none whose years of labor equal theirs—have long since earned the public gratitude for their good works. To Mrs. Hale was largely due the successful completion of Bunker Hill Monument. She is the inventor of Thanksgiving day, for she first suggested the idea of an American national thanksgiving in 1846, and her efforts toward the advancement and education of women have been untiring and fruitful with beneficial results. Both herself and her associate may look back with justifiable pride over the 571 numbers of the *Lady's Book*, which they have prepared, in the consciousness that their labors have tended always toward the promotion of education, culture and refined taste.

WATER SUPPLY FOR NEW YORK CITY.

The last plan submitted to the Special Committee on Water Supply for New York city is by a Brooklyn engineer, who claims a cheaper mode of getting water than by going fifty or sixty miles for it. His plan is the construction of a close canal or conduit, on a low level, of sufficient width and depth, commencing at Harlem river, running through Westchester, following the lowlands and keeping the depth below the well level. This conduit, he states, would always be full of the purest water, supplied from the great underground water basin of Westchester, and would in its course intercept all the springs and streams. Having studied the water supply of Brooklyn he was led to make a proposal to furnish that city with a future supply at a much cheaper rate than could be obtained by building reservoirs, and he thinks the same plan would be applicable to New York, although the soil is very different. The soil of Long Island is of such a nature that it readily absorbs all the rainfall. What streams there are come from springs fed from the higher grounds. The soil of Westchester is different from that of Long Island; it is harder and more compact, and much more of the rainfall runs off the surface; that which is absorbed remains longer in the soil. Hence a long drought would not affect the wells in Westchester as much as those on Long Island. The Brooklyn conduit, which carries the water to the pumping wells, was built as low as possible in order to collect the water from the different springs, yet built above the well level; and by extending it, sufficient elevation to the mile was given to impart the necessary current to send the water to the pumping wells, till now, in seventeen miles, it has risen above the springs and no more water can be obtained without building reservoirs, or adopting the plan he suggests. The conduit for New York was built high in order to get an elevation without pumping, and was carried back forty miles to the high ground of the Croton, passing many streams and getting no advantage from the many valleys in its course, or from the great water shed lying within thirty miles of New York—resources sufficient, if improved, to give an abundant supply for all time.

It is contemplated to build more reservoirs on these high elevations at a cost of $10,000,000, and to build a new conduit between New York and Croton Dam at a cost of $10,000,000 more. In regard to this, he says, to keep building expensive reservoirs on these high elevations is a waste of public money, and will naturally prove a failure as to a future supply, for, as the line is extended, it must keep rising, although already it is above the springs. What water may be obtained in this way is from storm flows, collected during the time of freshets, and retained in their shallow basins, stagnant pools, exposed to the rays of the sun and infected by vegetable decomposition, with no circulation whatever until it is let off into the conduit, thus distributing the seeds of malaria. The best place for reservoirs is where you can get the purest water, and that is at the foot of the hills. Here not only the surface flow is got, but as much more pure spring water, filtered through the upper lands. The expense of pumping will not compare with that of building costly reservoirs on such high elevations; but, even if it did, the sanitary advantages would more than compensate. As the land naturally rises from Harlem river, a conduit could be built on a slight elevation to the mile, of sufficient width and depth to bring to the city as much water as would be needed for all future time. The water in the canal would be spring water and a running stream. The pumping engines could be placed at the Harlem river, and pump directly into the pipes, under pressure, giving the water sufficient force to carry it into the top story of the houses on Murray Hill, leaving the old aqueduct, with its reservoirs, to supply the lower portion of the city.

In brief, the plan is to have one main conduit, commencing at a point west of King's Bridge or east of Central Bridge on the Westchester side of the Harlem river, extending up through Westchester, with lateral branches, running right or left as the nature of the ground may indicate; smaller ones to be built in each of the different valleys, and a cross tunnel made to intercept them all. By this means a large amount of water could be obtained, and the conduit could be extended according to the growth of the city. The main conduit at the commencement would not be less than twelve feet in diameter, or of sufficient capacity to deliver two hundred million gallons daily; it could be diminished as extended. The side walls of the conduit would be of heavy stone laid dry, backed up with small ones, the bottom paved with cobble stone, the top arched with brick laid in cement. The pumping wells and buildings could be erected on the New York side of the Harlem river: the river to be tunnelled with either an iron or a brick tunnel of the same dimensions as the conduit, the top to be twelve feet below low water mark. All the overflow would empty into Harlem river.

