WHO IS DR. VANDER WEYDE?

During the past few weeks, an esteemed correspondent, J. W. Nystrom, Esq., C. E, of Philadelphia, has furnished to our readers several interesting communications, some of which have been answered and criticised by another of our valued correspondents, Dr. P. H. Vander Weyde, of this city. From the tenor of the following letter it would seem that our Philadelphia correspondent is a little suspicious of the respectability of his antagonist. But we can assure him that, in Dr. Vander Weyde, he has a foeman worthy of his lance.

To the Editor of the Scientific American:

SIR :—Will you be kind enough to inform me, through the SCIENTIFIC AMERICAN, if Mr. P. H. Vander Weyde, of New York, has a doctor's diploma, and if so, from which college he has received that title? And what kind of a doctor is he?

The answer to these questions will greatly oblige yours very respectfully, JOHN W. NYSTROM.
1010 Spruce street, Philadelphia, Pa., Sept. 7, 1872.

We would inform our correspondent that Dr. Vander Weyde is a physician of the strictest orthodox sect; that he is an honored graduate of the New York University Medical College, of which John W. Draper, LL.D., is President; that he holds the regular diploma of that institution; that he enjoys the fellowship and esteem of many of our leading physicians and prominent men of science; that he is a native of Holland, where he received a university education; took the degree of Doctor of Philosophy in 1840; was the editor of a scientific periodical; in 1845, at Amsterdam, he received the honorary prize, consisting of the gold medal of the Society of Sciences for his essays upon natural philosophy.

Dr. Vander Weyde is now a citizen of the United States. From 1859 to 1864, he was Professor of Physics, Higher Mathematics and Mechanics at Cooper Institute in this city. During nearly the same period, he was also Professor of Chemistry in the New York Medical College. From 1864 to 1866, he was Professor of Industrial Science in Gerard College, Philadelphia, Pa. His contributions to the scientific literature of the day have been very extensive, and are widely known.

These are only a few of the items of Dr. Vander Weyde's public record. But they are sufficient, we trust, to satisfy the enquiries of our correspondent, and remove from his mind any adverse prejudices that he may have formed concerning the qualifications of the distinguished gentleman whose public standing he has questioned.

CHEMICAL MEANS OF PREVENTING SCALE IN BOILERS.

In a recent number, we treated of the means acting mechanically to prevent the formation of deposits in boilers. In the present article, we propose to consider the efficiency of various chemicals, proposed from time to time for the same purpose.

Among the alleged remedies, the first to be considered are those which effect a decomposition of the gypsum (sulphate of lime) and convert it into insoluble but pulverulent carbonate of lime. The cheapest substance of this kind, and the one which would first suggest itself, is carbonate of soda, first proposed by Kuhlmann and recently again by Fresenius. We shall see that some authorities have affirmed that this substance may itself be detrimental; that a large surplus may corrode soldered joints or dissolve putty, if any be used. On the other hand, others maintain that they had used carbonate of soda for years with decided benefit and without detecting any such damage to the joints of the boiler. In all cases, it will be proper to regulate the addition of this material in such a manner that it will just suffice to decompose the sulphate of lime in the feed water.

Fresenius has recommended a ready method for ascertaining the quantity. To a measured volume of the feed water, a solution of carbonate of soda of known strength is added, until no further turbidity takes place. When the white precipitate has deposited itself, some lime water is added to a sample of the clear liquor; if it becomes very turbid, too much soda has been added; and the contrary is the case if, in the clear liquid, a further addition of carbonate of soda produces cloudiness. But if the liquor remains clear, or if it gets only slightly cloudy, the right quantity has been employed. From the proportions used in these tests, the quantity necessary to be added to the feed water may readily be calculated.

