as Wellington basin are to be nineteen feet in depth; the other three locks are to have fourteen feet on mitre sills.

The approximate cost is estimated at about *six millions of dollars*, and the whole should be completed, according to the terms of the contracts, on the 25th of April, 1878. John Page, Esq., is the chief engineer, and John G. Sippell, Esq., is the engineer in charge.

SECTIONS NOS. 1 AND 2 extend from the mouth of the canal up to Wellington Bridge, and include the Wellington Basin and basin No. 2. The excavation of Wellington Basin was a heavy piece of work. The earth was conveyed by cars upon a railway track to the vicinity of the Victoria Bridge. The basin, which is almost finished, is 1,250 ft. long, 225 ft. wide, with a depth of 19 feet of water. It will afford extensive accommodation for ships of large size and capacity, the new locks being 270 ft. long and 45 ft. wide, and the uniform depth of the water, from the river up to the Wellington Basin, 19 ft. The old entrance locks are only 200 ft. long, with a depth of 16 ft. of water. It is also contemplated building another large basin similar to Wellington Basin, and just below it.

The improvements on sections Nos. 1 and 2 consist of constructing new entrance locks Nos. 1 and 2, on the east side of the old ones, from which they are some little distance apart; constructing a basin, 500 ft. long and 300 ft. wide, between the new entrance locks; rebuilding the Mill street bridge, which will be a draw-bridge spanning both locks No. 2, the old and the new one, and swinging on a centre pier between the two; widening the "reach" between No. 2 lock and Wellington basins, constructing the Wellington Basin, and making all for 19 feet depth of water.

This contract was awarded to Messrs. James Worthington and A. P. McDonald, and the work is estimated to cost some $1,000,000.

SECTION NO. 3.—The contract for this section was given to Messrs. McNamee, Gaherty and Fréchette, but was by them transferred to an American firm, Messrs. Loss and McRae, who are now working it.

The improvements on this section comprise the widening and deepening of the canal, building a dockwall on the inner slope, the rebuilding of the Wellington Bridge, where the canal will be widened, on the south side, more than 100 feet; partially rebuilding the St. Gabriel lock and constructing a new one on the north-west side of it, which will have a depth of fourteen feet of water on the mitre sill, while the depth of the old lock is not changed; removing the regulating weir and race-way on the north side of the canal, and constructing new ones; rebuilding the McGee Bridge, which will swing on a centre pier between the two locks. The new Wellington Bridge will swing on a square centre piet having two arched culverts running through it to prevent impeding the water, with a rest pier of and in a line with the centre pier. The swing bridge will thus span two navigable channels, each forty-six feet wide; and outside these will be another channel, on either side, each 30 feet wide and spanned by stationary bridges. The work on this section is estimated to cost from $600,000 to $700,000.

It has been proposed for the safety and convenience of the public to build two bridges instead of one, where Wellington street crosses the canal, one to be solely for the Grand Trunk Railway, and the other for vehicles and foot passengers.

SECTION NO. 4 extends from McGauvran's Island up to the Grand Trunk Railway's iron bridge, including it. The improvements consist of widening and deepening the canal, building slope walls of dry masonry—which, by the way, are suited to answer the purpose of dock walls and so intended—and rebuilding Brewster's and the Grand Trunk Railway bridges. The new Brewster's, or Napoleon Road bridge will swing on a centre pier, having a culvert running through it, and leaving a channel for navigation on either side, similar to Wellington bridge. The iron railway bridge will be moved southward some fifteen feet, but will be of the same width, and with two channels for navigation, as at present. There will, however, be a stationary bridge at each end of the drawbridge.

This work is in the hands of Messrs. Whitney and Boyd, and is estimated to cost about $330,000.

SECTION NO. 5 extends from the Grand Trunk Railway bridge to within some 500 feet of the Cote St. Paul lock. The only mechanical work, besides constructing the slope walls and a by-wash, is the rebuilding of a culvert, but the rest of the job is a heavy one. The earth here is of peculiar formation, the top, to a depth of eight or ten feet, being black muck, under which is a bed of soft white clay or marl, and under it rock. The clay is so soft as to be nearly liquid, and therefore has to be removed and replaced by firm earth to afford a bottom upon which to build the canal walls. For a short distance, this marly bed is said to be sixteen feet in depth.

