guisher, but though it possesses many of the best qualities for such a purpose, it has never come into general use. It is readily procured, and cheap. It is heavier than air, and can therefore be poured over a fire very much as one would pour water. It is not only incapable of supporting combustion, but is itself perfectly incombustible, being the product of the complete oxidation of carbon. Even when diluted with three volumes of air it will still extinguish fire. These qualities would seem to recommend it highly for a more extended trial than it has yet had. It shares one of the disadvantages attending the use of steam or any other gas. It soon becomes mixed with the air and dispersed, unless applied very near at hand, or from above, under such circumstances that it can be poured into the scene of the fire without having too many vent holes below for its escape. This limitation for the present prevents its general introduction in place of water, but there are certain conditions under which it is the extinguisher par excellence.

In the hold of a vessel, for instance, nothing could be better. It would not affect the buoyancy of the ship, it would not damage the cargo in the slightest degree, and it would extinguish the fire as perfectly as an equal volume of water. In several instances it has been applied to this purpose. The perfect inclosure of the hull makes it possible to fill the hold with carbonic acid gas up to the very port holes, and, if these be closed, to the deck itself. The gas is readily produced by the action of acid upon fragments of marble or upon sodium carbonate. One plan proposed for the application of this extinguisher on shipboard consisted of having boxes with perforated sides for the escape of the gas, placed in different parts of the hold and connected by means of copper tubes with a carbonic acid generator. On the detection of smoke or fire, the acid is admitted to the marble or other carbonate in the generator, and the resulting gas permitted to flood the hold or such parts as are in danger. As it is half again as heavy as air, the carbonic acid gas would sink immediately to the bottom, and conflagration could soon be made impossible. The entire apparatus is simple and inexpensive. The materials for generating the gas are always easily obtainable, and cost very little. Had the Crystal been supplied with such an outfit, it is probable that the fire in her compartment could have been put out a few minutes after its discovery.

New Kind of Brick.

Messrs. Bleininger and Hasselmann, two German chemists, have, it is said, recently patented a method for obtaining products that will be more resisting to humidity, etc., than ordinary bricks and tiles. After drying and grinding the clay, they make a mixture as follows:

Clay	91½ parts.
Iron filings	3 "
Table salt	2 "
Potash	1½ "
Elder or willow wood ashes	2 "

The whole is heated to a temperature varying from 1,850 to 2,000 deg. C. (3,362 to 3,632 deg. F.). At the end of from four to five hours the argillaceous mixture is run into moulds, then rebaked in the ovens (always protected from the air) at a temperature of 842 to 932 deg. F. The product may be variously colored by adding to the above 100 parts: 2 parts of manganese for a violet brown, 1 part of manganese for violet, 1 part of copper ashes for green, 1 part arseniate of cobalt for blue, 2 parts of antimony for yellow, and 1½ parts of arsenic and 1 part oxdie of tin for white. These products resist the action of acids, and are well adapted for sewers, etc.

ACCORDING to the *Fireman's Journal*, some one advertised in a certain German local paper that another locality possessed a thrashing machine which was also very effective as a fire engine. The next number of the paper contained the following explanation: "Any one who advertises that at this locality we have a thrashing machine which can also be used as a fire engine is a liar, and even more, though he be as black and sooty as the devil himself; said advertisement is only for the purpose of ridiculing a mistake our noble fire brigade made at the late fire. They were in a great hurry, and in place of hitching their horses to the fire engine, they hitched them to a thrashing machine standing near, and drove quite a distance before they found out their mistake." And so it turns out not to be a combined fire engine and thrashing machine after all.

THE Holly Manufacturing Company, of Lockport, N. Y., have just completed the water works at Fond du Lac, Wis., and they have been very satisfactorily tested. The engines are two compound Gaskill engines, of 3,000,000 gallons each per 24 hours, and pump through 14 miles of pipe to 140 hydrants, etc. The water is taken from 4 six inch artesian wells 600 feet deep. The surplus from the wells is stored in an impounding reservoir of 2,500,000 gallons capacity, which is to be used for fire purposes only, and consumers are supplied direct from the wells. The contract test of throwing streams 120 feet high was perfectly successful.