Soda is employed in various manners. Runge recommended boiler tenders to draw off the clear water from the deposit, which would be unnecessary labor; for if particular precaution be necessary that the required amount of soda be not exceeded, the mixture may be made in the feed water heaters or in another vessel, before being pumped into the boiler. The ordinary way of procedure consists in putting in the boiler sufficient soda to last some time. It is evident that, in such a case, it must be considerably in excess in the beginning, and that it will be used up in time. In such instances, it is possible that the boiler is injured by the surplus of carbonate of soda, and some writers maintain that the cause is to be attributed to cyanide of potassium, from which commercial carbonate of soda is rarely free. Kuhlmann recommends the use of two or three tenths of a pound of soda per horse power per month. It is evident that this proportion can only be an approximation, from the fact that the conditions vary according to the construction of the boiler, the tension of the steam, the duration of a day's work, and, primarily, to the nature of the water. The sulphate of lime is converted into carbonate of lime (and so loses all its adhesiveness) when boiled with a solution of potash or soda; these two substances may also serve for the cleaning of incrustated boilers. And we must here remark that those in favor of the use of soda declare that such boilers as become leaky only remained tight in consequence of the scale which incrusted therein. In case the scale should not be completely dissolved by soda, dilute muriatic acid may afterwards be tried, the employment of which would be ineffective if soda were not used beforehand; but this remedy should only be resorted to in case of the utmost necessity and in simply constructed boilers. Due precaution should also be taken that the acid be completely washed out.

With regard to the substitution of caustic potash or soda for the respective carbonates, the result remains the same, and it is not clear to the writer, why the more expensive caustic alkalies are to be preferred to the cheaper carbonates. Muriatic acid and chloride of barium, in mixture, are only to be employed with great caution. By the addition of the latter, sulphate of baryta is produced from the gypsum of the water, as well as from the other sulphates. Respecting the muriatic acid, it is added for the purpose of dissolving the carbonate of lime; and it is stated that it is preferable to use the clear water only, although sulphate of baryta does not form any cohesive and adhesive deposit. The danger of using muriatic acid need scarcely be pointed out.

Carbonate of ammonia plays a part corresponding to that of the fixed carbonated alkalies; it precipitates the solution of the bicarbonate of lime, as well as that of the sulphate of lime, and forms sulphate of ammonia with the latter. Since a part of the carbonate of ammonia volatilizes always with the steam, one must not use the steam for purposes wherein the volatile alkali could be hurtful, as for instance, in steaming cotton tissues printed with topical colors, or for heating dyers' vats, etc. The other ammonia salts, such as sal ammoniac and the acetate and nitrate of ammonia, act quite differently. This becomes obvious when we consider the part which sal ammoniac plays. O. Smith observed that one equivalent of freshly precipitated carbonate of lime, when boiled with one equivalent of sal ammoniac, forms chloride of calcium, and that carbonate of ammonia passes off from the boiling liquid. Gypsum and carbonate of lime in presence of sal ammoniac are converted into chloride of calcium, carbonate of lime and sulphate of ammonia. Elsner was of opinion that sal ammoniac fulfils every reasonable requirement, and he considers one part sufficient for 1,200 parts of spring water. There is no doubt that sal ammoniac renders good service in dissolving scale, but it must not be overlooked, however, that all ammonia salts corrode stop cocks and other parts of the boiler made of brass.

Regarding substances containing tannin, they act by producing tannate of lime, a substance of slimy consistency which deposits itself without adhering to the walls of the boiler. Among them we enumerate extract of oak bark, gall nuts, tan bark, catechu, etc. Elsner found the wild growing tormentilla root very suitable. Cavé patented the suspending of oak blocks (from four to six pounds per month per horse power), and Roard recommends mahogany sawdust in the proportion of eighteen quarts for a ten horse boiler for every three months. Some of these materials possess also a mechanical action, about which we spoke in our previous article.

THE MARRIAGE OF FATHER HYACINTHE.

In the month of July, 1867, by the favor of a United States senator who was returning from abroad, we received a small package containing three corsets, accompanied by a letter dated at Paris, written in a clear and business style, directing us to take immediate steps to secure a patent on the article in the United States. "And can you," says the writer, "recommend to me a good, smart, honest Christian lawyer, a saint, to attend to all my affairs relating to my invention?"