The contractors, Messrs. Charlebois and Mallette, state that in excavating for the wall on the north side, they took out some 15,000 cart loads of this clay, and many acres of land adjoining are covered with it, presenting a curious sight. Interest is added to this section from the fact that it is the scene of the so-called "Canal Land Ring Frauds," concerning which litigation is still pending. This land has the appearance of being utterly useless for agricultural purposes, being simply a barren, boggy swamp; and it is not supposed that the top dressing of white clay which has just been spread upon it, will greatly increase its fertility. The following interesting extract from the report of the Chief Engineer of Public Works on the navigation of the St. Lawrence, last year, refers to this tract of land. He says:

"It was, however, soon ascertained that a great part of the land through which the new line would pass, was controlled by parties who not only attached great importance to its position themselves, but had succeeded in impressing others with greatly exaggerated notions of its value. In fact, land that a few years ago could have been bought for $120 per acre, and which at the time the canal survey commenced was not valued at more than from three or four hundred dollars an acre, has been recently disposed of, at a credit sale, at the rate from eleven to eighteen thousand dollars per acre. These enormous prices are stated to have been "bid" for property situated on the north side of the canal, and between the Grand Trunk Railway Swing Bridge and Côte St. Paul Road."

This section is a little over a mile long, and the improvements on it are estimated to cost $350,000. The culvert to be rebuilt is for passing the waters of the River St. Pierre under the canal. The new culvert will be just above the present one, and will be much larger. It will be constructed upon the principle of an inverted syphon, and will have three arches, each six feet wide; its entire length will be 296 feet, and width 36 feet, and the bottom will be 14 feet below the bed of the canal.

SECTIONS NOS. 6 AND 7 are comprised in one contract, which was awarded to Messrs. Wm. Davis and Sons, and is approximately estimated at $900,000. The extent of these two sections is from about thirty rods below the Côte St. Paul locks to a mile and three quarters above, and the improvements on them consist of widening and deepening the canal; partially rebuilding the old Côte St. Paul lock, without disturbing the bottom; constructing a new lock on the north west side of the present one, with a depth of fourteen feet of water on the sill; rebuilding the Côte St. Paul road bridge, which will swing on a centre pier, similarly to the Brewster's bridge (always in speaking of rebuilding bridges the masonry only is meant, for although the building of the superstructure belongs to the canal improvements, and has to be done by Government, this part of the work does not enter into the present contracts; and the same explanation is applicable to the building or rebuilding of the locks, in which the present contracts do not include the lock gates); rebuilding a waste weir or by-wash and a siphon culvert with one arch, to carry surface water under the canal, both a short distance above the locks, reconstructing the highway for a short distance below the bridge, moving it farther north. Here at the locks the wide channel of two hundred feet ends, and above the width will be one hundred and fifty feet. There is considerable rock cutting at the bottom of the canal on these sections. The widening of the canal is done altogether on the north-side on section No. 6, but on both sides on No. 7 section.

ON SECTION NO. 8, which is something over a mile and a third in extent, a considerable portion of the deepening will be rock cutting, on an average about four feet deep, but the upper portion of the section for one thousand feet, averages about twelve feet; and a roadway has to be built along the south side, the whole length of the section. The contract is in the hands of Messrs. O'Brien and Sullivan, and is estimated to amount to about $100,000.

On these intervening sections, at a distance both from the suburbs of the city and from Lachine, boarding-houses are erected on the works for the accommodation of the workmen.

Although the effects and results of drink among the canal laborers have a number of times been manifest since the commencement of operations, and although informed only the other day that drinking and drunkenness were conspicuous on the works, we are happy to see that during our visits on three different days, not a single case of drunkenness or of drinking was seen along the whole line of the canal.

SECTION NO. 9 is a little over a mile in extent and reaches up to within about one thousand feet of the guard-lock at Lachine. The work of widening and deepening is pretty much all rock-cutting, but slope-walls have to be built on both sides on top of the rock. The amount of the contract is estimated at $350,000. The immense amount of rock required to be removed on this section makes the job a heavy one, so far as labor is concerned. The contractors are Messrs. Lyons Bros., and the amount of work accomplished is not small. The earth on top, as well as the rock down to the water level, has been mostly all removed, on both sides of the canal. A curious sight is presented by the one thousand one hundred holes of three inches diameter and averaging eighteen feet in depth which have already been drilled in the rock on the sides, for blasting. It is said that this drilling, charged with dynamite, will be supposed to remove one hundred and twenty-five thousand yards of rock; but, fortunately, it will not all be blasted at one time, else the inhabitants of Lachine and vicinity might experience a little earthquake. The drilling is done by steam drills, peculiar looking machines, of which seven are used, and three steam-engines are required to operate them.

