HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY.

In the fall of 1857 a club composed of young men interested in science and mechanics was organized in Hartford, and was known as the Polytechnic Club. Among its members were E. K. Root, E. M. Reed, Horace Lord, Charles B. Richards, Charles F. Howard, J. M. Allen, Francis A. Pratt, Joseph L. Blanchard, Amos Whitney, and J. A. Ayres. The object of the club was to discuss the scientific and mechanical questions that were interesting the public from time to time. Tyndall's "Heat as a Mode of Motion" was just out, and the Richards indicator was beginning to attract attention; the Giffard injector had recently been brought to this country, and was interesting scientific men by its paradoxical performances. The question of running steam cars up steep grades, and the use of the screw propeller in place of side wheels for propelling steam vessels, were warmly discussed by mechanical and civil engineers. These and other similar matters furnished topics for the discussions of the above named Polytechnic Club, but this club did not confine itself to the discussion of matters that were before the public and commented upon by the few scientific and mechanical journals of the day. It sought suggestions and topics from its own members, and among these contributions was that of "Guaranteed Steam Boiler Inspections."

It was argued that a sound and substantial corporation, that carefully inspected steam boilers and guaranteed the owners against loss or damage arising from explosions, would be a valuable help to manufacturers and beneficial to the public generally. This was the inception of the idea of boiler inspection and insurance in this country, if not in the world. The exciting days preceding our civil war speedily followed, and shortly the war broke upon us. The Polytechnic Club disbanded, and nothing more was heard of steam boiler inspection and insurance until the war was over and business had settled down into its former peaceful channels.

In the early part of the year 1866 the question of organizing a steam boiler inspection and insurance company was discussed by prominent manufacturers and others in Connecticut and Massachusetts. Among these were Richard W. H. Jarvis, President of Colt's Patent Firearms Manufactory; Charles M. Beach, of Beach & Co., of Hartford, Conn.; George Crompton, of the Crompton Loom Works, of Worcester, Mass.; and H. H. Hayden, Esq. It resulted in securing a charter for such a corporation from the State of Connecticut at the May session of its General Assembly in 1866, the name of said corporation to be

THE HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY,

its object being to inspect steam boilers and insure the owners against loss or damage arising from boiler explosions. The company was organized in November by the election of E. C. Roberts, President, and H. H. Hayden, Secretary. Mr. Roberts retired from office the following July, and in October, 1867, J. M. Allen was elected President, and H. H. Hayden was re-elected Secretary.

The company's early operations were small; the idea was new, and struck many people as ridiculous. The company had all the discouragements incident to the introduction of a new business and the development of a new idea; but by honest and intelligent work it gradually gained the confidence of the steam using public, and to-day has not less than 18,000 boilers under its care, and employs 42 trained inspectors, who are constantly engaged examining this large number of boilers. But this is not all; the company furnishes plans and specifications for boilers, boiler settings, and chimneys (for its patrons). Many of the large manufacturing establishments of the country have had their boiler houses, boilers, settings, piping, and chimneys laid out and arranged and insured by this company, with most satisfactory results. It has confined itself to the one business of the proper construction, setting, care, and management of steam boilers and their surroundings, studying the quality and character of material best adapted for their construction; also the inspection of boilers already in use, with a view to greater economy and safety.

In the opinion of the officers and directors of the company this business should not be mixed up with a number of other kinds of insurance, but its efforts should be directed solely to the study and development of the best results in the use of steam power.

The company is not interested in any patent boiler or boiler appliance, nor in any boiler "purger;" it approves all attachments, however, that have been sufficiently proved by use to be advantageous. In connection with its office are an experimental room, a draughting room, and a chemical laboratory. In the latter, scale from boilers is analyzed, also water that has proved detrimental to the boilers in which it is used, with a view to recommending the proper treatment to overcome the difficulty. In short, the company aims to give its patrons the best advice possible for the safety of their boilers and economy in their use. The offices and several departments are illustrated on the first page of this paper.

The company has extended its operations until it reaches in its results from Maine to California, and gives a sense of security to owners and users of steam boilers impossible by any other means; for the company not only insures against financial loss from boiler explosions, but by a series of periodical inspections discovers defects and suggests proper management to prevent disaster. The company, through its inspectors and examiners, has contributed very materially to the accumulation of facts regarding the life of steam boilers and the causes of their wear and injury. A large fund of valuable information exists in the records of the company, and its examiners are selected in consequence of their practical knowledge as steam engineers. The "Inspecting Room," shown in the engraving, is a museum of steam boiler curiosities, defective tubes, improper riveting, unsafe plates, etc., teaching more in an hour's study to the engineer and boiler maker than could be obtained by months of study of text-books.