In a subsequent letter concerning her patent business, she commences: "I beg you will not allow this letter to leave your left hand till your right hand answers it." And again she writes, from the Alps: "Here I am among the eternal snows, clouds, rocks, monks, and dogs of St. Bernard." During the pending of the application before the Patent Office, we received a number of letters from our fair client, all of which bear evidence of the writer's genius and superior business qualifications. In the patent records for September 8, 1868, may be found the name of Emilie J. Meriman, patentee of an improved corset. It is to this lady that Father Hyacinthe, the eloquent and gifted Frenchman and Catholic clergyman, was married the other day in London. The new wife of the reverend father is very beautiful, and is gifted with rare talents.

This marriage will not, we presume, be promotive of a reconciliation between Father Hyacinthe and his former religious order, and we therefore indulge the hope that it may influence him to seek in this, the native land of his bride, a new and happy home. He would be cordially welcomed here, and as a citizen of the United States would enjoy the most extensive opportunities for usefulness.

PATENT OFFICE ITEMS.

The Commissioner of Patents has granted an extension of the patent of Theodore Heermane, of Illinois, for coffee roaster, and of Harlow H. Thayer, of Boston, Mass., for journal boxes, and has refused an extension to Clayton Lippincott, administrator of Sherburne C. Blodgett, deceased, of New Jersey, for sewing machine.

Lewis W. Haupt, C. E, Assistant Examiner in the class of Civil Engineering and Architecture, has resigned his position to accept the chair of Assistant Professor of Civil and Mechanical Engineering and Mathematics at the University of Pennsylvania.

The receipts of the Patent Office during the month of August last were $57,217.75.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

BITUMINOUS COAL AND IRON MANUFACTURE.

Professor E. B. Andrews, State Geologist of Ohio, read before the Association, at its recent meeting at Dubuque, an interesting paper on coal. He states that, so far as his observation extends, a coal seam has never been accumulated on high grounds, or ground above water level; and such formations could not take place, because it would be impracticable to establish the conditions of accumulation on the side of a hill. Hence it is impossible in the nature of things that two distinct seams of coal could ever coalesce, since their subsidences must take place in parallel lines. To suppose otherwise would involve a very unequal subsidence over very limited area, amounting, indeed, to a convulsion of Nature, which is almost incredible. For example, Professor Andrews has yet to see two seams of coal 50 to 100 feet apart in one place come together in another within a distance of a mile or a few miles so as to make one seam, though the contrary has often been asserted by other explorers. The apparent exception to this is in cases where a small local basin of coal has been formed and subsequently filled in with clay sediments, and after that a new coal seam has been established, like a lid to the basin, and continuous with its edges.

Referring to the solidification of coal, which is generally considered an exceedingly slow process, Professor Andrews states that it is comparatively rapid. Thus it appears that where a gully has been torn out of a coal seam by a rapid current of water, the small boulders, washed by it over the covering stratum of sand a few feet above, are complete coal, having an angular fracture, some being still sharp on the edges and some being slightly water worn. These boulders in turn have again been covered by subsequent depositions and are found at considerable depths, near the base of the coal measures.

