AN INTERESTING MARMOSET.

We select, from the pages of the *Illustrated Sporting and Dramatic News*, the accompanying engraving of a recent arrival at the world-renowned Zoological Gardens, situated in the Regent's Park. The look of intelligence and docility on his countenance much resembles that seen on the face of a King Charles' spaniel; but his feet and claws are evidently made for mischief, and he is not therefore suited for a domestic pet, although his dimensions (the engraving is of the size of life) adapt him to be carried in the vest pocket or attached as a pendant to a watch chain.

The marmoset is a South American monkey, much resembling a squirrel in form and agility; and the *marikiva*, or silky marmoset, is of a golden yellow color, its fur being very soft and of the color of raw silk, deepening in shade on the paws. It is, in its natural state, very clean in its habits; and if not properly attended to when in captivity, it pines away and dies. Its usual voice is gentle, but it hisses loudly when irritated. The *leoncito*, or leonine marmoset, is endowed with a mane of considerable proportions, which it erects when angry. It is the smallest known animal of the monkey tribe.

Preservation of Aqueous Tartaric Acid Solutions.

One of the chief objections to the use of tartaric acid as a reagent or in alkalimetry is the readiness with which its aqueous solutions decompose. The detection of potash in solution is difficult, owing to the solubility of all its neutral and most of its other salts. The acid tartrate of potash is soluble in 200 parts of cold water, while the double chloride of platinum and potassium dissolves in 140 parts cold water; hence tartaric acid is a more delicate test than chloride of platinum. Professor Wittstein announces the discovery of an easy method of preventing decomposition in the use of salicylic acid. A freshly prepared solution of 1 part tartaric acid in 5 parts water, has added to it about $\frac{1}{1000}$ part salicylic acid. In an unprotected solution of tartaric acid, the well known flocks appear in two weeks; while a relatively small quantity of salicylic acid has kept a solution pure and clear for three months, and may, he expects, preserve it unaltered for a year or more, a question which can only be settled by time. Dr. Wittstein claims also that tartaric acid solutions may be used in alkalimetry, as the amount of acid does not change for a year even when these slimy flocks form in the solution. We see, however, no reason to prefer this acid to the more permanent oxalic acid, when an organic acid is desired for a normal acid solution.

AN ARTIFICIAL MAMMOTH.

M. Martin, a German naturalist, has recently constructed artificially a mammoth (*elephas primigenius*) of the quaternary epoch, after the many fine fossils of that extinct animal now existing in the Natural History Museum of Stuttgardt. The form of the body of the gigantic creature, its trunk, tusks, and hair (the latter a close imitation of that of the real animal found in the Siberian ice) have been wonderfully counterfeited, so that the resemblance is as accurate as if the mammoth's skin had been stuffed. The animal, a representation of which is given in the annexed engraving from *La Nature*, measures 16 feet in height by nearly 26 feet in length. It is made upon a wooden framework, covered with wire cloth, the latter being coated with *papier maché*. The hair is reproduced from the fiber of an Indian palm, the tusks are of wood, and the trunk is ingeniously made of paper.

We are glad to notice that this valuable work has been purchased by Professor H. A. Ward for his Museum of Zoölogy and Comparative Anatomy in Rochester, N. Y. It has already been packed, and is now on its way to this country.

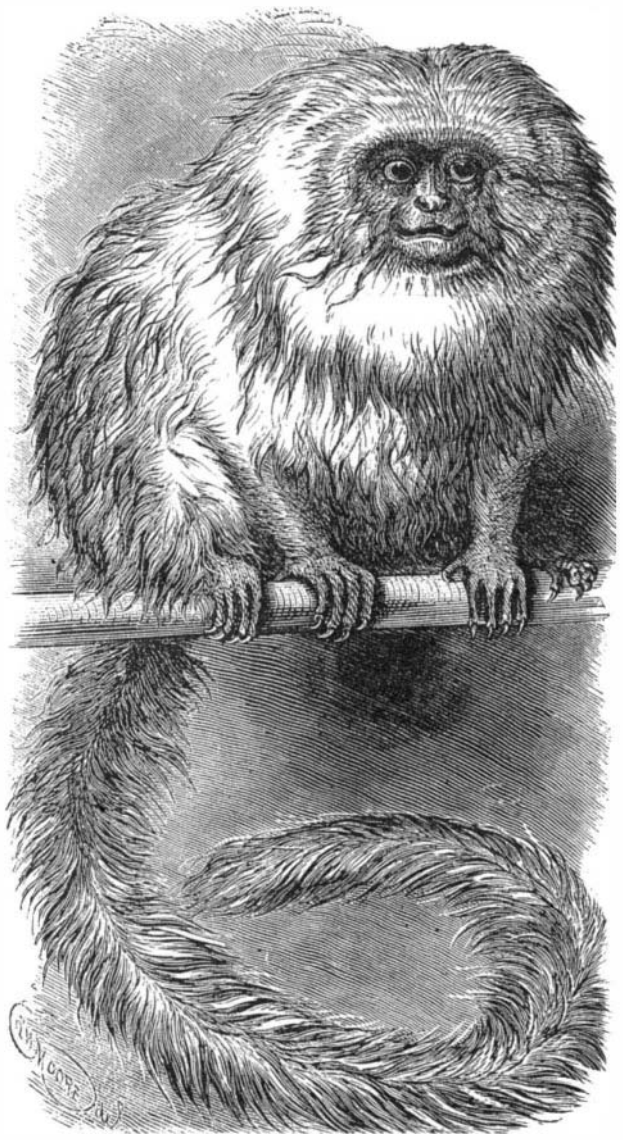
Coating Metals with Platinum.