SECTION 10 commences at about seventy rods below the guard lock at Lachine, and includes the remainder of the canal proper. From the lower end of this section, the rest of the old canal is not interfered with at all, but a new, more capacious and entirely distinct channel will be constructed, extending far out into the river. The work on section 10 comprises the opening of the new channel, which will be 150 feet wide, a short distance below the guard lock, making the width of the canal, at the junction of the old and new channels, some 320 feet; constructing a new guard lock, 45 feet wide and with 14 feet of water on the sill; constructing a new swing bridge, similar to the present one over the old canal for the highway immediately above the lock. About two-thirds of the cutting is through solid rock. The section is only 1,400 feet long. This work is in the hands of Messrs. Rogers, Kelly & Co., and its estimated cost $275,000. Work on this section will not be subject to the inconveniences attending that on other sections, and this new channel being distinct from the old one, the work can be done either in summer or winter, and the contractors state that they will build the lock, bridge and slope walls next summer. The earth taken from the excavation has to be dumped into the river, forming an embankment outside the pier work of the new entrance. In the new guard-lock there will be a submerged gate, called a "guard gate," reserved for use in case of emergency.

SECTION 11 comprises the new entrance channel, which will extend over a mile out into the river, to above the lighthouse, quite a distance beyond the present entrance channel. To protect this channel on the outer side a continuous line of pier work, 6,200 feet in length, will be constructed, running nearly parallel to the present pier; and on the inner side, alongside the present pier, will be a single line of crib-work, and the space, six feet wide, between this and the old pier will be filled in with puddle. The outside pier consists of two lines of tight cribs filled in with stone, and the space, six feet wide, between the two, is to be filled with puddle; these cribs being built up to the level of low water, and a wall of rubble masonry being built on top of them. This, obviously, will make very secure work. The channel will be 200 feet wide, and 15 feet deep at low water. The bottom is rock, and from six to ten feet of it will require to be removed; to do this the channel will require to be unwatered, a section at a time, which can only be done after the crib work is built.

The contract for this work, which is expected to cost $700,000, was given to Messrs. Wm. Davis & Son, who have also sections 6 and 7, and the time for the completion of it does not expire till April, 1879, a year later than the other contracts.

The reason for building a new entrance channel instead of enlarging the old one, was that great difficulties in doing the latter in winter, when the canal would not be in use, were anticipated. To drain the new channel for the purpose of excavating the rock bottom, coffer-dams will have to be built across the channel, and the section thus enclosed pumped dry.

DIFFERENT SCHEMES AND THEIR MERITS.—By referring to the report of Mr. John Page, Chief Engineer of Public Works, on the navigation of the St. Lawrence, submitted to the Secretary of the Department last year, it is seen that several different schemes were proposed for the enlargement of the Lachine Canal, Mr. John G. Sippell, the Superintendent Engineer, having presented various schemes for enlarging portions of the old canal, and constructing a duplicate canal for the remainder of the distance, while the scheme at present being carried out is in the main that of Mr. Page. Mr. Sippell's arguments in favor of a new canal for a large portion, or nearly all the way, amounted to this: That a new canal could be built with comparative facility during the summer months without interfering with either the traffic on it or the manufactories along its banks which are dependent on the canal for water power; while the enlargement of the present canal would largely increase the cost of the work by its being forced into the winter months, extending over three or four winters, and seriously interfering with the operations of the manufacturing interests, it being represented that there were 30,000 people who derived a subsistence from the mills and factories on the canal, which of course would have to shut down in winter unless provided with steam power. Mr. Page while taking into full consideration these important and weighty arguments in favor of the new channel scheme, had still to regard the formidable objection of the enormous prices which it was likely would have to be paid for the land through which the new canal should pass, and presented the following arguments in favor of the enlargement of the old canal: "First: there would be no uncertainty connected with the bottom, or formation of the banks, nor risk of damage to adjoining property from leakage. Second: the canal could be enlarged without the department being at the mercy of property-holders, who entertain such extraordinary ideas of the value of land. Third: the principal part of the clay excavation could be advantageously done by machinery during the open season, and all the work over water-surface could be carried on at the most favorable time. Fourth: the future outlay for working expenses, maintenance and management, would doubtless be very much less for one large canal, than for two of lesser dimensions."

Although the depth of water in the canal when enlarged will be thirteen feet, it will only allow for the navigation of vessels drawing twelve feet of water; but the new locks will all have at least fourteen feet of water on the mitre sill, and the canal may be deepened to fifteen feet so as to accommodate vessels of 14 feet draft, which is equal to the capacity of the Welland Canal and greater than the present capacity, for navigation, of the River St. Lawrence.