There are three leading varieties of bituminous coal; the ordinary resinous or caking coal, the splint, and the cannel coal. These pass into each other by almost imperceptible gradations. The resinous coal seems to be the normal condition which the buried vegetation first assumes, and splint and cannel are modified forms, the cannel coal having lost all trace of structure, and containing no organized forms except stigmaria, which are very abundant. The ash of coals is the original inorganic matter of vegetation, often increased by sedimentary matter in the marsh during the formation of the coal. The lowest percentage of ash observed by Professor Andrews in Ohio coals is 0·77 per cent. Sulphur is found in all coals, being a part of the original organic compounds, now combined in part with iron, as iron pyrites—sulphuret of iron,—though not necessarily so combined, as Professor Wormley has abundantly shown in his chemical examination of the Ohio survey. Sometimes the sulphur is so exclusively combined with the more bituminous element of the coal as to pass off entirely with the gases in the operation of coking, leaving the coke almost as pure as charcoal. Coals of this kind are specially adapted to the blast furnace, the sulphur passing off in the top of the stack without detriment to the iron. Coal for the blast furnace, if used in the raw state, must be a dry burning coal, so as not to expand in coking and thus choke the furnace. The coke of the dry burning coals has a tendency to be less firm than that made from the more bituminous or coking varieties, and consequently will not so well sustain in the blast furnace the weight of the superincumbent materials of the charge. The coke made from the softer coals, like the Newcastle of England and the Connellsville of Pennsylvania, has a hard, cinder-like formation, enabling it to bear the burden of furnaces of great hight, those of England sometimes exceeding 100 feet. As a practical matter, it is absolutely necessary that iron masters should adapt their furnaces to the peculiar physical properties of the coke produced by the coals they are using. A high furnace with a weak, tender fuel must necessarily meet with disastrous results, unless, by simple mechanical contrivances, the vertical pressure of the burden can be relieved and the coke at the bottom of the furnace allowed to rest lightly and not under heavy weight; thus securing the most intense and perfect combination of the carbon at the base of the furnace. Such contrivances are by no means impracticable.

TEMPERATURE OF THE POLAR REGIONS.

Professor Wheildon, of Concord, Mass., advances, in opposition to what is known as the Gulf Stream theory, an atmospheric theory to account for ameliorations of climate and an open sea in the polar regions. The accounts of arctic voyages, it is stated, show sudden rises of temperature when nothing but an unlimited extent of ice is near. These changes, it is considered, could not have been consequences of proximity of open water, which, at best, would be of 29° temperature. The theory of Professor Wheildon is that open water, melting ice, rain after snow, and other phenomena of the sort in arctic regions, are not caused by winds warmed by an open sea, but by a circulation of air in which warm winds descend from upper atmospheres; being a circulation by which winds heated at the equator reach the poles.

INSECTS SHAPED TO THE NEEDS OF FLOWERS.

The flowers of the Yucca plant are peculiarly constructed so that it is impossible for the pollen to reach the stigma, it being glutinous and expelled from the anthers before the blossoms open. It has been therefore the opinion that the plants must needs rely on some artificial agency for fertilization. Professor C. V. Riley, of St. Louis, has lately discovered that the work is done by a small white moth which he calls *pronuba Yuccasella*, and which forms the type of a new genus. It is most anomalous from the fact that the femaly only has the basal joint of the maxillary palpus wonderfully

modified into a long prehensile spined tentacle. With this tentacle she collects the pollen and thrusts it into the stigmatic tube, and after having thus fertilized the flowers she consigns a few eggs to the young fruit, the seeds of which her larvæ feed upon. The Yucca is the only entomophilous plant known which absolutely depends for fertilization on a single species of insect, and that insect is remarkably modified for the purpose. The plant and its fructifier are inseparable under natural conditions, and the latter occurs throughout the native home of the former. In the more northern portions of the United States, and in Europe, where our Yuccas have been introduced and are cultivated for their showy blossoms, the insect does not exist, and consequently the Yuccas never produce seed there. The larva of the *pronuba* eats through the Yucca capsule in which it fed, enters the ground and hibernates there in an oval silken cocoon. In this stage the insect may easily be sent by mail from one part of the world to another, and our transatlantic florists may, by introducing it, soon have the satisfaction of seeing their American Yuccas produce seed without any personal effort on their part.

JEWELS IN THE UNITED STATES.

It is stated that the chief discoveries of rubies and sapphires in this country have been made in Macon and Cherokee counties, North Carolina, where the mining of corundum is carried on to a great extent. A ruby has been found of the weight of a pound. A crystal of ruby and sapphire corundum, weighing 315 pounds, has been sold for $350. These specimens are all found in beds of chrysolite which extend into Georgia, a distance of 100 miles; that is, corundum is found only in chrysolite. Professor Carr has recently seen one of these crystals which had partially become tourmaline —at least one half of it having become metamorphosed into that stone.

