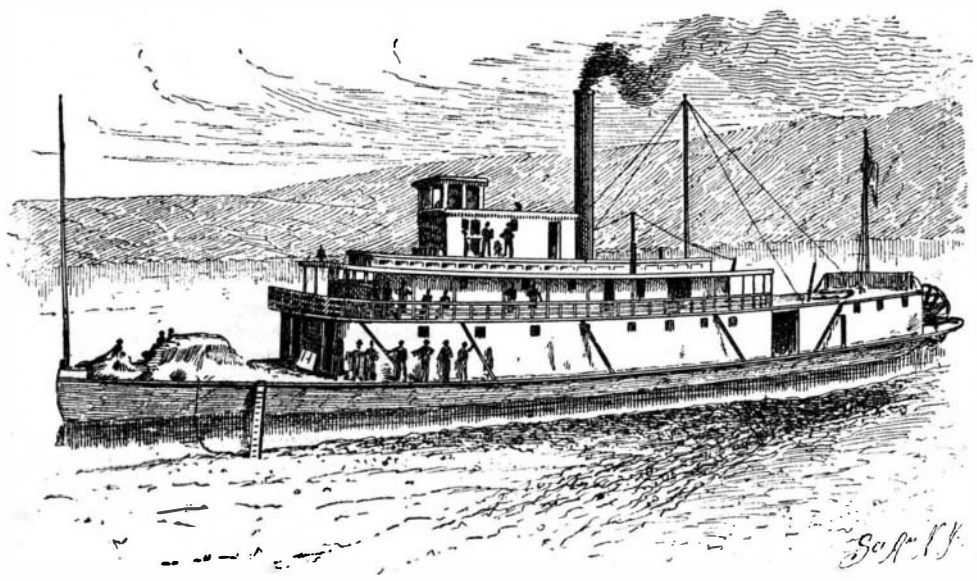
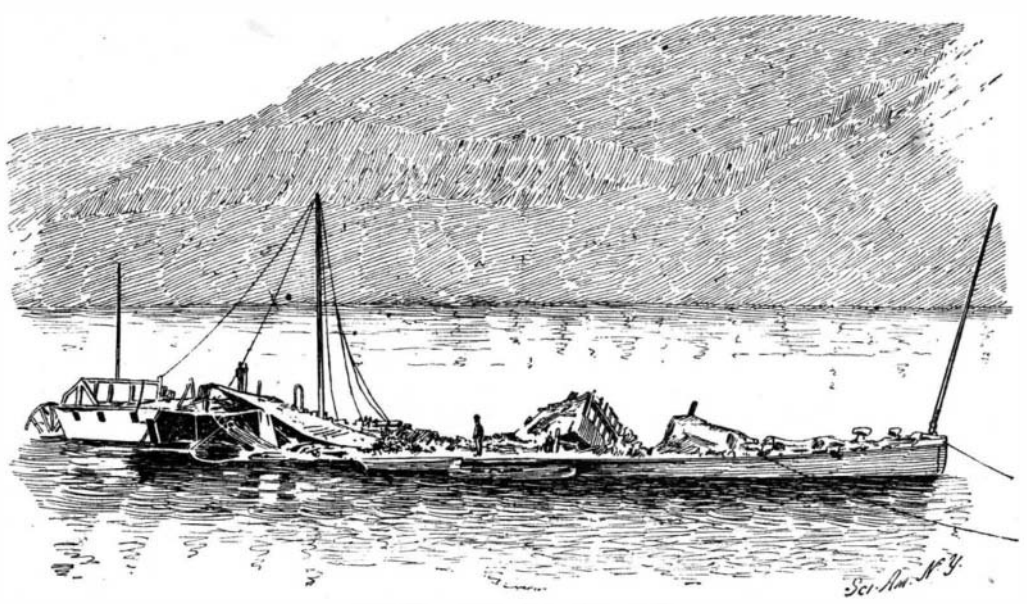
A STEAMBOAT EXPLOSION.