It should be borne in mind that the company by its guarantee has a direct pecuniary interest in every boiler under its care, hence the company is as much interested in preventing accidents as the owner of the boiler. The confidence which the manufacturers of the country have in this company is, no doubt, due largely to the fact that its advice is disinterested so far as the manufacture or sale of boilers or boiler appliances is concerned. It should be stated that Secretary Hayden retired from office, January, 1869, and Theodore H. Babcock was elected to fill the vacancy. In February, 1873, Mr. Babcock retired from the secretaryship to assume the duties of manager of the New York department, which office he fills at the present time. Mr. J. B. Pierce, formerly Secretary of the North American Fire Insurance Company, was elected Secretary in February, 1873. The present officers of the company are: J. M. Allen, President; General William B. Franklin, Vice-President; J. B. Pierce, Secretary; F. B. Allen, Supervising General Agent. Branch offices of the company are established at the principal manufacturing centers of the country.

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Cutting and Setting Precious Stones.

BY A. WAGNER.

Crystalline gems, like diamond and topaz, are generally cut in such a manner as to have flat, smooth faces. Precious stones that decompose the light and thus produce a play of colors, are polished in such a manner as to heighten this effect as much as possible, which is accomplished by making a large number of small facets. The brilliant is an example.

Precious stones that do not crystallize, and are distinguished by play of colors, like the opal, or peculiar effects of light, like the cat's eye, are usually polished round or oval like a loaf of bread or a half of an egg.

Gems are set in two different ways, distinguished as a free setting (*ajour*) and band setting (*en cassette*). In the former the stone is exposed on all sides and only held by little clasps. All its properties, its fire, its play of colors, show to the best advantage here. Hence very valuable gems are never set in any other way. Flat stones that are set in rings are sometimes fastened on the edge so as to leave only the top and bottom surfaces exposed.

In the band setting the stone forms the lid of a gold box, and if the gem is transparent the upper surface is generally made flat and smooth, while the under side forms a low pyramid.

In those stones which receive a band or box setting, and are less valuable, the beauty of the stone is increased by lining the box with colored tin foil, the color of the foil corresponding to that of the stone. Thus, for example, a piece of dark yellow foil is placed under very pale topaz, a deep purple foil under a pale amethyst, and so on, so that the light reflected from beneath through the stone will have a deep yellow or violet color, giving the stone a much finer appearance than if it were set free.

When setting common stones in cheap goods, they do not take the trouble to line the box with tin foil, but merely give it a coat of some colored varnish. This method is not one to be recommended, for a stone that has the foil beneath it looks much handsomer.

In order to make a cheap article with genuine stones the following ingenious device is resorted to: Thin slips of some gem, as emerald, for example, are backed up with a glass of exactly the same color, and the glass likewise polished. By setting one of these double stones with the real stone outward and the glass beneath, the surface will, of course, exhibit all the properties of the gem, such as hardness, etc. These half genuine stones are known as "underlaid gems," or in French as "*pierres fines doublée.*" When these underlaid gems are skillfully set, it is difficult even for the expert to distinguish them from perfectly genuine stones. But still it is easy to distinguish them by holding the stone before the eye in such a manner that the light reflected from the top enters the eye at an oblique angle; the surface where the stone and glass meet can be distinctly recognized by the difference in the refractive power of the two media, having the appearance of a crack or flaw in the stone. The public are frequently deceived by dealers who represent these underlaid stones as being perfectly genuine.—*Neueste Erfindungen.*

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Eighty Years of Usefulness.

There is something encouraging to young mechanics in the fact that a distinguished member of the craft has just completed eighty years of useful life and is still busy. In effort he is a very young man, for he hopes beyond his accomplishments, and believes beyond his possibilities. This old-young man is John Ericsson, the designer of the first monitor—for so he will be remembered in this country and others. And yet he will be considered historically as an inventor of the locomotive, of a caloric engine, of a screw for the driving of vessels, and possibly as the orginator of a "destroyer" that may add greatly to our national defenses. Possibly his solar engine may also add to his fame; but he will be held in remembrance, by those who share his friendship, as a good man and pleasant friend.

