 1871 the British frigate "Megera" was wrecked at the mouth of the crater and most of the 400 souls on board had to reside on the island for upwards of three months. Landing on 23rd September 1874, a French Transit of Venus expedition remained on St Paul till 8th January 1875, and a visit of much importance was paid to New Amsterdam.

See Vélain, *Description géol. de la presqu'île d'Aden, des îles de la Réunion, de St Paul, &c.* (Paris, 1878), and his papers in *Archives de la zoologie expérimentale*, 1877, and in *Comptes Rendus, Acad. des Sc.*, 1875; Sauvage on the fishes in *Arch. Zool. Exp.*, 1879-80.

ST PAUL DE LOANDA. See LOANDA.

ST PAUL'S ROCKS, not to be confounded with the island of St Paul in the Indian Ocean, are a number of small islands in the Atlantic, nearly 1° north of the equator and

540 miles from South America, in 29° 15' W. long. Their outline is irregular, and as they are only separated by narrow but deep chasms they have the appearance of being one island. The whole space occupied does not exceed 1400 feet in length by about half as much in breadth. Besides sea-fowl—two species of noddy (*Anous stolidus* and *Anous melanogerys*) and a booby or gannet (*Sula leucogaster*)—the only terrestrial inhabitants are insects and spiders. Fish are abundant, seven species (one, *Holocentrum sancti pauli*, peculiar to the locality) being collected by the "Challenger" during a brief stay. Darwin (*On Volcanic Islands*, p. 32) decided that St Paul's Rocks were not of volcanic origin; more modern investigators—Renard, A. Geikie, and Wadsworth—maintain that they probably are eruptive. See *Reports of the Voyage of H.M.S. Challenger: Narrative of the Cruise*, vol. I.

ST PETER PORT, the capital of the island of GUERNSEY (*q.v.*); its population was 16,658 in 1881.

ST PETERSBURG, a government of north-western Russia, at the head of the Gulf of Finland, stretching along its south-eastern shore and the southern shore of Lake Ladoga. It is bounded by Finland and Olonez on the N., Novgorod and Pskoff on the E. and S., Esthonia and Livonia on the W., and has an area of 20,750 square miles. It is hilly only on its Finland border, the remainder being flat and covered with marshy forests, with the exception of a plateau of about 350 feet high in the south, the Duderhof hills at Krasnoye Selo reaching 550 feet. A great number of parallel ridges of glacier origin intersect the government towards Lake Peipus and northwards of the Neva. Silurian and Devonian rocks appear in the south, the whole covered by a thick glacial deposit with boulders (bottom moraine) and by thick alluvial deposits in the valley of the Neva. The government skirts the Gulf of Finland for 130 miles. The bays of Cronstadt, Koporye, Luga, and Narva afford good anchorage, but the coast is for the most part lined with reefs and sandbanks; to the east of Cronstadt the water becomes very shallow (18 to 20 feet). The chief river is the Neva, which receives only a few small tributaries; the Luga and the Narova also enter the Gulf of Finland. The feeders of Lake Ladoga—the Volkhoff, the Syass, and the Svir, the last two forming part of the system of canals connecting the Neva with the Volga—are important channels of commerce, as also is the Narova (see Pskoff). Marshes and forests cover about 40 per cent. of the surface (70 per cent. at the end of the 18th century).

The population (apart from the capital) was 635,780 in 1882, 82.7 per cent. being Russians, 15.0 Finns, 0.5 Esthonians, and 1.8 per cent. German colonists who have immigrated since 1765. Twenty per cent. are Protestants; the remainder mostly belong to the Greek Church; but there are also more than 20,000 Nonconformists, about 6000 Catholics, and 1500 Jews. Agriculture is at a low stage and very unproductive; the Germans, however, get advantage from it. The Finns rear cattle to some extent. Manufactures are especially developed in the districts of Tsarskoye Selo and Yamburg,—cottons, silks, paper, ironware, and machinery (at Kolpino) being the chief products. Several large manufacturing establishments—especially at Cronstadt—are maintained by the state for military purposes. The government is subdivided into eight districts, the chief towns of which are St Petersburg (see below), Gdoff (3150 inhabitants), Luga (1650), Novaya Ladoga (4100), Peterhof (7950), Schlüsselburg (10,400), and Yamburg (3250). Gatchina (10,100), Narva (8610), Oranienbaum (3600), and Pavlovsk (3400) have no districts. Cronstadt and the capital form separate governorships. Okhta, Kolpino, Pulkova, and Krasnoye Selo, though without municipal institutions, are worthy of mention.

