SCIENTIFIC AMERICAN

[Entered at the Post Office of New York, N. Y., as Second Class Matter.]

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY AND MANUFACTURES.

Vol. XLV.—No. 9. [NEW SERIES.] NEW YORK, AUGUST 27, 1881. [$3.20 per Annum. [POSTAGE PREPAID.]

WATERTOWN, N. Y., AND ITS WATER POWER.

One of the prettiest and industrially one of the most promising of the smaller cities of this State is Watertown, the county seat of Jefferson County. The basis of its industrial promise is the admirable and unfailing water power afforded by the several falls of the Black River within its limits, supplemented by the circumstance that it lies in the midst of one of the best agricultural districts of Northern New York, and adjacent to the great timber and mineral regions of the Adirondacks. Its shipping facilities are good, owing to abundant railway connections and its proximity to good ports on Lake Ontario and the river St. Lawrence.

Black River, whose falls furnish the water power which has given the city its name and much of its industrial development, rises in the heart of the Adirondack wilderness, and is the outlet of the southwestern portion of the lake region dear to health and pleasure-seekers, hunters, and fishermen. With its branches it drains a territory of 2,000 square miles, mostly granitic, full of lakes and swamps, with a copious rainfall, making the flow of water abundant and sure at all seasons. For several miles above the city the river has a rapid course over a rocky bed—the Trenton and Birdseye limestones of the State geologists—and in purity and softness the waters are admirably suited for manufactures, especially of textile fabrics. Within the city limits are five distinct falls, which, with the rapids, make a difference of level of 112 feet. The average flow of water is about 400,000 cubic feet a minute, furnishing an actual (average) working energy of over 80,000 horse power. The available water power must certainly exceed a quarter of that amount—enough at any rate to make Watertown a very considerable manufacturing place.

The accompanying engraving represents the main fall of Black River, as sketched by our artist during a recent visit. This fall, 35 feet high, is on the north side of Beebee Island, in the very heart of the town. Its companion on the south side of the island is 20 feet high. The other falls are respectively 14, 13, 12, and 11 feet in height. Aside from the water which flows unused over the dams already built, there are sites for several other dams, with excellent mill sites in various parts of the city at which larger powers could be cheaply utilized. And it is a commendable feature in the management of these properties that a decidedly liberal spirit is shown toward those manufacturers who may wish to locate there. In some cases the owners of available water powers offer to donate water rights to such as will undertake to use them. There are also many places along the river above and below Watertown where the stream is rapid and narrow and well suited for mill sites.

Watertown has a population of about 12,000, and is one of the healthiest cities in the Union. Its manufactures include numerous tanneries, machine shops, foundries, engine works, grist mills, cotton and woolen mills, paper mills, lumber mills, and woodworking establishments, a large wagon factory, furniture factories, the Davis sewing machine factory, and many other establishments turning out lamps, car wheels, vacuum brakes, boots and shoes, stoves, tinware, and a great variety of industrial products.