An approximate estimate of the cost of such works, with five compound steam pumping engines of the most approved kind, with their boilers, fixtures, and buildings to pump one hundred million gallons of water per day at $9,500,000, exclusive of the right of way, which would not cost much, as the conduit would be mostly underground. Much of the tunnelling could be done without disturbing the surface. The principal and only damage would be the surplus earth left in places. As the conduit would follow the low lands, their drainage would mitigate damages.

'THE GREEN CORN CASE.

The celebrated "Green Corn Case," which was argued last September in the Circuit Court at Baltimore, before Judges Bond and Giles, has recently been decided, and the bill for the injunction dismissed. This case was an application by John Winslow Jones for an injunction against Louis McMurray, of Baltimore, for an injunction to prevent him infringing the re-issued patent No. 7,061 (original patent No. 35,274), covering a process of canning green corn, and re-issue No. 7,067 (original patent No. 34,928), for the product of said patented process. The original patents were declared invalid by the Supreme Court of the United States. They were then surrendered and the re-issued patents obtained, which formed the basis of this suit. The complainant avers that the decision of the Supreme Court was given against him because of his "defective specifications," which have been cured by the re issues obtained since the decision referred to. The circuit judges, however, in the present case, have a different opinion of the Supreme Court decision than that entertained by the plaintiff, and state that, "while we are of opinion that the decision of that court is much broader than the complainant admits, and that it goes to the whole invention then and now claimed by Jones in the patents we are here considering, and that it determines that both the process and product now claimed by Jones was the invention of Appert, in France, and Durand, in England, more than sixty years ago, and held that Jones' patents were void for want of novelty, and not merely invalid for want of a proper specification and description of Jones' claims, nevertheless, since the Commissioner of Patents has issued the patents to Jones, we would give him the benefit of them could we discover in what respect they differed from the originals, which the Supreme Court has decided were void. There is no essential difference, however, between the process described in the first patent and the re-issue. The first recites that, after some difficulty found in preserving green corn without drying, the inventor removed the corn from the cob and boiled it, but that by this process the corn, being broken by removal from the cob, dissolved out the juices and made the corn insipid, and then he finally removed the corn from the cob, packed the kernels in cases, hermetically sealed them, and boiled them until the corn was cooked." The Supreme Court, in the case of Sewell *vs.* Jones, says this is not new. Complainant, in his re-issue, states he pursues another plan, whereby he separates and retains the nutritious and edible parts of the corn, boiling them in a liquid of their own juices. No one ever cut green corn from a cob who did not do exactly what this claim describes, and no one under the process described in the patent, which requires the corn to be removed from the cob, could so remove it without breaking the kernels, and when he cooked it in a can, as the patent required, he would find necessarily more or less of the juices with it. The process described in the re-issue is substantially that of the original patent. But if we admit there is something new and patentable in the re-issued patent, which was not in the original, the patent is void, because it is not for the same invention as the original. * * * * It cannot, therefore, be claimed that the re-issued patent contains anything which the original did not, and the original, says the Supreme Court, is void for want of novelty." The patents also described the use of a curved knife to remove the corn from the cob, but this does not appear to add any novelty or patentability to the alleged invention, for the knife differs nothing in principle and little in construction from some styles of spokeshaves or paring knives, and even if the validity of these patents could be admitted on reference to this point, the court could find no evidence that the defendant, McMurray, has infringed them by using the knife of complainant, but, on the contrary, the proof shows that he used a different knife entirely. For these and other objections to the complainant's case, the bill for the injunction was dismissed, with costs. Numerous other suits have been entered by Jones against other parties in New York, Boston, Portland, Chicago, and other parts of the country, which will probably be influenced to a considerable extent by this decision.

HOW TO MAKE HOMES HEALTHY.

Most cases of infectious diseases have, in addition to the common epidemic influence, a direct exciting cause. This will be found, when contagion is excluded, to be poisonous emanations of some kind in the house, or on the premises, or in the drinking water; in cities generally sewer gas. Dr. Chapman, of Brooklyn, to whom we refer in another article, after experiments, has settled on the following plan as a sure relief from sewer gas: The soil pipe running from the cellar passes through the house and opens into the kitchen flue at the top story. The pipe should be four inches in diameter. It will be freely ventilated by the draft of the flue. Into this soil pipe or ventilator, the waterclosets and basins on the different floors empty through traps. The water from the upper closet, running past the opening of the lower closet, would be apt to suck its trap dry, and to prevent this a separate ventilating pipe is run from the traps of the lower closets to a point in the ventilator above the upper closet. In this manner all foul gases at once pass upwards and empty at the top of the house. In several houses where malarial disease had been frequent, since the introduction of this plan the residents have been free from all disease due to blood poisoning.