A Frenchman named Dodé recommends the following process for coating cast iron, whether rough or enameled, with platinum: The metallic articles are first moistened by means of a brush dipped in oil of turpentine, then immersed in a mixture of borate of lead and oxide of copper, and baked in an oven. When thus prepared, they are dipped into a mixture of borate of lead, litharge (or massicot), chloride of platinum, ordinary ether, oil of lavender, and amylic ether, and then heated.

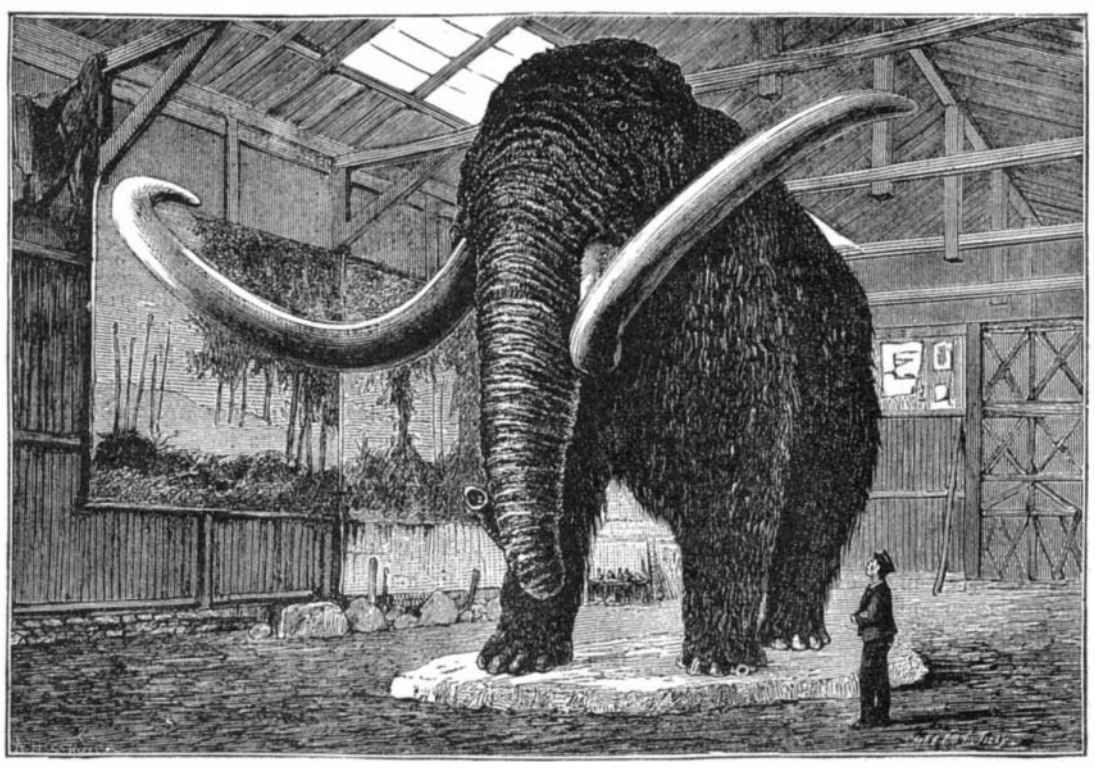
New Method of Manufacture of Steel Armor Plates and Blocks.

The trials of the 100 ton gun at Spezia resulted in some remarkable deductions in favor of steel armor, and it now appears probable that steel plates will supplant iron in the armament of war vessels. Mr. James Yates, of Rotherham, England, has patented, March 13, 1877, a new process of making steel blocks for armor purposes, which is as follows:

Molten steel of one temper or hardness is run into an open or closed mould, and then upon its upper surface a second layer of molten steel of another temper or hardness is added. its operation is repeated so as to form as many strata of a different tempered steel as may be desired, arranged according to their temper or hardness, forming thereby one solid and compact compound mass. This may be either at once ured or be stamped, rolled, or pressed, to give the form required, and to impart strength to bear greater pressure or strain tensibly, compressively, or by impact from projectiles or heavy blows. The molten steel, of varying temper and hardness, is successively poured into the mould before the preceding stratum is cold.



