

### THE TIDAL "BORE" AT MONCTON.

BY GUSTAV KOBBE.

The "bore" at Moncton, N. B., about 130 miles from the mouth of the Bay of Fundy, is a tidal wave which, in the twinkling of an eye, converts a rent of mud in the landscape into a broad, navigable river. This happens each flood tide. With the ebb the twelve miles of river over which the "bore" sweeps, again become a reach of mud and slime.

The "bore" is the final and climacteric act in each flood tide of the Bay of Fundy. There is one phenomenon more picturesque, the reversible tidal falls at St. John, N. B., but none is so dramatic or more in keeping with what the climax of a great tidal rise should be. In height, velocity and roar the "bore" fulfills all these conditions.

The Bay of Fundy is, roughly speaking, one hundred and seventy miles long and from thirty to fifty wide. It lies like a narrowing trough between Maine and the provinces of Nova Scotia and New Brunswick. The heaping up of waters in this natural trough is believed to account for the extraordinary tidal phenomena. The various headwaters of the bay are themselves Bays of Fundy in miniature, with the result that, as we proceed up the bay, the tidal phenomena repeat themselves on a steadily enlarging scale. Thus, the nearer we draw to the headwaters the greater the rise of tide; until the climax is reached at Moncton with a "bore" and a tidal rise and fall of seventy feet.

This explanation of the extraordinary tides of the Bay of Fundy, attributing them to the troughlike shape of the bay, is, I believe, widely accepted. There seems none other feasible. The bay itself lies at the head of a series of great bights in the Atlantic coast, so that, when the tide reaches its mouth, there has already been a great upheaving of waters upon which the troughlike shape of Fundy has a cumulative effect as the tide streams up the bay.

It is interesting to follow the tide from its beginning to its climax at Moncton. It affects not only the landscape of the bay, but also the industries which are followed there. For instance, dry docks hardly are needed in the Bay of Fundy. If a vessel is anchored in deep water at flood tide, she will probably be high and dry before half the ebb, and there will be time to scrape and clean her and to make other repairs before the flood lifts her again.

Near the mouth of the bay and athwart it, like a huge bolt of rock, lies the beetling island of Grand Manan. Here the rise and fall of the tide is about fifteen feet. At low tide there are numerous rocky islets, which are swallowed up by the flood. Seaward are echelons of rocky ledges, and the effect of these on the tide is to increase its velocity, so that not infrequently ships are unable to stem it and are obliged to beat about the mouth of the bay for hours, even when the wind is fair. There are many days of thick fog in the Bay of Fundy, and often I have stood on the high cliffs of Grand Manan watching the topsails of ships above the mist. The effect was ghostly and weird. It seemed as if a phantom fleet were cruising below.

On one occasion I went out fishing in a rowboat. A few rods from shore we scraped bottom on a rock. Some hours later, as we were returning, the boatman pointed to a high rock, at least twenty feet out of water. "That is the rock we touched," he said. The

scene was completely transformed. Small craft, the anchors of which had apparently been thrown out on shore, were dangling by their cables from rocky eminences. The wharf where the little steamer had landed me stood, slime-stained, amid a lot of seaweed-covered stones. The steamer was anchored well out in the bay.

The strength of the tidal rush adds to the force of the waves and on some of the headlands strange shapes have been carved from the rocks by the water. At the very end of a picturesque ledge, jutting from the cliffs at the southern end of Grand Manan, is the perfect figure of a cross worn from the solid rock and standing erect on the ledge as if it had been built there. I once saw a white sea-gull hover above and perch upon this



LOW TIDE ON THE PETITCODIAC RIVER, AT MONCTON, N. B.



THE RUSH OF WATERS, OR THE "BORE," FIVE FEET FOUR INCHES HIGH, AT MONCTON, N. B.

cross. The day was tranquil, the waves sunlit and murmuring faintly against the base of the cliff; and the southern cross with the white gull perched upon it gave a wonderful sense of peace to the scene.

Curiously enough, at the other extremity of the island, the waves have carved another symbol of religion—the rock there resembling so closely a bishop's miter that it is called the bishop.

But the greatest effect of combined wave and tide action is what is known as the seven days' work on the west shore of Grand Manan. This is a seawall several miles in length and composed of huge boulders. It is a giant's causeway built by the tides of the Bay of Fundy, and forming an entirely artificial shore line with here and there a little pond where the waters of the bay have percolated or where a brook comes down the slope of the island and spreads out behind the seawall.

There are fish weirs at Grand Manan, but in no such number as further up the bay around Lubec, Eastport, and Campobello, where the rise and fall of the tide is about 25 feet. The fish swim into these weirs at high water, and being unable to find the way out, because, once in the weir, they swim in a circle, and thus miss the narrow entrance, the fishermen have only to enter the weir at low tide, and scoop up the catch. The tide is thus made tributary to an important industry. Most of the fish caught in these weirs are herring which are put up as sardines at the many factories near Eastport. About a billion a year are canned, and the industry affords occupation to many besides the fishermen.

It is considered great sport to launch boats and small vessels on the wake of the bore, be carried swiftly up stream, with no exertion beyond steering, and come down on the ebb. A schooner, the stern of which protruded from one of the wharves, was torn from her moorings by the bore, had her masts snapped by a bridge under which she was carried, and her bow smashed. Altogether, the "bore" belies its name; for it makes things rather lively for the otherwise slow town of Moncton.

### New Process of Making Photographic Reliefs.

A new process of photography in relief upon glass, porcelain, etc., has been lately discovered by M. Sekutowicz. He transforms by a direct process a photographic film into a photoplastic relief, which may be used in the molding of glass and in analogous processes. The experimenter happened upon the discovery in the following manner. Having had occasion to reinforce a negative film in a solution of mercury bichloride, he found that the film then presented a surface having greater relief than usual. In searching for the cause of this action he discovered that the solution had been very much too strong, owing to a mistake in weighing. Upon repeating the experiment the phenomenon again appeared, and by varying the strength of the solutions he obtained a series of reliefs in proportion to the degree of concentration of the bath. After demonstrating this fact he at once proceeded to utilize the discovery, and first obtained a plaster impression in the following manner. The film in relief, while wet, is placed upon a block of fine plaster having a plane surface, this having been previously moistened. The formation of air bubbles between the film and the plaster should be carefully avoided. At the end of a few minutes the excess of

water is absorbed by the plaster and the film remains fixed flat upon its support, the side in relief being uppermost. A layer of plaster is then flowed over this in the usual way and a reproduction is thus made, which is treated by the galvanoplastic process. In this way a mold is formed, which may be applied to various industrial uses, such as impression in relief upon glass or porcelain, and also in the different processes of photo-printing, and the discovery of M. Sekutowicz will no doubt prove of considerable value in these and analogous processes.

THE use of silicate of soda in refining heavy petroleum has been recommended. It is useful in making from spindle to cylinder oils. The silicate is used as a neutralizing agent after treatment with sulphuric acid and is said to be highly efficacious. It may be used either alone or in connection with caustic soda.