BREAKAGE OF A STEAMBOAT BEAM.

The Harlem, a passenger steamboat plying between New York and Harlem, recently broke the working beam of her engine. The break took place between the eye of the main link and the main center of the beam. The beam is of the usual American type, having a cast iron skeleton frame bound round with a strap of wrought iron. The fracture of the lower part of this strap shows that a flaw has existed for some time but was not perceptible, being covered by a vertical strap. The fracture of the cast iron skeleton frame and the upper part of the wrought iron strap showed a good quality of iron, the former being of a gray color and close grain, and the latter of a fibrous nature. The rectangular cross section of the strap, where the flaw is, and where the break first commenced, is in size 5 by 3¼ inches. The length of the beam is 15 feet 6 inches by 8 feet wide.

The point of interest is the fracture of the wrought iron strap where the flaw is, and the iron sbows crystallization. As the flaw was concealed from view it becomes a matter of speculation how long it has existed, and whether it resulted from inferioriron or from crystallization gradually taking place as the result of constant vibration. The excellent appearance of the iron in the upper part of the beam strap seems to indicate that the iron when first put round the skeleton was all of good quality, and that a change took place in the lower half or some portion of it.

The experience as to iron undergoing a gradual deterioration under certain circumstances is too universal to be discredited. The multitude of theories put forth to account for it bear witness to the fact, although an explanation of the phenomenon is still required. Mr. Roebling, the late distinguished engineer, assumed that the drawn out fiber of wrought iron is "composed of an aggregate of pure iron threads and leaves, enveloped in cinder. Wrought iron thus becomes brittle under long-continued vibration under tension, because the iron threads and laminæ become loosened in their cinder envelopes."

The Northern Lights.

The Finland observations of northern lights in the years 1846–1855, numbering 1,100, have recently been compared by M. Fritz, in the *Wochenschrift für Astronomie*, with auroral phenomena of the same period in all other regions. This comparison leads to results which are interesting as bearing on the theory of the phenomenon. The table shows that of 2,035 days of the months August to April, on which northern lights were seen, 1,107 days were days of northern light for Finland. On 794 days northern lights were visible simultaneously in America, and mostly also in Europe; on 101 days only in Europe, and on 212 days only in Finland. They were on 958 days visible in Europe and America, and not visible in Finland. The conclusion is thus reached that a large portion of the polar lights have no very great extension, or that the causes producing them must often be of a very local nature, while in another portion of the phenomena the regions of simultaneous appearance are very considerable. The number of those phenomena which are limited to Finland is very small. With the increase of frequency of the phenomena, at the time of maximum, their number observed in Finland and America on the same day increases; while those observed in Finland and only in Europe, or those in Finland only, decrease. These relations correspond to the known law, that with the frequency the intensity and extent of the polar lights also increase.

Yellow Fever Infectious.

Many medical men hold that yellow fever is not infectious. Mr. Jasper Cargill, of Jamaica, W. I., relates, in the *Lancet*, several instances which came under his notice in which there would be no doubt whatever that the disease came from infection. The sufferers were colored people fully acclimatized to the Jamaica climate, so that there was no pobability of the fever having bred in themselves; besides the place of infection was very clearly ascertained.

Lead Explosions.

Many mechanics have had their patience sorely tried when pouring lead around a damp or wet joint, to find it explode, blow out, or scatter from the effects of steam generated by the heat of the lead. The whole trouble may be stopped by putting a piece of resin, the size of the end of a man's thumb into the ladle and allowing it to melt before pouring.

THE famine in India has quadrupled the death rate in the city of Madras. The death rate in July was 1,150 weekly. During the week ending August 17th, 1,051,000 persons were receiving relief in the Madras presidency. In thirteen affected districts the annual death rate in the week was equal to 483 per 1,000, signifying that if this rate continued for a year scarcely more than half the population would survive.

TO COAT iron with emery, give the metal a good coat of oil and white lead; when this gets dry and hard, apply a mixture of glue and emery.