MARMOSET AT THE ZOOLOGICAL GARDENS, LONDON.



M. MARTIN'S ARTIFICIAL MAMMOTH.

A TUNNEL under the Pyrenees, uniting France and Spain, will be opened at the beginning of next year.

The Tern.

Mr. Thomas Edward, the Scotch naturalist whose pursuit of Science amid toil and privation has gained him such just renown, writes as follows concerning the tern. He was, one afternoon in August, watching the evolutions of a flock of these birds, which were engaged in fishing in the Firth of Boyndie. He was seeking an opportunity to bag one of the beautiful creatures, when, as if in answer to his desire, a noble specimen directed its course to the shore, fishing all the way as it came.

"Once more he soars aloft on lively wing, and, having attained a certain elevation, and hovering, kestrel-like, for a little, with quick repeated strokes of his pinions he rapidly descends. Again, however, his hoped-for victim has made his escape; and he bounds away in an oblique direction, describing a beautiful curve as he rises without touching the water. Shortly after he wings his way nearer and nearer to the beach; onward he advances with zigzag flight, when suddenly, as if struck down with an unseen hand, he drops in the water within about thirty yards of the place where I am standing. As he righted and sat on the bosom of the deep, I was enabled distinctly to perceive that he held in his bill a little scaly captive, which he had snatched from its home, which struggled violently to regain its liberty. Its struggles were in vain; a few squeezes from the mandibles of the bird put an end to its existence.

"Being now within my reach, I stood prepared for the moment when he should again rise. This he did as soon as the fish was dispatched. I fired, and he came down with a broken wing, screaming as he fell into the water. The report of the gun, together with his cries, brought together the party he had left, that they might ascertain the cause of the alarm. After surveying their wounded brother round and round, as he was drifting unwittingly toward the shore with the flowing tide, they came flying in a body to the spot where I stood, and rent the air with their screams. These they continued to utter, regardless of their individual safety, until I began to make preparations for receiving the approaching bird. I could already see that it was a beautiful specimen; and I expected in a few moments to have it in my possession, being not very far from the water's edge.

"While matters were in position, I beheld, to my astonishment and surprise, two of the terns take hold of their wounded and disabled comrade, one at wing, lift him out of the water, and bear him out seaward. They were followed by two other birds. After being carried six or seven yards, he was left gently down again, when he was taken up in a similar manner by the two who had been hitherto inactive. In this way they continued to carry him alternately, until they had conveyed him to a rock at a considerable distance, upon which they landed him safely. Having recovered my self-possession, I made towards the rock, wishing to obtain the prize which had been so unceremoniously snatched from my grasp. I was observed, however, by the terns, and, instead of four, I had in a short time a whole swarm about me. On my near approach to the rock, I once more beheld two of them take hold of the wounded bird as they had done already, and bear him out to sea in triumph, far beyond my reach. This, had I been so inclined, I could no doubt have prevented. Under the circumstances, however, my feelings would not permit me; and I willingly allowed them to perform without molestation an act of mercy, and to exhibit an instance of affection which man himself need not be ashamed to imitate. I was, indeed, rejoiced at the disappointment which they had occasioned, for they had thereby rendered me the witness of a scene which I could scarcely have believed, and which no length of time will efface from my recollection."

Do Snakes Catch Fish?

Mr. J. Y. Detwiler, of Toledo, Ohio, states that, on May 20 last, he killed a water snake in a small brook, which, when opened, was found to contain a fish, about 6 inches long, partly digested. He also has caught water snakes on trout lines baited with minnows; and he once caused a water snake to disgorge a fish about 8 inches long.

Yield of Wine in France.

The wine crop of France in 1876 was only 41,846,748 hectoliters (a hectoliter = 22 gallons), as compared with a yield of 83,836,391 hectoliters, or more than twice the quantity in 1875. The disease of the vines has caused this unfavorable result.

Science in War.

The present Russo-Turkish war cannot well be less interesting than those that have so recently preceded it, and we may especially point out two directions in which fresh examples of scientific warfare will probably manifest themselves—in connection, namely, with the cavalry pioneer and the Whitehead torpedo. Both of these will probably be seen in warfare for the first time, and before many days are past we may hear of their doings in action. The cavalry pioneer must not be confounded with the Prussian uhlan, who played so conspicuous a part in the last war. The ubiquitous uhlan, terrible as he was, did not work the injury which some of the Cossacks will have it in their power to inflict if accoutred as pioneers. These are selected from the smartest and most daring troopers, lightly armed and well mounted. In a belt round their waists they carry a few pounds of guncotton or dynamite, and with this highly destructive explosive they may work incalculable harm. A small charge of guncotton placed simply upon a rail and fired with a fuse suffices to blow several feet of the iron to a distance of many yards, thus rendering the railway unservicable on the instant. A trooper may dismount, place a charge at the base of a telegraph pole, fire it, and be in his saddle again within 60 seconds. Wires may thus be cut and communication stopped in the heart of an enemy's country by fearless riders, who have but to draw rein for an instant to effect the mischief, while lines of railway in the neighborhood are entirely at their mercy. Even light bridges and well built stockades may be thrown down by the violent detonation of compressed guncotton, and forest roads considerably obstructed by trees thrown across, which are never so rapidly felled as when a small charge of this explosive is fired at their roots. The influence of the Whitehead torpedo, of which we have heard so much of late, will likewise be felt for the first time during the present war. An implement so ingenious in its character that, as Lord Charles Beresford the other day happily remarked, it can do almost anything but talk, is in the possession of both belligerents, and will doubtless be heard of before long on the Danube and in the Black Sea. These torpedoes are manufactured at Fiume on the Mediterranean, and, like Krupp guns, are to be purchased by any one who chooses to pay for them.