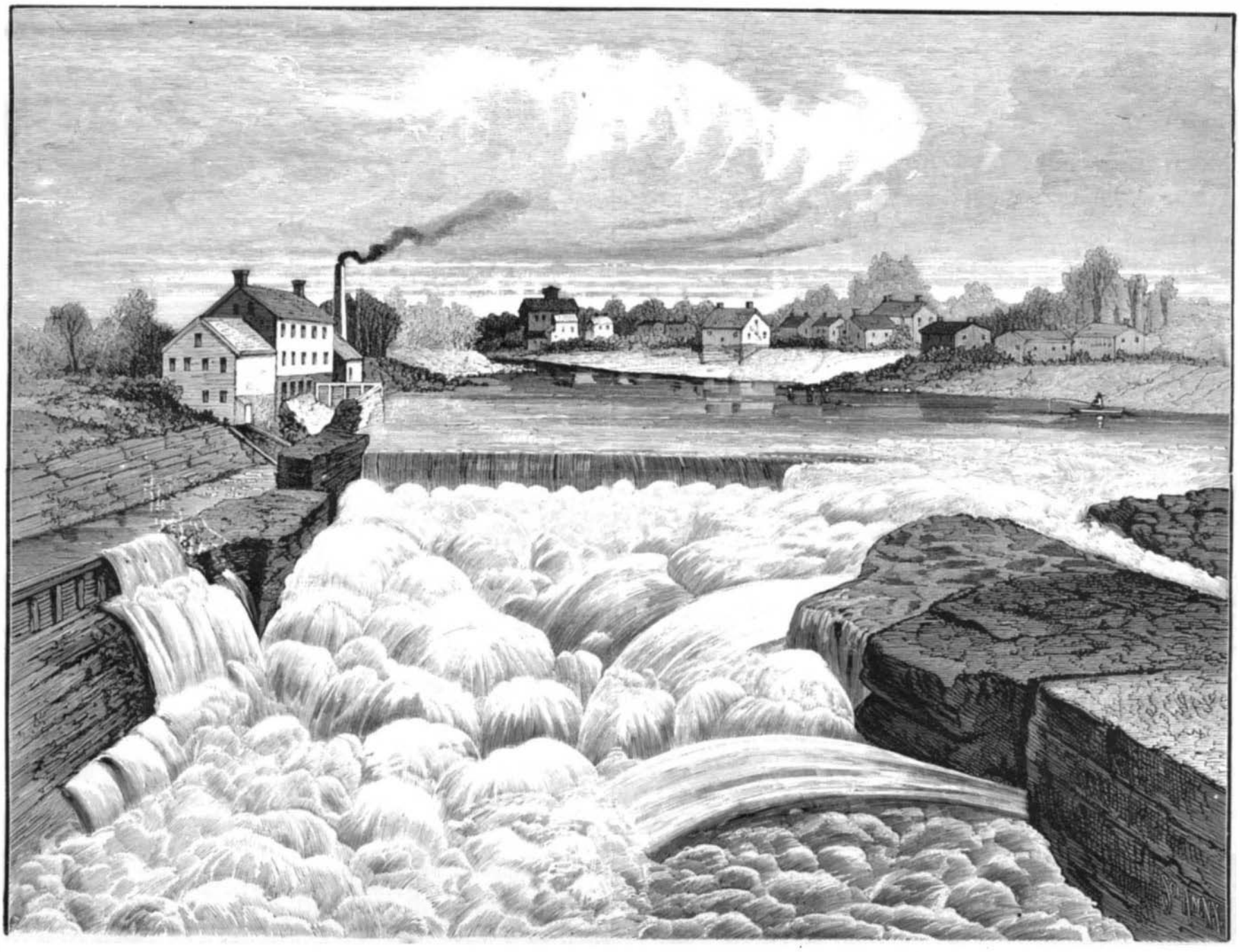
The Arctic Winter.

Lieutenant Schwatka, the Arctic explorer, gives some interesting facts in regard to the character and duration of the Arctic winter. He says:

"The generally received opinion that the Arctic winter, especially in the higher latitudes, is a long, dreary one of perfect opaque darkness is not strictly correct. In latitude 83° 20′ 20″ N., the highest point ever reached by man, there are 4 hours and 42 minutes of twilight on December 22, the shortest day in the year in the Northern Hemisphere. In latitude 82° 27′ N., the highest point where white men have wintered, there are 6 hours and 2 minutes in the shortest day, and 328 geographical miles from that point must yet be attained before the true Plutonic zone, or that one in which there is no twilight whatsoever, even upon the shortest day of the year, can be said to have been entered by man. Of course, about the beginning and ending of this twilight it is very feeble and easily extinguished by even the slightest mists; but, nevertheless, it exists, and is very appreciable on clear, cold days, or nights, properly speaking. The North Pole itself is only shrouded in perfect blackness from November 13 to January 29, a period of 77 days. Supposing that the sun has set (supposing a circumpolar sea or body of water unlimited to vision) on September 24, not to rise until March 18 for that particular point, giving a period of about 50 days of uniformly varying twilight, the Pole has about 188 days of continuous daylight, 100 days of varying twilight, and 77 of perfect inky darkness (save when the moon has a northern declination) in the period of a typical year. During the period of a little over four days the sun shines continuously on both the North and South Poles at the same time, owing to refraction, parallax, semi-diameter, and dip of the horizon."

The Last of the Centennial Exhibition.

The Main Centennial Exhibition building of 1876 was sold at the Philadelphia Exchange, August 9, for $97,000. The building originally cost $1,600,000. In its construction 75,000,000 feet of lumber and 8,500,000 pounds iron were consumed. The structure was 1,880 feet long and 464 feet wide.



WATER POWER ON THE BLACK RIVER AT WATERTOWN, N. Y.