Steamboat boiler explosions attended with loss of life are few in number, and the entire history of Northwestern steam boating records a bare half dozen of these distressing fatalities. What was probably the most terrible accident of this nature that ever happened on the Northwestern waters took place on Snake River, August 14, when the boiler on the Annie Faxon exploded, killing eight people, wounding nine others and making a total wreck of the fine steamer. The steamer, in command of Captain H. C. Baughman, with George Brown engineer, left Lewiston, Idaho, on her regular trip to Riparia about daylight, and at 7:20 A. M. started to land at Wade's landing. In making the landing the engineer received a "go ahead" bell, and was in the act of answering it when the explosion occurred. The boiler was torn asunder and literally blown to pieces, a considerable portion of it being missing from the debris that remained on her decks. The accompanying illustrations, taken before and after the wreck, give a good idea of the awful destruction. A rigid examination by Inspectors Edwards and McDermott has thus far failed to reveal the cause of the explosion. The boiler was in good order, and at the time of the explosion was carrying ten pounds less steam than was allowed. The fusible plug, which would melt when the water became low, shows no sign of trouble from that cause, and from indication the exact cause will never be known.—*Railway and Marine Gazette.*



BEFORE THE EXPLOSION.



AFTER THE EXPLOSION.

A Boiler Explosion.

Boiler explosions are by no means uncommon, and yet they are seldom observed by "disinterested spectators." One of our inspectors from the Hartford office had the good fortune a short time ago to actually see a boiler blow up under steam at a high pressure. The boiler was torn apart and thrown in various directions. The inspector relates his experience as follows:

"About 12.30 o'clock on the afternoon of August 14, my attention was attracted by a fire which had just broken out in a shingle mill at North Adams, Mass. The flames spread rapidly, and were fast consuming the wooden mill and communicating with the adjoining buildings; and when the fire department arrived and got to work it bent its entire efforts upon saving the surrounding property. Hence no water was thrown on the burning building in which the boiler was situated.

"The boiler was of the locomotive type, and was rated at about 35 horse power. It was unjacketed and all its parts were exposed to the elements. It was provided with a two-inch pop valve, which would be of ample size to relieve it of excessive pressure under working conditions. The boiler, being under our care, was recently inspected, and was in good condition for a working pressure of 110 pounds to the square inch.

"The mill was situated on the bank of a small pond and the boiler was set at right angles to this bank. The position taken by the writer at the time of the explosion was on the opposite side of the pond, about 200 feet away from the mill.

"The boarding which covered the mill soon burned away, leaving only the frame and the stock for about 250 panel doors. This stock had been piled over the boiler to dry, and when it was released by the burning away of the mill it fell down about the boiler in a heap and burned fiercely, so that the entire outer part of the shell became the heating surface of the boiler. The safety valve was blowing freely, and could be heard distinctly above the roar of the flames. It was doing its utmost to relieve the enormous pressure that was fast accumulating. The iron stack had fallen into the pond and the smoke arch at the front end had become red hot. A few moments later there came a deafening explosion, like the report of a blast, and the burning timbers were hurled in every direction. One piece, about 6 inches square and 8 feet long, which was probably over the point of rupture, was thrown high in the air, so that it was hardly visible to the eye; it must have gone up 300 or 400 feet. The point of initial rupture was on the top of the barrel and the boiler was torn in three pieces. The front end was thrown into the pond, about 50 feet from where it stood before the explosion; and the fire box end, with the protruding tubes, was blown about 75 feet in the opposite direction, narrowly missing two firemen who were standing by. The central portion of the barrel was laid flat on the floor where the boiler stood.

"Investigation showed that the boiler was nearly filled with water at the time of the explosion. The shell above the water line had been overheated and softened, and the enormous pressure that accumulated caused the explosion. The shell was bulged outward in several places along the top to a depth of nearly half an inch."—*The Locomotive.*

Foundations in Quicksand.