The Sutro Tunnel.

Considerable interest is now being taken in the progress of the Sutro tunnel, as it is advancing quite rapidly towards the Comstock, and is only 2,800 feet east of the workings of the Savage mine. At the date of the last measurement the total length of the tunnel was 16,913 feet. The *Enterprise* is authority for the statement that the tunnel has, during its progress thus far, cut twelve separate and distinct ledges, yielding assays of from $2 to $20. One of them was 112 feet in width; yet not a foot of prospecting has been done in either side of the tunnel. These statements are of interest as showing the immense lateral extent of the Comstock deposits. Other ledges may yet be struck by the tunnel in its course, any or all of which may be worked on the completion of the tunnel when they have time to turn their attention to mining.

At present, of course, the whole energies of the company are directed to putting the header along as fast as possible, so as to get at the Comstock. There is not so much opposition to the project as formerly among the mine owners and property owners of Virginia and Gold Hill, and it is conceded that the tunnel will save great expense in draining the mines. Still they object to the two dollars per ton royalty on ores; but if it is proved that the tunnel will drain and ventilate the mines, they can afford easily to pay that sum without grumbling. The projectors of the enterprise have shown indomitable pluck and energy in carrying out the plan amid so many difficulties; and even if the tunnel is not constructed as it should be, as some aver, there will be plenty of opportunity to enlarge, strengthen, and improve it, when the Comstock is reached and funds are more plentiful.—*Mining and Scientific Press.*

Nickel Plating.

Some time ago Herr Stolba published a method of plating iron and steel with nickel by the simple immersion process, and the following plan has been recently put forward by him as an improvement: To a dilute solution (5 to 10 per cent) of as pure chloride of zinc as possible, there is added enough sulphate of nickel to color it strongly green. This is heated to ebullition in a porcelain vessel. The objects, being completely cleaned of grease, are then suspended in the liquid so that they touch each other as little as may be; and the boiling is kept up for from half an hour to an hour, water being from time to time added in place of that evaporated. The nickel is precipitated in a brilliant white layer wherever the surface of the object is not greasy or rusty. The operation can be continued for several hours if desired; but the plating will not thus be rendered much thicker. After removing the objects, they are washed with water holding chalk in suspension, and carefully dried. They may afterwards be cleaned with chalk, and they take a fine yellowish-toned polish. The chloride of zinc used should contain no metal precipitable by iron. When it cannot be obtained of sufficient purity, it may be made by dissolving zinc scraps in hydrochloric acid, and allowing the solution, containing an excess of metallic zinc, to rest, in order that the metals precipitable by the zinc may separate. Filter at the end of 24 hours, and the solution is ready for use; each portion of zinc dissolved corresponds to about 3·1 parts of chloride of zinc. The sulphate of nickel should also be as pure as possible, and the cold solution should not precipitate when a plate of iron is plunged in it, as would happen, for example, if it contained copper. When during the operation the liquor becomes a pale green, owing to the precipitation of nickel, more sulphate must be added until the intense green is regained. When the used liquid is exposed to the action of the air, it deposits hydrated oxide of iron, coming from the dissolved metal. It should be filtered, and more chloride of zinc and sulphate added, when it may be again used. In the same way, polished iron and steel objects may be covered with a brilliant plating of cobalt, by using a sulphate of cobalt solution. The appearance of this plating differs little from that of polished steel. The distinguishing characteristic is the light rose-colored tint. The author states that the plating wears well.

Glycyrrhizin.

