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 865,000,000, 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 flour­mill, 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 11/2 miles long from north-west to south­east 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 rhyolithic 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 scoriæ 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 *Umbclliferæ,*

1. ; *Compositæ,* 2 ; *Plantaginaceæ,* 2 ; *Cyperaceæ,* 2 ; *Graminaceæ,*
2. ; *Lycopodiaceæ,* 1 ; feras, 2 ; and from 35 to 40 species of mosses and lichens. The only plants really abundant are an *Isolepsis nodosa (Cyperaceæ)* 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 off the coasts, where *Cheilodactylus fasciatus* (in shoals), *Latris hecateia (cabot* or *poisson de fond),* and *Mendosoma 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 *Mouchezis 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 “Megæra” 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 experimentale,* 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