ST PETERSBURG, capital of the Russian empire, is situated in a thinly-peopled region at the head of the Gulf of Finland, at the mouth of the Neva, in 59° 56' N. lat. and 30° 40' E. long., 400 miles from Moscow, 696 from Warsaw, 1138 from Odessa, and 1338 from Astrakhan. The city covers an area of 21,195 acres, of which 12,820

belong to the delta proper of the Neva; 1330 acres are under water. The Neva, which leaves Lake Ladoga at its south-west angle, flows in a wide and deep stream for 36 miles south-west and north-west, describing a curve to the south. Before entering the Gulf of Finland, it takes for 2½ miles a northerly direction; then it suddenly turns and flows south-west and west, forming a peninsula on which the main part of St Petersburg stands, itself subdividing into several branches. It discharges a body of remarkably pure water at the rate of 1,750,000 cubic feet per second, by a channel from 400 to 650 yards in width, and so deep (maximum depth, 59 feet) that large vessels approach its banks. The chief branch is the Great Neva, which flows south-west with a width of from 400 to 700 yards and a maximum depth of 49 feet (discharge, 1,267,000 cubic feet per second). The other branches are the Little Neva, which along with the Great Neva forms Vasilyevskiy

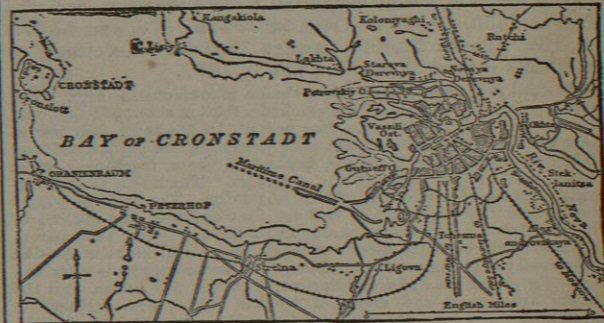


FIG. 1.—Environs of St Petersburg.

(Basil's) Island, and the Great Nevka, which with the Little Neva forms Peterburgskiy Island and sends out three other branches, the Little Nevka, the Middle Nevka, and the narrow Karpovka, enclosing the islands Elaghin, Krestovskiy, Kamennyi, and Aptekarskiy (Apothecaries' Island). Smaller branches of the Great and the Little Nevas form the islands Petrovskiy, Goloday, and numerous smaller ones; while a broader navigable channel forms the Gutueff and several islands of less size in the south-west. Two narrow canalized channels or rivers—the Moika and the Fontanka—as also the Catherine, Ligovskiy, and Obvodnyi Canals (the last with basins for receiving the surplus of water during inundations), intersect the mainland. All the islands of alluvial origin are very low, their highest points rising only 10 or 11 feet above the average level of the water. Their areas are rapidly increasing (572 acres having been added between 1718 and 1864), and the wide banks which continue them towards the sea are gradually disappearing. The mainland is not much higher than the islands. At a height of from 7 to 20 feet (seldom so much as 29) the low marsh land stretches back to the hills of the Forestry Institute (45 to 70 feet) on the right and to the Pulkova and Tsarskoye Selo hills on the left. The river level being subject to wide oscillations and rising several feet during westerly gales, extensive portions of the islands, as also of the mainland, are flooded every winter; water in the streets of Vasilyevskiy Island is a common occurrence. In 1777, when the Neva rose 10.7 feet, and in 1824, when it rose 13.8 feet, nearly the whole of the city was inundated. But, owing to the construction of canals to receive a large amount of surplus water, and still more to the secular rising of the sea-coast, no similar occurrence has since been witnessed.

Broad sandbanks at the mouth of the river, leaving but a narrow channel 7 to 20 feet deep, prevent the entrance of larger ships; their cargoes are discharged at Cronstadt

and brought to St Petersburg in smaller vessels. A ship canal, completed in 1885 at a cost of 10,265,400 roubles (£1,026,500), is intended to make the capital a seaport. Beginning at Cronstadt, it terminates at Gutueff Island in a harbour capable of accommodating fifty sea-going ships at a time. It is 22 feet deep, 17½ miles in length, and from 70 to 120 yards broad at the bottom, and is protected by huge submarine dams.