John Ericsson was born in Sweden in 1803, his father being a mining proprietor. He was educated as a civil engineer and subsequently practiced his profession in England. There in 1829 he entered a locomotive in competition with that of George Stephenson.

In 1833 he first brought to public notice his caloric engine. In 1837 he constructed the first practicable propeller vessel, the Francis B. Ogden, and the disfavor with which this was received by the British Admiralty resulted in Captain Ericsson's departure for America in 1839. His record in America began with his first essay in war ship building, the Princeton, which was the first steamship ever built with machinery protected from shot by being placed below the water line. The story of the Monitor, which revolutionized naval architecture, is too well known to need more than a reference. For the last few years Ericsson's time has been chiefly devoted to the perfection of submarine attack, and his torpedo boat, the Destroyer, is the result of his labors in that direction.

◆

An Excellent Ferrotype Developer.

Messrs. Spiller and Crook, after long experience, give the following as a good developer for ferrotype plates:

Water	1 ounce.
Sulphate iron	14 grains.
Saltpeter	10 grains.
Acetic acid No. 8	30 minims.
Nitric acid	2 minims.

some have added—

Sulphate of potash	10 grains.

A potassium collodion should be used.

The tones which this developer gives are of a metallic luster, resembling the daguerreotype.

◆

Instantaneous Photographs.

The introduction within the past two years of the improved gelatine process, by which the time of taking photographs with dry plates has been reduced a thousand times, renders it an easy matter now to obtain with certainty excellent pictures of moving objects, and opens up a vast field of experiment for the scientific student. We lately received some excellent specimens of instantaneous work by Mr. G. G. Rockwood, of Union Square, New York, illustrating the principal proceedings at the opening of the great Brooklyn Bridge. Pictures of frigates covered with flying flags, sailors manning the yard arms, and cannons firing from the same ships are among the pictures, and convey to the mind an idea of the extreme brevity of the time in which the impression must have been made on the sensitive plate. We are informed that the camera was located upon a steam tug, but the plate exposures were so brief that the vibration due to the machinery of the tug did not affect the distinctness of the pictures.

Mr. Rockwood has also produced a variety of beautiful photos illustrating the recent yacht races in the harbor. The several boats engaged in the race are shown in many various positions, going at racing speed, all photographed instantaneously; we have here marine pictures very artistic in finish, that show the form and motion of the waves, the spray, the bending of masts and sails to the wind, and all the circumstances of vigorous action sharply defined and naturally portrayed.

◆

Tar as Fuel.

M. Le Treust gives some data relating to the use of tar as fuel in the Vaugirard Gas Works; the model followed being that of the tar furnaces of the gas works at Breme, designed by M. Servier. M. Le Treust mentions the disadvantages usually accompanying the use of tar as fuel, including the rapid destruction of the retorts, the extreme care necessary to maintain a regular flow of tar, and the liability to smoke. All these inconveniences are claimed to have been overcome by the arrangements perfected by M. Le Treust, which consist of a special form of injector, working in a furnace to which the air supply is regulated to a constant quantity. To insure fluidity, the tar used is taken directly from the hydraulic main. In order to utilize the great radiant power of the burning tar, the retorts of the setting of six are left as bare of brickwork is possible, being supported only on three narrow arches in their length, the middle of the setting being left void. Finally, the front wall is kept cool by the passage through it of the air required to support combustion. Eight settings of six retorts, working for a period of 434 days, carbonized 19,259,200 kilos. of coal, and consumed 2,345,750 kilos. of tar; being 675 kilos. of fuel per bench per day, or 12·17 kilos. of tar per 100 kilos. of coal carbonized. From these figures M. Le Treust concludes that tar firing is as good as coke, since the production of gas is as large, the retorts last as long, and the consumption of fuel is only 12 per cent of the weight of coal carbonized.

◆

THE *Lancet* believes the naked electric light is fatal to the eyes. It is too hard; the "waves of motion are too short, and the outstroke joins the instroke at too acute an angle." To remove this defect a small convex reflector is placed below the light in the protecting globe, and one of larger size above it to secure a double reflection with ultimate divergence downward and outward, causing the rays to fall upon objects within the area of illumination.

