drink for the tillers and toilers of England, should be found systematically poisoned. The investigation showed that, among the ingredients put into liquors, were cocculus indicus grains of paradise, and copperas, the latter being nothing less than green vitrol. Beer houses have been regarded everywhere as the great curse of the country; but a much greater curse was the stuff sold in them. In this city it has been discovered that a large amount of the stuff sold for lager beer is a compound of the vilest ingredients. In many cases persons who have been in the frequent habit of drinking it at low places have found their health impaired, and have prematurely died. Pure beer is undoubtedly an invigorating beverage. The inhabitants of Germany are mostly robust people; but then it must be remembered that their beer was pure, which cannot be said of the swill sold in many places in this city. Lager has become a popular beverage in this city. How is this evil to be reached, is a subject that should engage the attention of the Health Board.

ROCHESTER CITY WATER WORKS.

Report of Messrs. W. Milnor Roberts and John C. Trautwine on the Rochester Water Works, October, 1868.

We have visited the line of the works and made an examination of the present condition and prospects of the Rochester Water Works chiefly with the object of ascertaining the merits of the project in a financial point of view. In the very beginning we were struck with the remarkable fact that the city of Rochester, a flourishing and enterprising place containing not less than sixty-five thousand inhabitants, should be without Water Works and without a supply of wholesome soft water.

The Genesee river which flows through the city is a hard limestone water, and the only soft water is that collected in cisterns from the rain fall. A company chartered in 1852 was authorized to erect Water Works, and surveys and reports were made, but no practical results ensued until 1866, when a contract was made with Alexander Easton, Esquire, who has since carried on the work with much vigor, under the general superintendence of Daniel Marsh, Esq., Chief Engineer of the Company. We are indebted to Mr. Marsh for valuable details relating to the different plans which have been proposed for supplying the city with water. Several sources of supply were available, the chief of which are the Genesee river, Lake Ontario, (seven miles north of the city,) Black, and Irondequoit creeks, the Mendon ponds, and the Lakes about twenty five miles south of Rochester. Without entering into all the details, it may be briefly stated that the objections to the adopting of any of the proposed plans, except the one chosen, are deemed to be valid and sufficient. Thus the objections to the water of the Genesee river are, that it is hard, and not at all adapted to city purposes, and that expensive works would be required to force it to the requisite height.—The objections to taking the supply from Lake Ontario are the difficulty of getting the water clear of the flow of the Genesee River, and then having to force it uphill seven miles to reach the city, and to force it thence by steam or water power, up to the distributing reservoir. (See Mr. Marsh's report of 1861 for further information on these projects.) The plan finally adopted is to take the water from Hemlock Lake and Canadice Lake, both of which have the same outlet. The surface of Hemlock Lake is 288 feet above the canal in Rochester. The water is taken from the outlet stream at Richmond Mills, about four miles below the foot of Hemlock Lake. A water-tight box flume three feet square takes the water from the pool of the dam at Richmond Mills, and carries it about three-fourths of a mile to the Horse-shoe Reservoir which, when filled, will be about 270 feet above the canal in Rochester, distant 27 miles. This Reservoir requires but little artificial work to complete it, nature having arranged the ground in a manner peculiarly and remarkably adapted to the purpose for which it has been chosen. This Reservoir may be made to cover about 65 acres to a depth of from [illegible] feet by the construction of an embankment about one thousand feet long, and from ten to twenty feet high. The expense of constructing this Reservoir of sufficient capacity to store an average depth of about 30 feet over 65 acres will be trifling, and it will contain in round numbers four hundred and twenty-five million gallons. A population of one hundred thousand at fifty gallons per day for each person, would require five million gallons daily, so that this storing reservoir alone would furnish a supply for that number of persons for eighty-five days. The natural minimum flow of the two lakes, Hemlock and Canadice, at the driest period is known to be five hundred [illegible] feet per minute, or five million four hundred thousand gallons per day. Hemlock lake alone was discharging more than this at the date of our visit (Oct. 9th, 1868). This minimum quantity alone, therefore, is amply sufficient for a population of one hundred thousand. The proposed plan for bringing the water to the city is by gravity, and may be briefly described as follows: First, it will flow (chiefly through its natural channel) from the lakes to the Horse Shoe Reservoir, a distance of five miles, thence by pipes for fifteen miles further to Henrietta Reservoir, which contains fourteen acres of an average depth of fourteen feet, the surface of the water being one hundred and fifty-four feet above the canal at Rochester. From Henrietta Reservoir the water is carried by a main twenty-four inches in diameter for about seven and a half miles, to the distributing point, about one and a half miles from the business centre of the city, and at an elevation of one hundred and four feet above the canal. The entire distance thus amounts to twenty-five miles. The adequacy of the supply may be tested by the drainage area of the two lakes from which it is derived. This amounts to fifty-six square miles, or nearly three thousand six hundred acres. Put the annual rain fall at thirty-six inches in depth (which the rain guages show to be safe), and the quantity available for city use at forty per cent. of the whole, and this last will amount in round numbers to four teen billion gallons. Now, one hundred thousand persons, at fifty gallons per day each, require one billion eight hundred and twenty-five million gallons annually; therefore the supply is nearly eight times the quantity needed. The cost of construction of the works, compared with the results obtained, is very moderate, and it is obvious that the Company have at their command water enough for the city and for supplying the mills during the dry season with quite as much as they have now.