Communication between the banks of the Neva is maintained by only two permanent bridges,—the Nicholas and the Alexander or Liteyni, the latter 467 yards long; both are fine specimens of architecture. Two other bridges—the Palace and the Troitskiy (720 yards)—across the Great Neva, connect the left bank of the mainland with Vasilyevskiy Island and the fortress of St Peter and St Paul; but, being built on boats, they are removed during the autumn and spring, and intercourse with the islands then becomes very difficult. Several wooden or floating bridges connect the islands, while a number of stone bridges span the smaller channels; their aggregate number is ninety. In winter, when the Neva is covered with ice 2 to 3 feet thick, temporary roadways for carriages and pedestrians are made, and artificially lighted. Numerous boats also maintain communication, and small steamers ply in summer between the more distant parts of the capital. A network of tramways (about 80 miles) intersects the city in all directions, reaching also the remoter islands and suburbs, and carrying about 45,000,000 passengers yearly. Omnibuses and public sledges maintain the traffic in winter. In 1882 hackney carriages numbered 7930 in summer and rose to 14,780 in winter, when thousands of peasants come in from the neighbouring villages with their small Finnish horses and plain sledges.

The Neva continues frozen for an average of 147 days in the year (25th November to 21st April). It is unnavigable, however, for some time longer on account of the ice from Lake Ladoga, which is sometimes driven by easterly winds into the Neva during several days at the end of April or in the beginning of May. The climate of St Petersburg is very changeable and unhealthy. Frosts are made much more trying by the wind which accompanies them; and westerly gales in winter bring with them oceanic moisture and warmth, and so melt the snow before and after hard frosts. The summer is hot, but short, lasting hardly more than five or six weeks; a hot day, however, is often followed by cold weather: changes of temperature amounting to 35° Fahr. within twenty-four hours are not uncommon. In autumn a cold dampness continues for several weeks, and in spring cold and wet weather alternates with a few warm days. The following figures will give a more complete idea of the climate:—

	January.	July.	The Year.
Mean temperature, Fahr.	15.4	64.0	58.6
Rainfall, inches	0.9	2.6	18.3
Amount of cloud, percentage	80	53	67
Prevailing winds	S. W.	W.	W.
Number of rainy days	12.5	12.7	150.6
Average daily range of temperature, Fahr. 2.2		10.2	7.7
Relative humidity	89	74	81

The bulk of St Petersburg is situated on the mainland, on the left bank of the Neva, including the best and busiest streets, the richest shops, the great bazaars and markets, the palaces, cathedrals, and theatres, as well as all the railway stations, except that of the Finland Railway. From the Liteyni bridge to that of Nicholas I. a granite embankment runs along the left bank of the Neva, bordered by palaces and large private houses. About midway, behind a range of fine houses, stands the admiralty, the very centre of the capital. Formerly a wharf, on which Peter I. caused his first Baltic ship to be built in 1706, it is now the seat of the ministry of marine and of the hydrographical department, the new admiralty standing farther down the Neva on the same bank. A broad square, now partly a garden, surrounds the admiralty on the west, south, and east. To the west, opposite the senate, stands the fine memorial to Peter I., erected in 1782, and now backed by the cathedral of St Isaac. A bronze statue, a masterpiece by Falconet, represents the founder of the city on horseback, at full gallop, ascending a rock and pointing to the Neva; the pedestal is a huge granite monolith, 44 feet long, 22 wide, and 27 high, brought from Lakhta, a village on the shore of the Gulf of Finland. To the south of the admiralty are several buildings of the ministry of war and to the east the Winter Palace, the work of Rastrelli (1764), a fine building of mixed style; but its admirable proportions

hide its huge dimensions. It communicates by a gallery with the Hermitage Fine Arts Gallery. A broad semicircular square, adorned by the Alexander I. column, separates the palace from the general staff and foreign ministry buildings; the column, the work of Montferant, is a red granite monolith, 84 feet high, supported by a huge pedestal. Being of Finnish *rappa-kivi* (from Piterlaks), it disintegrates rapidly, and has had to be bound with massive iron rings concealed by painting. The range of palaces and private houses facing the embankment above the admiralty is interrupted by the large macadamized "Field of Mars," formerly a marsh, but transformed at incredible expense into a parade-ground, and the Lyetnyi Sad (summer-garden) of Peter I. The Neva embankment is continued to the west to a little below the Nicholas bridge under the name of "English embankment," and farther down by the new admiralty buildings.