Professor I. Lawrence Smith, of Louisville, Ky., having made the subject a specialty, declares his belief that the so-called diamonds discovered in this country were not diamonds, but that they are colorless sapphires which, if properly cut, are nearly if not quite as brilliant. They will scratch every other mineral, except the diamond itself.

This is doubtless the whole fact in relation to the mooted diamond discoveries of Arizona, as the telegram, recently published in the daily papers, regarding the buying of rough diamonds in London by American purchasers is, in all probability, a mere sensational supposition.

ANOTHER LADY SCIENTIST.

Place aux dames! Miss J. Swain, in the late convention at Dubuque, read an excellent paper on "Why we differ, or the law of variety," treating her subject with remarkable taste and ability. The fair philosopher discussed the material aspect of humanity, how each individual consisted of a little more or less hydrogen, oxygen, nitrogen, carbon, sodium, sulphur, and phosphorus respectively, and judged that differences in the proportion of these ingredients, if carefully ascertained, might lead to a knowledge of the law of variety in individuals.

CURIOSITIES OF VIBRATION.

Professor Lovering, on vibration, mentions the following curious instances: When the first suspension bridge was building in England, a fiddler offered to fiddle it away. Striking one note after another, he eventually hit its vibrating note, or fundamental tone, and threw it into such extraordinary vibrations that the bridge builders had to beg him to desist. Only recently a bridge went down under the tread of infantry in France who had not broken step, and 300 were drowned. An experiment is often referred to of a tumbler or a small glass vessel being broken by the frequent repetition of some particular note by the human voice. It is said, and may be true, that certain German tavern keepers increase their custom by the occasional performance of this feat. In the Talmud there is a curious question raised as to what would be the damages if a domestic vessel were broken by a noise made by an animal, such as a barking dog.

[Special Correspondence of the Scientific American.]

LETTER FROM PROFESSOR R. H. THURSTON.

The machinery used in copper mining.—Homeward journeying from the Lake Superior region.—The new city of Chicago.—General character of the new buildings.—The water machinery.—The North Chicago Rolling Mills.—Manufacture of Bessemer steel.—Description of the process.

NIAGARA FALLS, August, 1872.

In presence of this most sublime of all earthly scenes, one feels very little like writing of such vulgar concerns as those which must form the subject of this letter; but as we found, in copies of the SCIENTIFIC AMERICAN that we obtained in the little mining towns recently visited, the commencement of the series, it will probably be expected that others follow uninterruptedly.

COPPER MINING MACHINERY.

When writing from Negaunee, I had intended, had space permitted, to describe the machinery in use in the mining regions visited.

There is usually but little machinery about a mine, whatever its character or location. The ore is raised through vertical shafts in iron buckets, and through inclined shafts in skips, as the miners call them, peculiarly shaped wagons having small wheels which run upon a tramway laid upon the lower side of the shaft. The skips are also made of iron. The hoisting rope is usually of iron wire of from seven eighths to one and a half inches diameter, according to circumstances, the smaller size being sufficient for inclined shafts and light loads, and the larger being required where heavy loads are raised through vertical shafts. The rope is led through a series of heavy blocks, or over a set of larger pulleys, to the engine house, where it is wound upon a drum of from thirty to forty-eight inches in diameter. In one case, where a one and a half inch rope was used, the drum was eight feet in diameter. A small quick-running engine is generally used to drive the drum when hoisting, and a brake controls the latter when the engine is thrown out of gear and the bucket is lowered. The strap brake is used with the best winding machinery, and the compression is effected by a right and left handed screw, whose connection with the strap is made by means of nuts secured to the strap ends.

At the Jackson mine, near Negaunee, the compression is obtained by a very neat and immensely powerful combination of levers and screw, designed by Captain Merry, the superintendent of the mine. At this place, the winding apparatus was driven very satisfactorily by a 40 horse power Root engine and boiler, built in New York.