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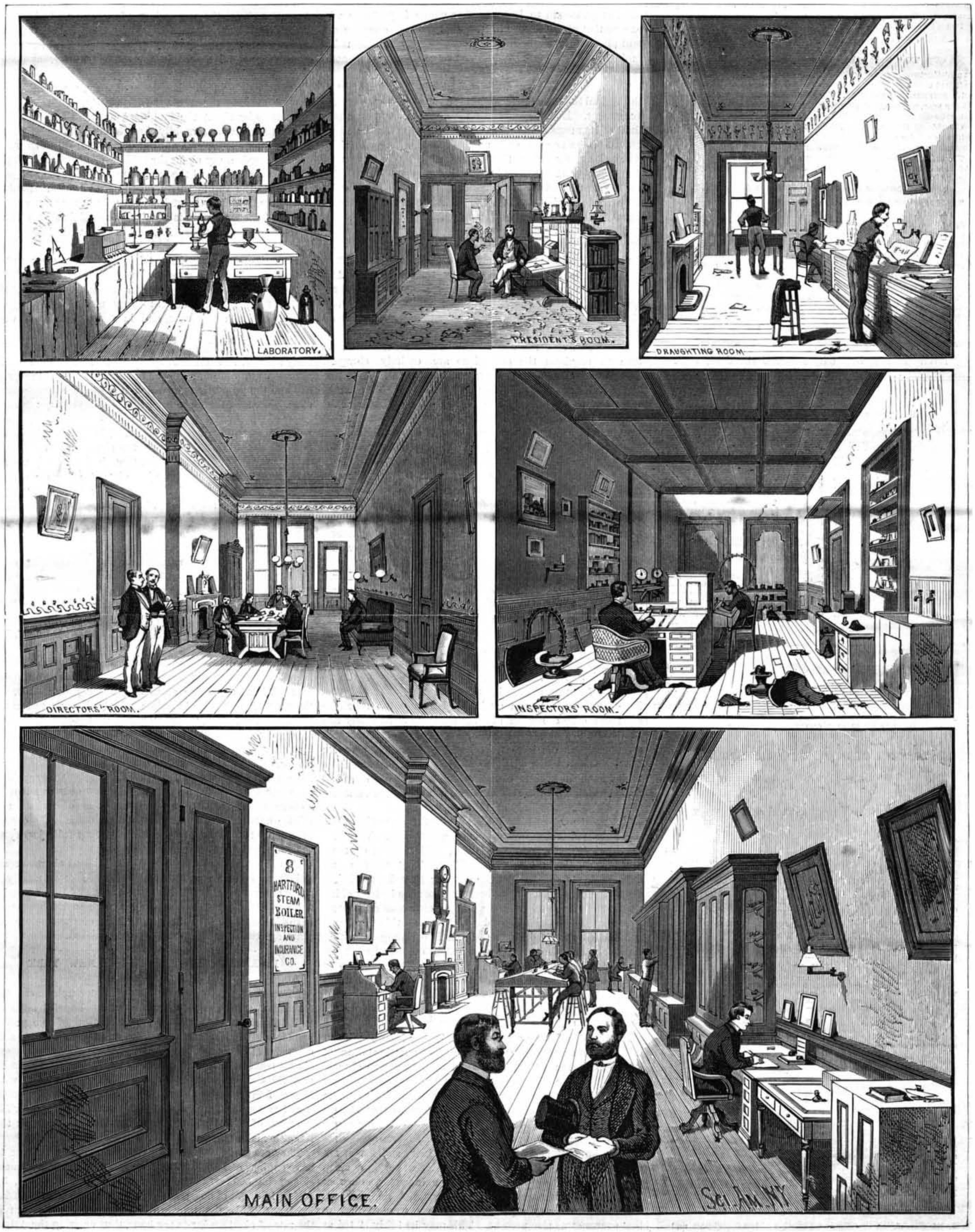

HARTFORD STEAM BOILER INSPECTION AND INSURANCE COMPANY.—[See page 100.]

The Alloys of Gold.

Gold is capable of combination with many of the baser metals; and while its appearance can hardly be said to be improved by the process, its value for various practical purposes is enhanced by the mixture of other metals.