The topography of St Petersburg is very simple. Three long streets, the main arteries of the capital, radiate from the admiralty,—the Prospekt Nevskiy (Neva Prospect), the Gorokhovaya (Peas' Street), and the Prospekt Voznesenskiy (Ascension Prospect). Three circles of canals, roughly speaking concentric, cross these three streets,—the Moika, the Catherine, and the Fontanka; to these a number of streets run parallel,—the Great and the Little Morskaya, the Kazanskaya, the Sadovaya (Garden Street), and the Liteynaya, continued west by Prospekts Zagorodnyi and Rizhskiy (Riga). The Prospekt Nevskiy is a very broad street running straight east-south-east for 3200 yards from the admiralty to the Moscow railway station, and thence 1650 yards farther, bending a little to the south, to the Smolnyi convent, again reaching the Neva at Kalashnikoff harbour. The part first mentioned owes its picturesque aspect to its width, its rich shops, and still more its animation. But the houses which border it architecturally leave very much to be desired. And neither the cathedral of the Virgin of Kazan (an ugly imitation on a small scale of St Peter's in Rome), nor the still uglier Gostinyi Dvor (a two-storied quadrilateral building filled with second-rate shops), nor the Anitchkoff Palace (which looks like immense barracks), nor even the Catholic and Dutch churches do anything to embellish it. About midway between the public library and the Anitchkoff Palace an elegant square conceals the old-fashioned Alexandra theatre; a profusely adorned memorial to Catherine II. does not beautify it much. The Gorokhovaya is a narrow and badly paved street between gloomy houses occupied mostly by artisans. The Voznesenskiy, on the contrary, though as narrow as the last, has better houses. In its north part it passes into a series of large squares connected with that on which the monument of Peter I. stands. One of them is occupied by the cathedral of St Isaac (of Dalmatia) and another by the memorial to Nicholas I., the gorgeousness and bad taste of which strangely contrast with the simplicity and significance of that of Peter I. The general aspect of the cathedral is undoubtedly imposing both without and within; its red granite colonnades are not devoid of a certain grandiose character; but on the whole this architectural monument, built between 1818 and 1858 according to a plan of Montferant, under the personal direction of Nicholas I., does not correspond either with its costliness (23,000,000 roubles) or with the efforts put forth in its decoration by the best Russian artists. The pictures of Bruloff, Bruni, and many others which cover its walls are deteriorating rapidly and their place is being taken by mosaics. The entire building, notwithstanding its vast foundations and pile-work, is subsiding unequally in the marshy ground, and the walls threaten soon to give way.

The eastern extremity of Vasilyevskiy Island is the centre of commercial activity; the stock exchange is situated there as well as the quays and storehouses. The remainder of the island is occupied chiefly by scientific and educational institutions,—the academy of science, with a small observatory (where some astronomical observations are carried on, notwithstanding the tremors of the earth), the university, the philological institute, the academy of the first corps of cadets, the academy of arts, the marine academy, the mining institute, and the central physical observatory, all facing the Neva. Peterburgskiy Island contains the fortress of St Peter and St Paul, opposite the Winter Palace, separated by a channel from its "kronverk," the glacis of which is used as a park. The fortress is now merely a state prison. A cathedral which stands within the fortress is the burial-place of the emperors and the imperial family. The mint is also situated within the fortress. The remainder of the island is meanly built, and is the refuge of the poorer officials (*chinnovniks*) and of the intellectual proletariat. Its northern part, separated from the main island by a narrow channel, bears the name of Apothecaries' Island, and is occupied by a botanical garden of great scientific value and several fine private gardens and parks. Krestovskiy, Elaghin, and Kamennyi Islands, and Novaya Derevnya, right bank of the Great Nevka (Staraya and Novaya Derevnya), are occupied by public gardens and parks and by summer houses (*datchis*). Owing to the heat and dust during the short summer the middle-class inhabitants and the numerous officials and clerks emigrate to the *datchis*, the wealthier families to the islands, and the poorer to Staraya and Novaya Derevnya Polustrovo. Kusha-