The amount of stock and bonds at the disposal of the Company are: stock $800,000, bonds $400,000; total $1,200,000. According to an estimate, which we believe to be correct, the sum of $200,000 will suffice for completing all the unfinished work and for bringing the project to a satisfactory conclusion. The estimated receipts are $163,200 per annum and this may be anticipated soon after the water reaches the city, allowing $15,000 for yearly expenses of superintendence, taxes and repairs; the balance is $98,000 net income from a city of not less than sixty-five thousand inhabitants. This ambunts to 7¾ per cent. on the total capital of $1200,000. The sum of $163,000 annual total income amounts to very nearly $2.00 per head of sixty-five thousand inhabitants. At present the pipes are laid on about nine miles of the city, and are provided and ready to be laid on three miles more; these twelve miles embrace the most densely populated and business parts of the city. The city of Rochester appears to be improving rapidly; it has great advantages for being the center of a large population, possessing splendid water power for manufacturing, and commanding one of the finest agricultural surroundings in the State. The Erie canal, and the New York Central Railroad pass through it. There is therefore no reason for anticipating any serious check for its growth, and the Company that furnishes it with an abundance of remarkably pure water, can scarcely fail to realize a satisfactory income upon the investment necessary for constructing the required works. Mr. Marsh has laid out plans embracing fifty-four miles of pipe in the city, which when in use by a population of one hundred thousand or more, will augment the receipts in a much larger ratio than [illegible] fifty.

(Signed), W. MILNOR ROBERTS,
JOHN C. TRANTWINE.

The preceding part of this report is to be considered as the joint production of Mr. Roberts and myself, but the following is appended by myself alone, inasmuch as other engagements compelled Mr. Roberts to leave Rochester before this portion could be prepared.

The energy and faithfulness with which the work is being carried on by Mr. Easton and the equally praiseworthy devotedness of Mr. Marsh to the important duties assigned to him as Chief Engineer, have already been alluded to. So far as actual inspection of the operations was possible, everything along the line appeared to have been performed in so careful and workmanlike a manner as to lead to the inference that many years will elapse before serious repairs would be required. The construction presents one feature which at first sight would create an unfavorable impression, but which was rendered imperative by the small amount of means available for the work. I allude to the use of a wooden main instead of a cast iron one, for carrying the water about twenty-five miles from Richmond Mills to the city, together with an interval of about two miles of sixteen-inch main of double-riveted and soldered galvanized sheet-iron. This last was substituted for wood on account of its superior strength on that portion of the line at which the pressure of the water is the greatest. The wooden main is in sections of about sixteen feet in length, and is formed of staves of pine or hemlock two inches thick, carefully prepared by machinery. They are twenty-four inches in diameter at the down stream end and twenty-eight inches at the up stream end. They are strongly banded with wrought iron hoops one quarter of an inch thick by from one and a half to two inches wide, and tightly driven at intervals of from one to two feet apart according to the degree of strain brought upon them by the pressure of the water. They are thoroughly coated outside with warm tar. Owing to the completeness of the machinery at the work shop, and to the systematic course of proceeding, these pipes are prepared with such rapidity that a mile in length of them can readily be furnished in a week. Both the wooden pipe and those of galvanized iron have been subjected to thorough tests to prove their entire adequacy so far as *strength* is concerned. As to their *durability* we must, of course, rely upon the results of experience elsewhere for forming an opinion. The wooden pipe taken up in Arch street, Philadelphia, a few weeks since had been laid for about fifty years and were in excellent preservation, *they* had not been protected by *tar*. The durability of wooden pipes, however, depends much upon the character of the soil in which they are buried, the clay appearing to be the best, and fortunately this is the prevalent soil along most of the route. Care has been taken to compact the soil well under the pipes, as well as around them, as far up as to the middle of their height. They will be less liable than cast-iron to break by unequal settlements, and will be free from obstruction by the accumulation of deposits upon their interior. I was informed that a galvanized sheet-iron pipe has been in use for sixteen years in Wilmington, Delaware, for conveyance of mine, and that is still in good condition. This test is of course much more severe than that of pure water. It is my opinion that experience in Rochester like that at Philadelphia and many other cities will prove that the wooden pipes will endure at least until the time shall arrive when an increase of population will demand an entire new water supply on a much larger scale.—About thirteen miles, or one-half of the entire length of wooden main, has already been laid, extending from near the city southward, also many crossings of natural streams and canals throughout the line. The crossings are all buried below the bottoms or beds of the channels, the pipes follow the undulations of the ground. All the pipes laid in the city itself, are of cast-iron, and vary in diameter from four to sixteen inches. These are so distributed as to form a portion of the entire system designed by Mr. Marsh as the result of long and careful study of the present and prospective wants of the city.