A novel method of making foundations in quicksand was described by Mr. F. Neukirch, of Bremen, at the International Congress of Engineering, Chicago. The sand on which the foundation is to rest is converted into solid concrete by blowing into it, by air pressure, dry cement in powder. For this purpose a 1½ in. pipe is used, which is drawn to a point at its lower end, and has there three or more ⅜ in. holes. This pipe is joined at its upper end by a rubber tube to an injector, which is connected to a source of compressed air, and is fed with dry cement. The sinking of the pipe to the depth required is facilitated by blowing air through it during its descent and setting it in motion. Depths of 16 ft. to 19 ft. can thus be quickly reached. This done, the cement is fed in, and is carried into the sand by the air, which, boiling up through the former, insures a thorough mixture of it and the cement. The tube is then slowly withdrawn, the supply of cement being continued till it reaches the surface. The concrete formed in this way takes several weeks to harden, and requires months to attain its full strength. The whole area to be treated is divided into a number of small areas of about one square foot each, and the tube is sunk successively in all of them. It is found that the mixture of cement and sand produced occupies less space than the sand alone did before the operation. The method has been, it is stated, successfully applied to the water tightening of an iron coffer dam at the harbor of Vegesack, Bremen, and to a similar purpose on a sewer laid in quicksand in a narrow street. The sewer, which was egg-shaped, was very leaky—so much so that the sand passed into it, and was carried away with the sewage. Settlement then took place, and it was to prevent this going further that the "air" grouting process already described was adopted, and proved quite successful.

Progress of Refrigerating Industries.

With regard to ice manufacturing and refrigerating machinery, the *Engineer* remarks that during the year the progress has, on the whole, been satisfactory. There has not been much demand for large ice-making plants, chiefly because of the low price of Norwegian ice, but now that attention has been called to the desirability of using pure or distilled water ice for dietetic purposes, it is probable that the demand will improve. That machine-made ice can be produced at a less price than that of ice imported from Norway admits of no doubt whatever, and an ice factory must be a commercial success, provided it is put up with reasonable skill and with due regard to the wants of the particular district. Already in England large factories are successfully working in London, Birmingham, Hull, Liverpool and Manchester, as well as in other large towns. In warm climates the conditions are, of course, still more favorable for the artificial production of ice than in temperate climates such as that of England. The day of the compressed air refrigerator is at last over, and this seems to be true for machines both for land and ship use. At the present time, probably, no less than 80 per cent of the dead meat imported into Liverpool from North and South America is brought over by means of ammonia compression machines, and it is only a question of a comparatively short time until the few remaining vessels still using compressed air machines are fitted with more modern appliances, not only costing less to install, but requiring merely about one-fifth of the driving power. In the New Zealand and Australian trade, Messrs. Turnbull, Martin & Co.'s new boats, Perthshire and Buteshire, each of which will carry about 2,500 tons of frozen meat and dairy produce, are fitted with Linde machines on the air circulating system; and a third vessel, similarly equipped, has just been ordered by the same firm. The Gothic has a chemical machine on the carbonic acid system, with brine pipes; but in view of recent rather alarming reports from the River Plate, further experience is required before the success of this system can be said to be assured. With working pressures reaching as high as 1,200 pounds per square inch in the tropics, and with a critical point as low as 88 deg. Fah., it is rather difficult to see how such a liquid as carbonic acid can be satisfactorily used, except perhaps in some special cases. Linde machines are now used extensively for mutton and beef freezing and storage in South America, New Zealand, and Australia; and the Queensland Meat Export Company has just recently ordered two large plants for Brisbane and Townsville, each capable of freezing 600 tons of beef per month, and of simultaneously storing 600 tons at 10 deg. Fah. At Townsville the initial temperature of the cooling water is 100 deg. Fah. In this country a large chilling and cold storage plant is in course of construction for the Manchester Corporation, and a large extension is in hand for the Liverpool Cold Storage and Ice Company. Refrigerating machinery—chiefly on the ammonia compression system—is now used very largely by butchers, poulterers, and others, who find that with a well-constructed cold chamber they can not only supply better conditioned meat, but they can themselves take advantage of fluctuations of the market, and so make an additional profit. For industrial purposes the field is daily increasing, and it is surprising to think of the many instances—unknown till a few years ago—in which refrigerating machinery is now economically adopted.

Cristalline.

This is a kind of collodion in which the ether and alcohol are replaced by methylic alcohol as a solvent. It evaporates more slowly than ordinary collodion and forms a durable translucid pellicle, said to be imperceptible on the skin. It has been employed in combination with various medicaments in cases of skin disease, and readily dissolves pyrogallic and salicylic acids, chrysarobin, sublimate, etc. By the addition of castor oil an elastic cristalline may be obtained as in the case of collodion.—*Sem. med.* and *Repertoire* [3].