leva, and as far as the first two or three railway stations of the principal railways, especially that of Finland. The mainland on the right bank of the Neva above its delta is known as Vyborgskaya Storona (Vyborg Side), and is connected with the main city by the Liteinyi bridge, closely adjoining which are the buildings of the military academy of medicine and spacious hospitals. The small streets (many of them unpaved), with numerous wooden houses, are inhabited by students and workmen; farther north are great textile and iron factories. Vast orchards and the yards of the artillery laboratory stretch north-eastwards, while the railway and the highroad to Finland, running north, lead to the park of the Forestry Institute. The two villages of Okhta, on the right

bank, are suburbs; higher up, on the left bank, are several factories (Alexandrovska) which formerly belonged to the crown, where playing-cards, cottons, glass, china, ironware, and so on are made. The true boundary of St Petersburg on the south is the Obvodnyi Canal; but wide tracts covered with orchards, cemeteries, and factories, or even unoccupied spaces, are included in the city in that direction, though they are being rapidly covered with buildings.

Of the 21,195 acres covered by St Petersburg 1160 remain unoccupied. The gardens and parks, public and private, take up 798 acres, to which must be added Aptekarskiy, Petrovskiy, Elaghin, and Krestovskiy Islands, which are almost quite covered with parks. Nearly 80 per cent. of the total area of the most densely populated



FIG. 2.—Plan of St Petersburg.

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|--------------------------------------|-------------------------------|-----------------------------------|-------------------------------------|
| 1. Stock Exchange. | 7. Physical Observatory. | 14. Cathedral of Virgin of Kazan. | 21. Military Storerooms. |
| 2. Academy of Sciences. | 8. Winter Palace. | 15. Town-house. | 22. Theatres (Great and Mariinski). |
| 3. University. | 9. Statue of Peter I. | 16. Gostinyi Dvor. | 23. Moscow Railway Station. |
| 4. Academy of First Corps of Cadets. | 10. Senate and Synod. | 17. Public Library. | 24. Medical Academy. |
| 5. Academy of Arts. | 11. Cathedral of St Isaac. | 18. Anitchkov Palace. | 25. Hospital. |
| 6. Mining Institute. | 12. General Staff Buildings. | 19. Orphanage. | 26. Courts of Justice. |
| | 13. Hermitage Gallery of Art. | 20. General Post-Office. | 27. House of Detention. |

parts are squares and streets, the aggregate length of the latter being 283 miles. More than half of them are lighted by gas, the remainder with kerosene. Except in a few principal streets, which are paved with wood or asphalt, the pavement is usually of granite boulders, and is bad and very difficult to keep in order. Many streets and embankments in the suburbs are unpaved. Nearly all the more populous parts have water led into the houses (4733 houses in 1883), and the same begins to extend also to the right bank of the Neva. In 1883 7,091,500,000 gallons of water, mostly from the Neva, very pure on the whole,¹ were supplied by seventeen steam-engines to the left-bank portion of the city (9423 gallons per inhabitant). The number of houses in 1881 was 22,229 inhabited and 16,983 uninhabited. Of the former 18,816 belonged to private persons and 3148 to societies or the crown. The houses are mostly very large: of the private houses no fewer than 169 had from 400 to 2000 inhabitants each; the contrary holds good

¹ For analyses, see Journ. Russ. Chemical Soc., vol. xv. 567.

² See St Petersburg according to the Census of 1881, and the Statistical Yearbook of St Petersburg for 1883, St Petersburg, 1884.

children is small. The distribution of the population according to age is as follows:—

Under 5 years	7.9 per cent.	From 16 to 20 years	12.2 per cent.
From 6 to 10 years	5.7 " "	21 to 50 "	55.2 " "
" 11 to 15 "	8.6 " "	Above 50 years	10.4 " "