At the Champion iron mine, the winding machinery is well made and highly finished. It does excellent work, and is considered by many to be the finest in that section. It was built in Detroit, and I very much regret that the name of the firm of whom it was purchased has escaped from my memoranda. I think, however, it is from the Michigan Iron Works of Messrs. Hodge & Christie. At a number of places we found the very neat and effective stone breaker of Messrs. Blake, of New Haven, an admirable machine.

HOMEWARD JOURNEYING.

From Negaunee we came by rail to Escanaba, thence by steamer through Green Bay to Menominee, and, there taking the train again, reached Chicago in just twenty-four hours from Negaunee.

NEW CHICAGO.

We remained at Chicago long enough to inspect the burned district with some care, to visit the water works, and to spend a half day with Mr. Forsythe, the superintendent of the Bessemer plant of the North Chicago Rolling Mills.

The resurrection of Chicago after the great calamity is something marvelous. Rebuilding commenced before the fire was extinguished, and has gone on unceasingly since. The results of such wonderful enterprise and energy are now seen in the rebuilding of perhaps one half of the business portion of the South side. The new buildings are generally substantial, neat, and convenient, and many are noble structures, uniting, in an unusual degree, architectural beauty with strength and excellence of workmanship. The new Chicago will be far superior to the old Chicago which it replaces, and ultimately it may be that the great fire will be considered, upon the whole, as having been a benefit to the city, notwithstanding the terrible suffering that came upon the citizens of this portion of Chicago as its consequence.

THE CHICAGO WATER MACHINERY.

The pumping machinery of the Chicago water works is located directly in the midst of the burned district, but fortunately remains uninjured. Four large steam engines are at work supplying the city with water, which is drawn from the lake through a tunnel extending far out into the lake, and which is of itself a noticeable piece of engineering. Besides the four pumping engines actually in use, two new engines of great power are in process of erection, and another tunnel is proposed. The new engines were built by the Fort Pitt Foundery, and are very similar to those of the St. Louis water works. We noticed here the Winter cut off on the old engines, the only application of that device to pumping engines that has come under our observation. The new engines have a modified Sickles cut off, and the bucket and plunger pump. They are fine looking machines, and should do good work.

CHICAGO ROLLING MILLS AND IRON WORKS.

The North Chicago Rolling Mills are situated in the suburbs of Chicago, and are extensive works. By the courtesy of Mr. Potter, the president, and the kind attention of Mr. Forsythe, we were enabled to make a very thorough inspection of the plant.

There are two large blast furnaces running here, smelting a variety of ores and making Bessemer pig metal. These furnaces are 17 feet in diameter and 66 feet high; the blast, at a pressure of 3½ pounds per square inch, is heated to a temperature of, probably, 800° Fah. before entering the tweers; the fuel is a mixture of coal and coke. The product amounts to about 600 tuns per week. In the rolling mills about 45,000 tuns of iron rails are made per year—enough to lay nearly 500 miles of track. There is nothing peculiar in the processes in use here.

BESSEMER STEEL WORKS AND PROCESS.

The Bessemer steel plant consists of two five tun converters and their accessories, and is placed in a building by itself. Here selected pig iron, from Lake Superior ores principally, is melted in cupola furnaces, and thence flows, at the proper time, in a glowing stream into the converter, the vessel in which its conversion into steel takes place. Air is then forced, by powerful blowing engines, into the bottom of the vessel, and rises, in hundreds of minute streams of bubbles, through the liquid metal, burning out its carbon and silicon, leaving it almost pure iron, and at so elevated a temperature that it is more fluid than at first. An alloy of iron and manganese, rich in carbon, is next added, and in such quantity that the amount of carbon entering the mass is just sufficient to convert it into the desired quality of steel. The manganese assists by neutralizing the deleterious effect of any sulphur that may be present, and by preventing ebullition of the metal when poured into the molds. The process is one of the most beautiful applications of scientific principles to useful purposes that has ever been made. The operation presents to the spectator one of the most imposing sights that can be witnessed in any branch of manufacturing industry, and the ingenuity displayed in every detail of engineering connected with it is no less remarkable. This most interesting and immensely important branch of modern industry is patented by, and owes its successful introduction very greatly to, a most persistent and ingenious British inventor, Henry Bessemer; but, as might be anticipated, American enterprise and inventive talent have done much towards increasing the reliability and effectiveness of the process. An American, Kelly, was working upon the problem contemporaneously with Bessemer, and met with some success even in advance of him, and the efficiency of the apparatus is largely due to our fellow countryman, A. L. Holley, who has brought up the number of charges worked off per day by a pair of converters to, in some cases, as many as there are hours in the day. Some of the transatlantic Bessemer steel works are producing, even now, but eight or ten charges per day.