The word "glycyrrhizin" is the name applied to the active principle of the licorice root, which bears the botanical name of *glycyrrhiza glabra* and *g. echinata*. It has usually been described as an amorphous, yellowish-white powder. Habermann has succeeded in preparing from the commercial article sold by Trommsdorff, by treating it with a considerable quantity of glacial acetic acid, an almost colorless substance, which crystallizes from alcohol in prismatic needles which usually form hemispherical masses. This substance is extremely soluble in water and in strong alcohol, less soluble in absolute alcohol, and as good as insoluble in ether. It has an intensely sweet taste, with an irritating after-taste, and in many of its properties corresponds remarkably with glycyrrhizin as described by Gorup-Besanez in 1861. An alcoholic solution of this with an alcoholic solution of calcium chloride gives a white flocculent precipitate, and a similar precipitate is obtained by mixing an alcoholic solution of glycyrrhizin with one of sugar of lead. When the crystallized glycyrrhizin is boiled with water containing 2 per cent of sulphuric acid, a solid resinous substance of a light Isabella yellow color separates, which, however, differs from that described by Gorup-Besanez in having the characteristic sweet taste of glycyrrhizin. The amount of carbon in the crystalline substance differs by several per cent from that in the substance described by Gorup-Besanez. Habermann is continuing his investigation of the new substance and its derivatives.

Dyeing Loose Cotton.

The working up of cotton and wool into all sorts of fabrics has of late years received much development, so that now 25 to 30 per cent of loose cotton may be added to wool, and the fabrics so woven actually deceives the naked eye of the experienced dealer; the only difficult point is to dye the cotton well and fine. It may, therefore, be interesting to quote a cotton-dye method which has been found to answer the purpose well.

With fabrics that do not require to be fulled, all colors can be produced to resemble the tints of wool. The loose cotton, as it proceeds from the ball, may be loosed either by mechanical or manual labor, and as soon as each raw cotton yarn has been boiled two hours in water, it is ready for dyeing; but that manipulation may be saved in most colors by immersing the cotton: as, for example, for black, into a logwood bath for two hours, by which time is saved. The chief thing to attend to during the boiling process is to turn the cotton incessantly, so as to insure that all portions may be soaked through, otherwise non-dyed white spots would show up. It is also advisable to use separate vats for each bath, by which much dye material may be saved, as the subsequent baths then require less fresh dyestuffs or salts; if the baths have, however, been used several times, or are broken or thick, of course fresh baths have to be prepared and the old ones cleaned out.—*Textile Manufacturer.*

Desiccated Eggs.

It is already well understood that if albumen or white of egg be slowly dried in mass, or be dried rapidly at too high a temperature, a product or material will be the result which is of inferior and not uniform character or quality. Also, that if the yelk of eggs be dried in mass, slowly or rapidly, the result will be a material or product inferior in quality, not uniform in structure, difficult of solution, and of little value for the ordinary uses of the yelk of eggs. If batter of eggs composed of the whites and yelks together be dried in mass, the result lacks uniformity and solubility; and if either of these products, so obtained, be subsequently ground or pulverized, by any known process, the mealy result so obtained is of inferior quality, is slow of solution in water, and does not possess several of the important properties of the fresh shell eggs.

To meet this difficulty, the idea of the desiccation of eggs in rotation or agitation under blasts of air, either heated or otherwise, has been variously applied during a long time past, both in this country and in Europe, but the difficulty mainly encountered has been that of producing a material capable of being preserved in different climates, of being readily and completely dissolved, and of being applied to the principal uses and purposes for which the egg may be applied before desiccation.

The natural egg contains, in varying proportions, a certain oil, hereinafter spoken of as the oil of the egg. This oil is a very important constituent of the egg. It is innocuous while in its natural condition—that is, in undisturbed combination with, or relation to, the other parts of the organism of the egg, its proportion thereto being relatively small.

When, however, this oil is set free by any process, it rapidly becomes rancid, highly offensive, and, in fact, acrid, and is a most potent and active agent in effecting the deterioration and decomposition of the other parts of the egg with which it may be brought in contact.

If, during the process of desiccation, the material to be desiccated is allowed to rise in temperature above a certain point, hereinafter indicated, the oil of the egg contained in the more solid parts, or which is not in suspension or emulsion, but is in more perfect combination with the other constituents of the egg, particularly that in the yelk, and so in the batter composed in the yelks and whites, is set free to a greater or less extent, according to the freshness and vitality of the eggs used and the degree of such heat. It has also been ascertained, by experiment, that the temperature at which this result follows varies at different times. The causes apparently depend upon barometric and other conditions of the atmosphere as well as the state of the thermometer. Such a result has usually followed whenever the material has been raised above 85° Fah. The highest temperature to which Mr. W. O. Stoddard, of New York city, who has made a special study of this subject, has been able to subject the material without that result following was 92° Fah.; but that was under exceptional atmospheric conditions, and he considers a much lower temperature than 85°, and, if possible, than 80°, very desirable for safety, and essential to commercial success in the manufacture. Indeed, his own operations have been conducted at a temperature not to exceed 80°.

Mr. Stoddard has lately patented (May 8, 1877) a device, the object of which is to regulate and control the temperature of the eggs, or parts of eggs, or batter of eggs, or other material during the process of desiccation, so as to prevent the development or freeing from the more solid part of such material of the oil of the egg not held in suspension or emulsion, being much the larger part of all the oil contained in the egg, and afterward to eliminate from the product derived such small portions of the oil of the egg as may have been held in suspension or emulsion, or may have been set free in the process of manufacture. The granulated or mealy product which thus obtained will then, he claims, retain and protect its proper proportion of the oil of the egg, even if exposed to a much higher temperature than that above mentioned.