The mortality at St Petersburg being very high (34.2 in 1883, from 29.7 to 38.6 in 1868-82), and the number of births only 31.1 per 1000, the deaths are in excess of the births by 2500 to 3000 in average years; in 1883 there were 26,320 births (1151 still-born) and 30,150 deaths. It must not be inferred, however, from these figures that the population of St Petersburg would die out if not recruited from without. The larger number of the workmen who come every year to the capital leave their families in the provinces, and the births which occur do not appear among the births of the capital, while the deaths very often do. The chief mortality is due to chest diseases, which prove fatal on the average to 9000 persons annually; diseases of the digestive organs also prevail largely; European and perhaps also Asiatic cholera is almost endemic, an average of 3700 deaths annually being due to this cause. Infectious diseases such as typhus (from 4280 to 5100 deaths during the last few years), diphtheria, and scarlet fever (3500 deaths) are common. Owing to a notable increase of these three infectious diseases the mortality figures for the last few years are above the average. Of 28,212 deaths nearly two-fifths (12,369) were among children under five. Another critical age seems to be that between 21 and 25. The number of marriages in 1883 was 6183 (only 7.1 per 1000 inhabitants); out of a total of 26,320 births 7977 (30 per cent.) were illegitimate; and no fewer than 31 per cent. of all children, both legitimate and illegitimate, born at St Petersburg are nursed in the foundlings' home, which sends most of them to be brought up in villages. More than 100,000 persons enter the public hospitals annually.¹

An interesting feature of the Russian capital is the very high proportion of people living on their own earnings or income ("independent"), as compared with those who live on the earnings or income of some one else ("dependent"). Whereas at Paris and Berlin only 34 and 50 per cent. respectively belong to the former category, the proportion is reversed at St Petersburg: only 33 per cent., 282,678 persons in all, have not their own means of support (18 per cent. of the men and 51 of the women). The proportion of employers to employed, as also the extent of their respective families, are as follows:—

	Trade.	Various industries.	Total.
Employers	8,838	19,306	28,366
Their families	29,967	38,193	59,010
Clerks	3,597	5,581	9,178
Their families	4,163	7,491	11,654
Workmen	37,559	195,850	233,409
Their families	11,997	66,856	68,853
Independent workers	3,336	23,954	27,290
Their families	4,470	17,506	22,276

Only a few industrial establishments employ more than twenty workmen, the average being less than ten and the figure seldom falling below five. The great factories are beyond the limits of St Petersburg, which contains a busy population of artisans grouped in small workshops. The proportions of various professions to the total population are as follows:—workmen, 1 in 3; servants, 1 in 10; scholars, 1 in 12; soldiers, 1 in 25; officials, 1 in 61; "rentiers," 1 in 76; female teachers, 1 in 186; male teachers, 1 in 291; policemen, 1 in 208; surgeons, 1 in 608; advocates, 1 in 1261; apothecaries, 1 in 1538; pawnbrokers, 1 in 1846; savants or litterateurs, 1 in 2121; lawyers, 1 in 2700. In respect of classes, 40.7 per cent. of the aggregate population belong to the "peasants," 20.0 are *myshchanc* (burgesses) and artisans, 12.3 are "nobles," 2.4 "merchants," and 3.1 foreigners. The various religions are represented by 84.9 per cent. Orthodox Greeks, 9.9 Protestants, 3.3 Roman Catholics, and 1.9 various (16,826 Jews). On the whole, the Orthodox population are not great frequenters of the churches, which are far less numerous than in Moscow.

St Petersburg is well provided with scientific and educational institutions, as also with libraries and museums. The intellectual life of the educated classes is vigorous, and, although 36 per cent. of the population above six years old are unable to read, the workmen must be counted among the most intelligent classes in Russia. Notwithstanding the hardships and prosecutions it is periodically subjected to, the university exercises a pronounced influence on the life of St Petersburg. In 1882 it had eighty professors and 2165 students (968 in physics and mathematics, 776 in law). The medical faculty forms a separate academy, under military jurisdiction, with about 1500 students. There are, moreover, a philological institute, a technological institute, a forestry academy, an engineering academy, two theological academies (Greek and Roman Catholic),

¹ Full mortality tables according to the separate diseases are given in the Statistical Yearbook. Very careful researches into the sanitary conditions of the city are given in the now suppressed *Sbornik Sudebnoi Meditsiny* (Mag. of Med. Jurisprudence) and *Zdorove* (Health).