R. H. T.

The Great Suspension Bridge between New York and Brooklyn.

Work on the East River bridge is progressing rapidly. The caisson on the New York side is now completed, and the superstructure or tower has reached the hight of twenty-four feet above high water, eight hundred cubic yards of masonry being laid every week. There are about fifty men employed on the structure, and they are under the personal supervision of four engineers, headed by Colonel Roebling. Mr. Martin, one of his assistants, has the present control of the work. Everything possible is done by steam. The stone comes from Maine, and is stored at Red Hook, Long Island immediately opposite Governor's Island. A scow plies between the structure and the island every day. From the scow, the stone is lifted by steam to the dock, where, at a certain point, two tracks come together. The stone is placed on two cars and conveyed to the structure, to the top of which it is raised and placed in its proper position by means of steam derricks. Then the spaces are filled up with concrete composed of cement, sand, and gravel. Even this is mixed by machinery. A revolving shaft is used to perform this operation, which is found to be much more thorough and economical than it could possibly be if done by hand. After this structure is completed, the next step will probably be the building of anchorages on the New York and Brooklyn sides. These will each be 800 feet inland from the towers, the New York one at the corner of Water and Dover streets, and the Brooklyn anchorage at the corner of James and Mercein streets.

The American Institute Fair.

It seems to be an impossibility for the managers of any exhibition to get into proper order before the opening day, and the managers of the American Institute are always more or less behind-hand with their arrangements. The machinery is still in a very incomplete condition, and any attempt to give the public an idea of the merits of the show would be lost labor. As the building in which the fair is held is now the property of the Institute, and the managers have had possession of it for some months past, there is no excuse for the want of punctuality.

As soon as the display is sufficiently complete to allow of judgment being passed upon the exhibition, we shall give our usual full account of such improvements and new appliances as it contains.

A Singular Explosion.

Workmen were lately employed to clean out the grease and paint from the inside of the steam cylinder of one of the large ferry boats of the New Jersey Central Railway Company, opposite this city. For this purpose the piston had been duly removed and three men went down into the cylinder, which is 11 feet deep and 50 inches in diameter, taking with them a pail of benzine, which liquid they used in softening the grease. Suddenly a small snake like streak of flame started from under the hands of the man nearest the benzine pail, and the next instant an explosion occurred, and scattered the burning fluid over the persons of the men.

Martin Sweeney was terribly burnt about the face and neck, and was taken to the hospital. Charles Maloy and John Hays were also severely burned on the face, neck, and arms.

FROM the official testimony given by the chief engineer of the steamer Metis, it appears that the recent foundering of that unfortunate vessel in Long Island Sound was due to the flimsy construction of the partitions in the hull of the vessel. The ship had four separate compartments. By a collision with a schooner, a leak into one of the compartments was made, and the rising of the water therein broke through the adjoining partition and filled the vessel. Had the partition been of proper strength, the steamer would have floated.

GEORGE P. ROWELL & CO, advertising agents, received twenty-seven thousand dollars in advance yesterday, for inserting a four line advertisement one year in all American weeklies. The advertisers are Geo. Stinson & Co., fine art publishers, Portland, Maine.

THE fair of the Maryland Institute for the Promotion of the Mechanic Arts will open on October 1, and continue till October 31.

BRIGADIER-GENERAL SYLVANUS THAYER, of the United States Corps of Military Engineers, died Sept. 7th, at Braintree, Mass., aged 87. He had been fifty years in the public service.