To obtain the object thus substantially set forth while employing for the process of desiccation a drying blast of warm air, he employs for the rotating surface, on which such desiccation is produced, a hollow cylinder, cone, frustum of a cone, or other surface which may be artificially cooled by means of ventilation or evaporation in the interior while the material within is actively agitated.

Employment of a New Salt of Iron for Steeling Copper Plates for Engraving.

The electrolytic deposit of iron on copper presents—as the author has shown thirty years ago—a great hardness, which equals at least that of steel. The salt generally employed for producing this deposit is double sulphate of iron and ammonia. The following solution seems to be more advantageous for this operation: We dissolve 155 grains of ferrocyanide of potassium and ¾ oz. of salt of seignette in 7 ozs. of distilled water, and we add to it 45 grains of ferric sulphate, dissolved in 1¾ ozs. of water; a precipitate of Prussian blue is thus produced. We add then, drop by drop, whilst stirring, caustic soda, until the precipitate is re-dissolved. We thus obtain a limpid yellowish solution, which is used for steeling copper. This same solution may serve to dye tissues blue without a mordant. For this purpose, after their immersion in the bath, we let them dry in the air; then we plunge them into a solution of sulphuric acid at 2°; we wash and dry them.—*M. R. Boettinger, in Chemisches Centralblatt.*

Wool Bleaching.

It has been found that the method of bleaching wool by means of oxalic acid, combined with glycerin, or used alone, has the effect of causing the fibers of the wool to become felted. This is now remedied by saturating the oxalic acid with soda, potash, or ammonia, thus forming a soluble oxalate. The bleaching is effected in the same manner, that is to say, with pure water, exempt from lime, and the wool preserves all its suppleness and soft touch.

Fast Railway Trains.

The New York Central and Hudson River Railroads and the Pennsylvania Railroad are now running fast trains between New York city and Chicago. The time allowed is about 24½ hours, the distance about 980 miles in each case. Taking these figures as a basis, a speed of 40 miles an hour, including stoppages, has to be maintained. The Chicago *Inter-Ocean* hints this speed is too great for safety, and asserts that passengers prefer to go by slower and safer trains.

JOHN W. EVARHART, of Marion county, Va., chopped down a chestnut tree the other day that contained 31 gallons of nice honey a distance of 10 feet from the butt. He afterwards made 600 rails and 1,000 shingles out of the tree.

PARA-ARABIN.—Professor E. Reichardt says that this substance, $C_{12}H_{22}O_{11}$, is obtained from the tissues of the sugar beet or the carrot after the juice has been expressed. It gelatinizes with water, and dissolves completely on the addition of a little acid and the application of a gentle heat.

London Water Pipes.

The first instance on record of water being conveyed to the city of London by means of pipes is in the year 1236. Before this time, according to Maitland, the city and places adjacent were supplied by the "river of wells," in the west part; whose decay was owing to certain mills erected on the banks thereof by the Knights of St. John, which obstructed its navigation, and by degrees gave it the name of Turnmill Brook, a name which is still preserved in Turnmill street, through part of which this water took its course towards the bottom of Holborn Hill, and thence into the Thames between the Fleet and St. Bride's. In process of time, Turnmill Brook was lost in the name of Fleet Ditch, or Fleet Dyke.

The other waters were Oborn or Holborn, Wall Brook, and Langbourn. Besides these bourns or brooks were several springs which supplied the city, as Holywell, a fine spring famed for its miraculous virtues in superstitious times; Clerk's or Clerkenwell, Skinner's Well, Fogg's Well, Tod's Well, Loder's Well, Crowder's Well, and Rad-Well, and the Horsepool or Horsepond in Smithfield. These several springs, or most of them united their streams, and formed the "river of wells" before mentioned.

In the year 1236, in consequence of a great want of water prevailing in London, occasioned principally by the encroachment of buildings and the Mills of the Knights of St. John, before referred to, on the fresh water canals about the outskirts of the city, many opulent citizens contributed liberally to the inauguration of a scheme for bringing water by means of main pipes from six fountains in the neighboring town of Tyburn, and this product was eventually carried into execution.

Hugh Myddelton, a worthy and enterprising citizen, carrying on the business of a goldsmith, who, after several others had attempted it without success, put into execution the design of supplying London with water for domestic use, by means of a river cut through the country from Chadwell and Amwell, near Ware, in Hertfordshire, to a basin or reservoir near Islington, on the north side of London. This work was begun on February 20, 1608, "and with great difficulty, art, and industry, and a prodigious expense," with the assistance of King James I., was completed, and the water let into it, on Michaelmas day, 1613. The source of the New River is twenty miles from London, but the measurement of the original stream, followed throughout its devious windings, necessary to preserve its level, and to some extent, also, owing to the stubborn opposition of certain of the landed proprietors, was 48 miles 3 quarters and 16 poles. Its length has been reduced, at different times, to about 28 miles, by cutting off the loops. On the completion of the work, Mr. Myddelton was knighted, and afterwards created a baronet. The stupendous undertaking eventually produced immense profits to the fortunate proprietors of its shares, but the original projector was all but ruined by the expenses he incurred in bringing it to a conclusion.