The embankment surrounding the Henrietta reservoir as well as the other work therewith connected was nearly completed at the time of our visit. It has been constructed with great care, being brought up in successive layers thoroughly consolidated by carting over them. The bottom soil was first removed and a puddle trench was excavated below the base of the embankment. The inner and outer slopes have an inclination as steep as about one to one which is much greater than I should myself have recommended. The top, however, has the ample width of twenty feet, which is also about the height of the embankment. Mr. Roberts who has had much experience in the construction of reservoirs, and who from his connection as chief engineer with the proposed improvement of the Ohio river has devoted special attention to this subject expressed himself as coincidding with Mr. Marsh in his opinion as to the perfect stability of the embankment having his opinion upon the favorable character of the soil of which it is composed, and upon the great care which has been taken to consolidate it thoroughly. My principal apprehension is that the rubble stone facing of the inner slope would be liable to be disturbed on account of its steepness, if the water should be suddenly drawn down to a low level. Mr. Marsh, however, proposes to obviate this by increasing the thickness of the stone lining at its base, and gradually diminishing it towards the top. I observed that hydraulic cement was used freely in the masonry. Arrangements have been made at the outlet of this reservoir, so that water for the city can be taken either from the pipe, or from the reservoir itself, as circumstances may require. As regards as I could form an opinion, Mr. [illegible] has completed nearly three-fourths [illegible] The consideration of the [illegible] of the enterprise does not [illegible] properly within the province of the Engineer, charged like myself, only with an examination of the ground physical character. I may however, venture the remark that it would be difficult to conceive that a more prosperous city as Rochester could find a satisfactory return upon the cost of a well arranged water works.

JOHN C. TRANTWINE.
Philadelphia, October 10, 1868.

Boot Blacking Capitalists.

A New York letter says: I was somewhat amused on passing the World office at an early hour, on a recent morning, at seeing a little squad of boot blacks sleeping like a litter of pigs over the grating on the pavement, through which steam ascended from the engine room below. Some of these waifs of humanity contrive to lay aside considerable money in the course of a year. For example, one (now almost a man) who has been located in front of the St. Cloud Hotel for a number of years, has six thousand dollars in governments now stored away in banks. This sum represents his savings in his "profession." A boot black organization has been projected and put in operation on the corner of Broadway and Fourth streets. On the walls hang time tables specifying the "beats" traveled daily by the attaches of the institution, and mentioning at what hour and place they can be found. As they travel about they visit hotels, private dwellings, &c. By paying two dollars a month one can have his boots blacked every morning at his house, and as often during the day as he may choose to call at the "head-quarters."

An Embarrassing Position.

The other day, while a workman was tightening a bolt on a railroad bridge that spans Bullock Pen Creek, in Kenton county, Kentucky, he got his pantaloons screwed fast with the last bolt, at a distance of eight feet above the level of the bridge. At this juncture his wrench fell. No help being near, he had to slip off his boots and wriggle and squirm out of his pants, succeeding in which he got down, recovered the wrench, returned to the top of the bridge, and released and donned his pantaloons. A workman who had observed him at a distance, thinking him crazy and about to commit suicide, procured assistance, but the supposed lunatic was himself again before help arrived.

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The True Medical Doctrine.

Nature when struggling with disease, indicates unmistakably the kind of assistance she requires. In cases of nervous weakness and general debility, the feeble pulse, the lack lustre eye, the attenuated frame, the flaccid muscles, the melancholy visage, inform us as plainly as if each organ had a tongue, that a *nervous stimulant is needed*. It does not require the aid of a medical education to understand this dumb appeal for new vigor, from an exhausted system. Every reader of these lines can comprehend it just as well as the graduate of a physicians' college. But not this demand of enfeebled nature be neglected. Respond to it promptly by commencing a course of HOSTETTER'S STOMACH BITTERS, a preparation uniting, in their highest excellence, the properties of a STIMULANT, an INVIGORANT, and an ALTERNATIVE. Before three days have elapsed, from the taking of the first dose, a marked beneficial change will be manifest in the bodily and mental condition of the patient. The pulse will be stronger and more regular, the eye will begin to lose its dull expression, the muscular and nervous systems to recover their tension, and the spirits to improve. Perseverance, and a complete revivification of the depressed animal and mental powers is certain. In cases of dyspepsia and biliousness, the same salutary results will be obtained. The appetite will revive, the sallowness of the skin will disappear, and all the distressing symptoms which accompany disorders of the stomach and liver, will rapidly subside. The cold of winter often intensifies these complaints by checking the perspiratory action, by which so much morbid matter is evaporated through the pores in milder weather, and therefore the BITTERS are especially useful to the dyspeptic and bilious at this season. del 26 d&tiw

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