PHOTOGRAPHIC NOTES.

The Best Temperature for Coating and Developing Dry Plates.—From some experiments recently made, which we find detailed in the *Photographic News*, we take the following interesting facts. Says the *News:*

It is a theory that has been often insisted upon by others as well as ourselves, that, the emulsion once evenly spread on a plate, the more quickly this sets the better; and there can be no doubt that slowness in setting produces deterioration in quality, probably because the bromide of silver has time to settle somewhat while the emulsion is still fluid on the plate, leaving an insensitive film of gelatine on the surface and a film of precipitated bromide against the glass, the latter wanting the protecting gelatine, and therefore liable to fog.

In coating in a room whose temperature was but little above the freezing point, we found that the emulsion at 100° F., a temperature about as high as we usually work at, poured on cold plates, set long before it was evenly spread.

In such a case, two alternatives are open to the operator. He may warm his plates and keep his emulsion at the normal temperature, or leave the plates cold and heat his emulsion to (say) 130° F. At this temperature it will readily flow over very cold plates.

We tried experiments to discover whether any difference in quality would be found in working by the two methods. We were astonished at the result. The plates coated on the glass slightly warmed were all that could be desired; those coated with the emulsion at a high temperature on cold plates were much slower in development, and showed a decided inclination to fog.

The time taken for the emulsion to set was about the same in both cases—probably not more than from one to two minutes—so time of setting cannot have been the factor which produced the deterioration of the plates. Nor can the emulsion itself have been spoiled by the mere raising of the temperature, because it was *after* the cold plates were coated with warm emulsion that, the emulsion being allowed to cool, warm plates were coated with comparatively cold emulsion.

It appears to us that the deterioration is produced by the contact of the atmosphere—probably not of either the oxygen or the nitrogen, but of some impurity in it—with a thin film of hot emulsion.

The more we work at plate making, the more convinced we become that the mere production of a satisfactory emulsion—one capable of giving plates of a high degree of sensitiveness, and possessing all other good qualities—is the easiest part of the process. The coating and drying of the plates form in reality the most difficult part of the work. The following few points may be laid down as established maxims in connection with plate coating and drying.

The plates should be coated with the emulsion at as low a temperature as will allow it to flow readily. After the plates are coated, the emulsion should be caused to set on them as quickly as possible. The drying should be conducted in a brisk current of dry air at a moderate temperature, and should never take more than twenty-four hours.

We were recently developing plates with the solutions very cold—probably the water was not above the maximum density point, say 40° F.—and, as was to have been expected, we found development exceedingly slow. This, however, we had not considered a disadvantage up till the time of our experiments, but we determined to try, by exposing two plates under the sensitometer, and by developing them with cold and comparatively warm solutions, to discover whether there was any real difference in result beyond the difference of time taken.

Here, for a second time, we were much astonished at the result of our experiments. We used iced—or rather snowed—water to mix the developer for the first experiment. It was quite a quarter of an hour before the developing action seemed to cease. Of course, we kept the plate carefully protected from light during all that time.

The second plate was developed with a solution of the same strength as that used for the first, but the temperature was raised to 60° F. The development in this case was complete in about two minutes. The two plates were fixed, and compared. The comparison was instructive. The plate which had been long in the cold solution was afflicted with stains and color fog to such an extent that, on placing it on a piece of white paper, the paper could not be seen at all through the parts that should have been transparent; the plate which had been developed rapidly in the comparatively warm solution showed the protected parts quite clear, and without stains of any kind. A temperature of 60° appears to be the best for all purposes.

With regard to the amount of detail brought out by the cold and the comparatively warm solutions, we may say that the advantage is slightly in favor of the latter, but not much, except when it is compared with solutions at a temperature so near the freezing point as is not likely to occur in practice. Solutions at 60° give an advantage of about one figure of the sensitometer over those at 40°.