CANADIAN ILLUSTRATED NEWS.

A very excellent portrait of Rev. Alfred J. Bray, pastor of Zion Church, appears in the number of the CANADIAN ILLUSTRATED NEWS, dated to-day, and is worthy of comparison with the very best specimens of the engraver's art in Europe or America.—*Witness.*

The last number of the ILLUSTRATED NEWS contains an admirably executed full page portrait of the Rev. A. J. Bray, of Zion Church. There is also a biographical sketch of the rev. gentleman, which we publish this morning.—*Gazette.*

THE CANADIAN ILLUSTRATED NEWS has a capital cartoon showing George Brown splitting the Dominion Board of Trade's "protection plank" all to pieces for kindling for his *Globe* base burner.—Kingston *Whig.*

MUSICAL AND DRAMATIC.

AN alliterative clergyman in New Haven lately referred to theatres as "the deep damnation of the dazzling dome."

MR. BARRY SULLIVAN'S arrival at Belfast was the occasion of an extraordinary demonstration, several thousand of people cheering him along the entire route from the station to the Imperial Hotel.

CROIZETTE'S so-called malady has come to a happy termination, and in a few weeks the brilliant actress of the Français will be restored to her usual state of blooming health. It is a girl, and it is to be named Sophie.

Mr. BOUCICAULT has received for playing *Conn*, in his play of the "Shaughraun," $157,000 for two hundred and sixteen performances at Wallack's, New York; $20,000 for four weeks in Boston; $27,000 for four weeks in San Francisco; $12,000 for two weeks in Philadelphia. With the proceeds of his London engagement the total is over $300,000.

M. SCHOELCHER, a French Senator with a German name, recently presented the library of the Paris Conservatory with a curious collection of old music, which he has been collecting for twenty years. It contains a large number of English airs compiled about 1797, comprising all the lyric, political, satirical, and seditious songs of the time of the Georges. Nearly all the old Jacobite songs rendered famous by Scott figure in it.

THE most competent Paris critics note in Albani, soaring there with a great London reputation, a marvellous progress since she last sang in Paris. "Formerly she succeeded; now she has triumphed," is the remark of M. de La Pommeraye in the *France*. The *Estafette* says: "Her voice has gained prodigiously in volume and compass, without any loss of suppleness. Her success was almost unexampled in the annals of the Italian Theatre."

HYGIENIC.

THE use of fruit and vegetable food during winter should be encouraged.

RE-VACCINATION is urgently necessary to all who have not undergone the operation since infancy.

THE medical officers of the Privy Council rank disinfectants according to their usefulness, the order of precedence being sulphurous acid—procured from burning sulphur—chlorine, carbolic acid.

DOMESTIC.

BARLEY WATER.—Boil two tablespoonfuls of best pearl barley in a quart of water till it is "smooth;" let it stand in a jug till cold, then stir it up and strain through muslin and it is ready for use.

YORKSHIRE PUDDING TO SERVE WITH ROAST BEEF.—Pour one pint of boiling milk over one small loaf of bread, finely crumbed; add four beaten eggs and a little salt and flour. Pour into the dripping-pan, under the beef, and bake twenty minutes.

FISH-CAKES FOR BREAKFAST.—Half a pound of cold fish, three ounces of suet shred fine, a small lump of butter, a teacupful of bread-crumbs, pepper, salt, and nutmeg, two teaspoonfuls of anchovy sauce. Pound all together in a mortar, mix with an egg, divide into small cakes, and fry them a light brown.

CLAM SOUP.

First catch your clams—along the ebbing edges
Of saline coves you'll find the precious wedges
With backs up lurking in the sandy bottom;
Pull in your iron rake, and lo! you've got 'em.
Take thirty large ones, put a basin under,
Add water (three quarts) to the native liquor,
Bring to a boil (and, by the way, the quicker
It boils the better, if you do it cutely),
Now add the clams, chopped up and minced minutely,
Allow a longer boil of just three minutes,
And while it bubbles quickly stir within its
Tumultuous depths, where still the mollusks mutter,
Four tablespoons of flour and four of butter,
A pint of milk, some pepper to your notion,
And clams need salting, although born of ocean.
Remove from fire (it much boiled they will suffer—
You'll find that India rubber isn't tougher):
After 'tis off add three fresh eggs well beaten,
Stir once more, and it's ready to be eaten.
Fruit of the wave! Oh, dainty and delicious!
Food for the gods! Ambrosia for Apicius!
Worthy to thrill the soul of sea-born Venus,
Or titillate the palate of Silenus!