Arsenic, on account of its volatility, can be combined with gold only in small proportions. If the mixture is attempted to be made by projecting metallic arsenic on gold in fusion in an open crucible, the arsenic, according to the quantity used, will be entirely or in great part dissipated, and the gold in consequence will remain entirely unaltered or rendered more or less brittle. If a small crucible containing gold be inserted into a larger one containing arsenic, and an inverted crucible be luted on by way of a cover, and the apparatus be heated strongly in a wind furnace, the arsenic will be raised in vapor, and the gold, being fused in this arsenicated atmosphere, will combine with a small portion of it. The alloy hence resulting is of a gray color, a coarse, granular fracture, and very brittle. A heat equal to that of melting gold is by no means necessary to effect this combination, for if a plate of gold is merely brought to a full red heat in an atmosphere loaded with arsenic, this latter will unite superficially with the gold, and the alloy hence resulting being very fusible, will trickle in drops from the plate, till the whole of it is thus arsenicated. This alloy is scarcely decomposable by mere heat, and at a high temperature the arsenic that is driven off carries a considerable proportion of gold along with it.

If antimony is mixed by fusion with either fine or standard gold in the proportion of even one-quarter of a grain to the ounce ($\frac{1}{1920}$ of the whole mass) the resulting compound is brittle, has a close granular fracture, with hardly any metallic luster, and its bulk will be found to be remarkably greater than would be deduced from the mean specific gravity of its ingredients.

Zinc forms with gold an alloy of a brass yellow color; in other respects its action on gold is very analogous to that of arsenic, when projected in quantity on melted gold, it is entirely volatilized; in the state of vapor it combines with gold and renders it brittle. Fine brass added to gold in the proportion of $\frac{1}{24}$ forms a pale yellow brittle alloy with a coarse granular fracture. The specific gravity of gold and zinc is somewhat greater than the calculated mean, where it forms $\frac{1}{12}$ of the mass. According to Hellot, an alloy of three parts of zinc and one of gold is somewhat malleable; and equal parts of the two metals form a compound which, though brittle, is susceptible of a very high polish, and is but little liable to tarnish.

Cobalt mixed with standard gold, in the proportion of four grains to an ounce, renders the color somewhat paler, and induces a slight degree of brittleness, but does not materially alter the specific gravity. When mixed with fine gold in the proportion of 38 grains to the ounce, the result is a pale yellow alloy, very brittle and with an earthy fracture.

Nickel alloyed with gold in the proportion of 38 grains in the ounce, produces an alloy of the color of fine brass, with a coarse grained earthy fracture, and very brittle: its specific gravity is less than the mean. If the nickel is reduced to eight grains in the ounce of standard gold, the alloy is only slightly brittle; and with four grains of nickel, the mixture continues perfectly ductile.

Gold may be alloyed with manganese by calcining the black oxide of this metal repeatedly with oil in a covered crucible, and then exposing it to a very high heat in contact with gold. The color of the alloy thus produced is a reddish gray; it is capable of receiving a brilliant luster like steel; it is excessively hard, and is so far possessed of ductility as to be in some measure flattened by the hammer before it breaks. The proportion of manganese thus combined is from $\frac{1}{8}$ to $\frac{1}{9}$ of the alloy. The gold in this mixture defends the manganese not only from being oxidated by the air, but also protects it from the action of all those acids in which gold itself is insoluble. By long exposure to a high heat with access of air, the manganese rises to the surface of the gold, when it becomes oxidated, leaving this latter metal behind quite pure. These two metals may in like manner be separated by cupellation with lead, or by solution in nitric acid, if the alloy has previously been quartered with silver.

If gold is mixed with bismuth in the proportion of 38 grains to the ounce, the result is an alloy of a pale greenish yellow, excessively brittle, and exhibiting a fine grained earthy fracture; its specific gravity is somewhat greater than the mean. If standard gold is alloyed with even one-quarter of a grain of bismuth in the ounce, the mixture, although in color and texture reasonably standard gold, is yet perfectly brittle. So great is the liability of gold to be affected by bismuth, that if it comes in contact even with the fumes of this metal, and that not in close vessels, its ductility is entirely destroyed.

If lead is melted with gold in the proportion of 38 grains in the ounce, the alloy, though externally resembling pale fine gold, is as brittle as glass; is of a pale brown color internally; is wholly destitute of metallic luster, and has a fine grained porcelainous appearance; its specific gravity is a little less than the mean. When the proportion of lead is reduced to one-quarter of a grain in the ounce, the alloy is still perfectly brittle; and the fumes of this metal are nearly as prejudicial to the ductility of the gold as those of bismuth.