an academy of arts, five military academies, a high school of law and a lyceum. Higher instruction for women is represented by a medical academy (now ordered to be closed), by a free university with 914 students in 1882, the standards of instruction and examination in both being equal to those of the other universities, and by higher pedagogical courses. For secondary education there are twelve classical gymnasia for boys and nine for girls, with four private gymnasia and three progymnasia, eight "real schools," five seminaries for teachers, ten military schools, three German gymnasia, and five other schools. For primary education there are 156 municipality schools (7225 scholars in 1883), 16 schools of the *zemstvo*, and about 450 others maintained either by public institutions or by private persons; 19,400 boys and girls received instruction in 431 public schools in 1884, the aggregate cost being £24,765; about 70 institutions for receiving the younger children of the poorer classes and several private "kindergartens" must be added to the above. The scientific institutions are numerous. The academy of sciences, opened in 1726, has rendered immense service in the exploration of Russia.² The oft-repeated reproach that it keeps its doors shut to Russian savants, while opening them too widely to German ones, is not without foundation; but the services rendered to science by the Germans in connexion with the academy are undoubtedly very great. The Pulkova astronomical observatory, the chief physical (meteorological) observatory (with branches throughout Russia and Siberia), the astronomical observatory at Vilna, the astronomical and magnetical observatory at Peking, and the botanical garden,³ all attached to the academy of sciences, issue every year publications of the highest scientific value. The Society of Naturalists and the Physical and Chemical Society, though less than twenty years old, have already issued most valuable publications, which are not so well known abroad as they deserve to be. The still more recently founded geological committee is ably pushing forward the geological survey of the country; the Mineralogical Society was founded in 1817. The Geographical Society, with four sections (923 members) and branch societies for West and East Siberia, Caucasus, Orenburg, the north-western and south-western provinces of European Russia, all liberally aided by the state, is well known for its valuable work, as is also the Entomological Society. There are four medical societies, and an Archaeological Society (since 1846), an Historical Society, an Economical Society (120 years old), Gardening, Forestry, Technical, Navigation Societies, and others, as also several scientific committees appointed at the ministries. The scientific work of the hydrographical department and of the general staff is well known. On the whole, there is access to all these societies, as well as to their museums and libraries. At St Petersburg classical music always finds first-rate performers and attentive hearers. The conservatory of music gives a superior musical instruction. The Musical Society is also worthy of notice. Art, on the other hand, has not freed itself from the old scholastic methods at the academy. Several independent artistic societies seek to remedy this drawback, and are the true cradle of the Russian *genre* painters.

The imperial public library, open free for 847 days in the year, though far behind the British Museum and the Bibliothèque Nationale in the number of volumes, nevertheless contains rich collections of books and MSS. Its first nucleus was the library of the Polish republic seized in 1795 (262,640 volumes and 24,574 prints), collected mostly by Archbishop Zalusski of Kieff. It has been much enriched since then by purchases and donations, and now (1886) contains more than 1,000,000 volumes, a remarkable collection of 50,000 "Rossica" (everything published in Russia), and 40,000 MSS., some of which are very valuable and unique. The library of the academy of sciences, also open every day, contains more than 500,000 volumes, 13,000 MSS., rich collections of works on Oriental languages, and valuable collections of periodical publications from scientific societies throughout the world. The library of the council of state is also open to the public; while several libraries of scientific societies and departments of the ministries, very rich in their special branches, the academy of art, the musical conservatory, the university (150,000 vols.), are especially valuable to the student. Nearly thirty private circulating libraries, which have to contend with many restrictions, supply the students for a small fee with everything printed in Russia, if not prohibited by Government. The museums of the Russian capital have a marked place among those of Europe. That of the academy of science, with more than 100,000 systematically classified natural history specimens; that of the Mineralogical Society, giving a full picture of the geology of Russia; the Asiatic museum, with its rich collection of Asiatic MSS. and coins; and several others are of great scientific value. The Hermitage Art Gallery contains a first-rate collection of the Flemish school, some pictures of the Russian school (the remainder being at the academy of arts), some good specimens of the

² Sakhomlinoff, "History of the Academy of Sciences," in its *Memoirs* (Russian), vol. xxvi., 1876, and the same year in its *Memoirs* in German.
³ Trautvetter, "History of the Botanical Garden," in *Memoirs* of the same, 1873, vol. ii.