The successful completion of the New River marked an era in the history of the science of engineering in England; and the abundant supply of one of the chief necessaries of life, which it afforded to the population of the metropolis, led to the development of the method of conveying water by means of pipes to the doors and into the dwellings of the inhabitants.

The main pipes used at that early day were sheet lead, turned on a mandrel, and soldered at the edges, and the trunks of elm trees, bored with augers, and left in their natural undressed condition outside. Other water companies were established in the course of time, till at the present day there are eight of these supplying London from various sources.

Gas began to be supplied through pipes in 1807.

French Workmen at the Exposition.

Ten thousand dollars have been appropriated by the Commissioners of the Paris Exposition of 1878 in aid of artisans who have meritorious objects to exhibit, constructed by their own hands, and who are working for their own account, but who are unable to defray the expense of exhibition from their own resources. The prefects of each of the 86 departments are to supervise the applications under this head.

THE royal tigress in the Berlin Zoological Gardens lately brought forth a litter of two, which she utterly refused to take care of. They were accordingly placed amidst the family of a Newfoundland dog, who welcomed the newcomers warmly, and bestows upon them all necessary maternal attentions.

DECISIONS OF THE COURTS.

United States Circuit Court—Northern District of Illinois.

TRUNK PATENT.—HERMAN VOGLER *vs.* EDWARD SEMPLE.

[In equity.—Before Blodgett, J.]

The claim in a patent must be for something described in the specification, so that any person of ordinary mechanical skill, or skill in the art covered by the patent, can, from the specification, make a mechanism which will contain the claim.

The purpose of a reissue is to enable one to secure what he was entitled to in his original patent, but, through inadvertence or mistake, did not obtain; but it cannot be made the means of covering anything which was not in the original invention.

The novelty of a patented invention is not impeached by a prior patent which did not orighally describe the invention, but has since been enlarged by reissue so as to include it.

Any device which secures substantially the same results as the patentees by the same or equivalent mechanism, is an infringement.

This is a bill in equity for an injunction, and an account of profits and damages for an alleged infringement of a patent granted by the United States to the complainant, January 11, 1867, for an "Improvement in Trunks," being a reissue of an original patent to the same substantial purport, dated October 6, 1874.

The answer denies the infringement, and also denies that complainant is the original and first inventor of the device set forth and claimed as new in his original and reisued patent.

Complainant's patent is for a removably hinged tray in the body of a trunk; the parts being so arranged and combined as to admit of the ready removal of the tray from the trunk, and yet so adjusted as to allow the tray to be turned up on its hinges, into, or against, the cover or top. This is accomplished by the peculiar form of the hinge—one leaf of which is permanently fastened to the tray, and the other so arranged as to be inserted in sockets, which are firmly fixed to the back wall of the trunk; the whole being so arranged as to admit of a ready removal of the hinged tray from the trunk, and so adjusted as to allow it an up-and-down play. * *

The Court held that any device which secures substantially the same results as complainants, by the same or equivalent mechanism, is an infringement on complainant's patent. The defendant does not use Vogler's strap hinge and socket, but in place of it he uses a hook and socket, or roller and socket—not the pintle and socket of Plumer, but a hook attached to the back wall of the trunk, and a roller fastened to the back and upper edge of the tray, so as to engage with and rest upon the hook, the two when in juxtaposition making a hinge which performs the substantial functions of complainant's hinge, except that for lack of the elongated strap it is more readily disengaged: but when the parts are together, it operates in all essential particulars as the equivalent of complainant's strap hinge. I am, therefore, of opinion that defendant's tray is, in all its material features as a removably hinged tray, an infringement of complainant's patent. * * *

Decree for the complainant.

[*Munday and Evarts*, for complainant.
N. C. Gridley, for defendant].

NEW BOOKS AND PUBLICATIONS.

TROW'S NEW YORK CITY DIRECTORY, for the year ending May 1, 1878. Price, $5.00. New York city: The Trow City Directory Company Publishers, 11 University Place

This is the ninety-first volume of this standard publication. It contains, we are told in the preface, 248,690 names, showing an increase of 7,253 over last year, and (estimating each name to represent five persons) an advance in population of the metropolis of 37,615. The work has been carefully compiled; and large as it is, equalling in printed matter, the publishers says some thirty volumes of the ordinary novel, has been entirely prepared and published since the 1st of May. The usual excellent map of the city is provided; and in general the work is fully up to its normal standard of excellence.