Packing Exposed Plates.—Says Mr. Wm. Brooks on this subject in the *British Journal of Photography:*

For a long time past I have been making experiments with various materials for packing plates, which I think are successful. I am of the opinion that plain paper is bad for the purpose. For successful packing, the material used must be non-absorptive. By way of experiment, I perfectly dried some gelatin plates, and then placed between them some pieces of *papier* Joseph, and bound them together, and in twenty-four hours I exposed a plate and developed it, when it gave the structure of the paper, and I came to the conclusion that it was caused by the different degrees of humidity of the paper and the gelatin film, the humidity being equalized between the two; other papers also caused markings of a different kind under the same conditions. I then tried rendering the paper non-absorptive, by passing it through a thin alcoholic solution of shellac, using thin brown paper for the purpose, and then passing it through a rolling press, with good pressure to flatten it; this I found a great improvement; after plates being bound tightly together for a whole week, on developing no marking occurred.

I have tried various other substances successfully, namely, tin foil, lead foil, thin sheet gutta-percha; the latter seemed to answer the purpose better than any other material, being perfectly non-absorptive of moisture, and I should say perfectly inert to the most sensitive of films; it can be purchased at the chemists' sundrymen or at the gutta-percha warehouses in almost any large town, and can be used over and over again. I do not for a moment suppose that plate makers would adopt this mode of packing, but for photographers, both amateur and professional, it will be of great service, for, as a rule, plates *en route* are changed at night in the bedroom with but very little accommodation, and whatever method may be adopted, it must be expeditious. In summer time (dry weather), thin sheet gelatin can be used, such as is used for bonbons, without any color. Using gelatin is going to the other extreme, as it absorbs moisture with a vengeance; but I have found it answer, but give the preference to either the gutta-percha tissue or the shellac paper. I always prefer to cut whichever material I use as near the size of plate as possible. With care I have packed many plates with nothing between them without any damage occurring, but have kept them entirely under my own charge. The sheets can be carried in a flat tin box or a small portfolio of the size, or between two thick pieces of cardboard. I have every reason to believe that many plates are packed by the makers, in the pressure of business, almost hot, the outside papers they are packed in being of a much lower temperature, and any moisture given off flies to the films and causes stains, which seem unaccountable at times.

Appointment of a New Trustee for Stevens Institute.

We learn with pleasure that President Henry Morton, of the Stevens Institute of Technology, Hoboken, N. J., has been appointed to fill the vacancy in the Board of Trustees of the same institution caused by the death of Mr. Wm. W. Shippen.

In his letter announcing this appointment, Mr. S. B. Dod, president of the board, says:

"I feel that this is only your due as a recognition of your services and generous gifts to the institute."

President Morton has been at the head of this institution since its foundation, by a bequest of Edwin A. Stevens, in 1870; and, in addition to other smaller donations, he, in 1881, fitted up a new workshop at a cost of over $10,000, and presented the same to the institute; also, in 1883, he provided funds for establishing a department of applied electricity, devoting $2,500 to the purchase of new electrical apparatus and paying the salary of the professor appointed to take charge of the new department.

The Rabbit Plague in Australia.

Some time ago we published a statement of the ravages of rabbits in Australia, they having become so numerous and destructive that the authorities were alarmed, and puzzled to know how to get rid of the pests. It was stated that one of England's colonies had already lost two millions of sheep by them. One flock owner, it was stated, had trapped five thousand of the troublesome creatures, but that they were so numerous they must be killed by the million to perceptibly check the rapid multiplication of these prolific and devouring pests. In a recent English newspaper we see that, although Queensland has not as yet been afflicted by the rabbit plague, attempts are being made to prevent their ingress into their territorial limits by erecting rabbit-proof wire fences on their boundary line. Tenders have been accepted for 2,550 miles of fencing wire and 450 miles of wire netting of small mesh. The order will be shipped from England forthwith. A route has been laid out, running for a distance of 300 miles to the intersecting angle of Queensland and New South Wales, and thence northward for 100 miles. The Queensland government have voted £50,000 for this purpose. It is estimated that 1,300 miles of fencing will have to be laid in New South Wales; while in Victoria so great is the demand for wire that the authorities have signified a willingness to forego the duty upon it.