Tin, when mixed with gold in the proportion of 38 grains in the ounce, forms an alloy of a pale yellowish gray color, with a somewhat earthy fracture; it may be bent without breaking, but is very little ductile; its specific gravity is considerably greater than the mean of the ingredients. An alloy composed of 19 grains of tin, 19 grains of copper, and the remainder of the ounce gold, has a coarse grained earthy fracture, and is considerably more brittle than if no copper had been made use of.

Iron, either in the state of bar iron, cast iron, or steel, may be combined with gold to the amount of 38 grains, and probably much more, in the ounce, without in the least degree impairing its ductility. The color of the alloy is pale yellowish gray, approaching to dull white; it is considerably harder than standard gold, and its specific gravity is somewhat less than the mean of its constituent ingredients.

Platina and gold, when the proportion of the former amounts to 38 grains in the ounce, compose an alloy of a yellowish white color, like tarnished silver, perfect ductility, but much harder and considerably more elastic than standard gold. If to the foregoing alloy the standard proportion of copper is added, the compound becomes of a pale dull yellow, and its ductility is somewhat diminished.

When gold is rendered standard by copper, that is, when the proportion of this last amounts to 38 grains in the ounce, the resulting alloy is of a deep yellow color inclining to red, is harder than pure gold, but perfectly ductile. Its specific gravity is less than that of the mean of its ingredients in a remarkable degree. Equal parts of copper and gold also form a perfectly ductile alloy. It is not, however, every kind of reputedly pure copper which can safely be used for alloying gold: even the Swedish dollar copper occasionally renders the gold with which it is mixed as brittle as glass; this appears to be owing to the lead and antimony which most copper contains, and which, though not in sufficient quantity to affect in any material degree the ductility of the copper itself, are fully adequate to destroy the ductility of the gold with which they are mixed; since no more than $\frac{1}{1920}$ of either of these materials is enough for this purpose, as we have already mentioned.

Silver may be alloyed with gold in all proportions, and occasions hardly any perceptible alteration of the ductility, hardness, or mean specific gravity, the color of the mass becomes paler, exactly as the quantity of silver is increased.

The purple oxide of gold is employed as a material for coloring glass and porcelain. The old chemists vaunted greatly the medical effects of gold, but it has long since disappeared from every American and European pharmacopœia.—*Glassware Reporter.*

◆

Incubation of Diseased Eggs.

Some observations in a field of experimental investigation hitherto but little, if at all, the subject of special research, were contributed by M. Barthélemy before a recent meeting of the Academie des Sciences. The conclusions at which M. Barthelemy arrives are remarkable, and may turn out to be of much value in throwing light on kindred questions. In a farmyard which had been during the past year the site of an epidemic of fowl cholera, a fowl presented this year, toward the end of February, all the symptoms of the affection, and after a protracted illness died. Fourteen eggs were laid by this bird during its illness, and these were subjected to incubation side by side with some eggs obtained from a normal fowl. Closely watched, the two kinds of eggs presented no recognizable difference so long as the circulation lasted in the yelk of the egg. Notable differences were, however, detected when the respiratory function was transferred to the allantois; this would be at about the ninth day of incubation. The addled eggs—if that term may be used—ceased to develop; not one was hatched. Examination of the eggs, opened with the usual precautions, showed that beneath the shell, and at the surface of the allantois, an extravasation of black blood existed, which was characterized by the presence of an odor quite similar to that arising from fowls dead of cholera. Pending the examination the umbilical artery continued to pulsate slowly, a fact which goes to show the tenacity of life of these embryos. The embryo proper was seen, so to speak, swamped in the bottom of the amniotic sac, which was swollen with a large quantity of fluid, while all trace of albumen had disappeared. The blood of the diseased egg was full of bacteria, and the amniotic fluid contained monads of very minute size. M. Barthélemy contends strongly for the notion that the ovum contained the germs of the microbes with which the parent's blood teemed, and that these germs only developed when, by the formation of the allantoid circulation, an aerial respiration imparted to the circulating blood the necessary amount of oxygen; it is of further interest to remark that just at this time the embryo begins to assume the special features of a bird. Two out of three fowls succumbed after inoculation with the *debris* of the diseased embryo. Lastly, it ought to be mentioned that cholera was still rife on the farm, and that other fowls were affected.—*Lancet.*

◆

Pentelian and Parian Marbles.

Although Pentelian marble and all monuments made of it have at first a beautiful white and brilliant appearance, yet after a while, sometimes within a few months, sometimes not for years, they exhibit reddish-brown spots and stains, and marble columns of Pentelian marble gradually become covered with a reddish-brown film of oxide of iron. The color comes from sulphide of iron (pyrites) that frequently occurs in fine streaks in this marble and is oxidized in course of time by the action of air and water, and can then be recognized, very disagreeably, by their dark color. The spores of cryptogamous plants, such as fresh and salt water algæ, germinate in these red streaks. The new Academy at Athens was built of such Pentelian marble, and while hundreds of the blocks used still remain perfectly white and will probably remain so a long time, others already show yellow, brown, and even black spots.

On the other hand, Parian marble, from which the old sculptors Praxiteles and Phidias chiseled their statues, has the property of remaining always white, because it contains no iron. Both kinds of marble have this excellent quality, namely, that they do not weather, lose their luster, and look like the shells of boiled eggs, as is the case with Carrara marble.

The name of marble, from its Greek derivation, signifies a stone that glistens on the broken or fractured surfaces.

To impart to new marble the appearance of old, which is necessary in repairing injured antiques, it may be painted over with a very dilute solution of chloride of iron, whereupon the new pieces acquire a fine yellowish-red color, similar to that produced by the influence of air and water for centuries upon the old marble.—*Austro-Hungarian Journal.*

◆

A Locomotive in a Procession.

At Austin, Nevada, on July 4, the public procession contained a locomotive and two flat cars which moved in a stately way through the main street, the cars being decorated and fitted for the display of emblematic devices and carrying young women representing the States, and symbolizing virtues, sciences, arts, and trades. The grade of the railroad which passes up through the main street of the town from the station of the Nevada Central is 12½ feet to the 100, and being on the natural route of the procession, the locomotive and cars were utilized to most excellent and peculiarly effective advantage.

A correspondent says that all went smooth and easy enough going down the steep grade, the brakes being in very competent and responsible hands, but many mechanically appreciative individuals were curious to see how it would be in coming up—whether the speed could be regulated to the pace of the procession marching before and behind. But that gallant little motor, weighing 33,000 pounds, just worked its way up the steepest plain road in the country, slowly, carefully, with the precision of clockwork, and regulated exactly to the gait of the procession. There was no difficulty whatever about it.

◆

Rapid Railway Building.

The Montreal *Gazette* says: The rapidity of construction on the main line of the Canadian Pacific railway in the first week in July is without parallel in this or any other country. On Saturday the rails were laid upon six miles of road, and in the week no less than 25·86 miles, exclusive of sidings, were completed, an average of about 4½ miles per day, the highest ever obtained, The record is as follows:

	Miles.
July 2	4·02
July 3	4·78
July 4	3·62
July 5	3·62
July 6	3·90
July 7	6·02
Total	25·86

The track is now completed for a distance of 728 miles west of Winnipeg, of which 161 miles have been constructed this season as follows: April 18 to 30, 17·58 miles; May 51·97 miles; June, 65·69 miles; July 1 to 7, 25·86 miles.

◆

Prof. Marsh on the Fossil Footprints in Nevada.

Prof. O. C. Marsh, after a close examination of photographs and casts of the footprints which were found during the past summer near Carson, Nev., and which have been supposed to be those of human beings, says, in the current number of the *American Journal of Science:*

"The size of these footprints, and especially the width between the right and left series, are strong evidence that they were not made by men, as has been so generally supposed.

"A more probable explanation is that the impressions are the tracks of a large sloth, either *Mylodon* or *Morotherium*, remains of which has been found in essentially the same horizon. In support of this view, it may be said that the footprints are almost exactly what these animals would make if the hind feet covered the impressions of those in front. In size, in stride, and in width between the right and left series of impressions, the footprints agree closely with what we should expect *Mylodon* or *Morotherium* to make."

◆

Preserving and Waterproofing Fabrics.

Piron describes in the *Moniteur Industrielle* a new process for rendering paper or cloth waterproof and at the same time protecting it from change. He employs an alcoholic solution of the agreeable oil used to perfume Russia leather, and which is obtained by distilling white birch bark.

The oil dissolves readily in alcohol, but is no longer soluble after it has once dried and became oxidized to a resin.

The thin film of resin formed by impregnating the fabric does not detract from its pliability in the least, and its aromatic odor protects it from insects. It protects quite well sea water, acids, and moderate changes of temperature.