THE AMERICAN MAIL.—This is the title of a new and handsomely printed monthly publication devoted to trade purposes, especially designed for foreign circulation. It exhibits the latest quotations in all the different branches of trade, shows productions of the country, its manufactures, and the advantages which the American market affords in the way of supplies for foreign places.

Recent American and Foreign Patents.

Notice to Patentees.

Inventors who are desirous of disposing of their patents would find it greatly to their advantage to have them illustrated in the SCIENTIFIC AMERICAN. We are prepared to get up first-class WOOD ENGRAVINGS of inventions of merit, and publish them in the SCIENTIFIC AMERICAN on very reasonable terms.

We shall be pleased to make estimates as to cost of engravings on receipt of photographs, sketches, or copies of patents. After publication, the cuts become the property of the person ordering them, and will be found of value for circulars and for publication in other papers.

NEW WOODWORKING AND HOUSE AND CARRIAGE BUILDING INVENTIONS.

IMPROVED MORTISING MACHINE.

Alfred D. Eddy and Henry J. Stolzenbach, Tiffin, O.—This invention is an improvement in that class of mortising machines in which the boring and cutting tool is caused to advance as the table carrying the stuff to be mortised is reciprocated in a direction at right angles thereto. The improvement relates to the device for clamping the stuff upon the table; the circular form of the work table, the adjustable bracket on which the work-table slides, the means for reciprocating the mandrel, the construction of the cam periphery, and a belt-tightening device.

IMPROVED APPARATUS FOR ATTACHING HARNESS TO THE SHAFTS.

William C. Smith, New Haven, Conn.—This is intended for the purpose of hitching quickly a single horse to any vehicle having shafts, or for hitching a double team, using two pairs of shafts, instead of a pole, the object of the device being to save time, so as to be specially adapted for hose carts, fire engines, and similar apparatus. It consists of a socket, with open top and spring-acted locking dog, applied to the harness, and of a button that enters the socket and is connected by loosely swinging link and trace piece to the shaft and trace.

IMPROVED RUNNING GEAR.

Moses Atwood, New Sharon, Iowa.—This running gear is so constructed that either of the wheels may rise above or sink below a level in passing over obstructions or depressions without straining the gearing or body.

IMPROVED SAWING MACHINE.

Flavel Simonson, Round Grove, Ill.—The operation of the machine is as follows: The guide is raised by a handle until it is engaged by a catch. A log is placed against the serrated plates and securely clamped by the dog by drawing a lever, the said lever being held in place by a ratchet bar. The guide is now released from the catch, and lowered until the saw comes into contact with the log, when, being in motion, it cuts its way through the log, being forced downward by the weight of the saw frame. When the log is cut through, the guide prevents it from dropping too low.

NEW HOUSEHOLD INVENTIONS.

IMPROVED INVALID BEDSTEAD.

Charles T. Moore, Renovo, Pa.—This is a bedstead for invalids which can be adjusted in various positions for the convenience and comfort of the occupant.

IMPROVED BURGLAR ALARM.

Hiram J. D. Miner and Daniel T. Seeley, Dunkirk, N. Y.—This is an alarm for attachment to doors and windows, which will indicate the opening of the same by releasing a spring-actuated train of gearing, which rings a bell. The movement of a lever attached to the door or window liberates an arm, and permits the gearing to act on the pallets and vibrate the hammer, which strikes a stud, causing the bell to ring.

IMPROVED WINDOW CORNICE.

Samuel Sargeant, Brooklyn, N. Y.—This consists in an improved window cornice, formed by attaching horizontal metal tubes and vertical metal tubes halved to each other, and provided with knobs in some or all of their ends, to foundation boards by screws passing through the said boards, through the inner sides of the said tubes, and into blocks of wood driven into the tubes.

NEW MISCELLANEOUS INVENTIONS.

IMPROVED ICE PLOW.

John F. Behm, Omaha, Neb.—This is an improved ice plow by which two furrows may be cut, and which may be used in either direction without turning the plow, the same marking also closer or wider, as required. The plow has cross-pieces, to which two longitudinal rows of cutters are attached, that are arranged symmetrically to a center cutter, and decreasing in height toward the end cutters. The handles are attached to a centrally pivoted beam that may be swung around to use the plow in either direction without turning the same.

IMPROVED TOY MONEY BOX.

Edward J. McLoughlin, New York city.—The shaft of a winged wheel extends through the side of the bank, and is provided with a flexible index, which touches a circular row of pins that project from the face of a dial at the front of the bank. The coin is dropped into a chute, whence it passes to the wheel, and by striking one of its wings causes it to rotate. This motion continues until arrested by the friction of the journals and the resistance of the index as it passes the pins. A number is called, and if the index stops at the number mentioned the bank pays five times the amount of the deposit, which is retained, but if the index stops at any other number than the one called, the bank retains the deposit and pays nothing.

NEW MECHANICAL AND ENGINEERING INVENTIONS.

IMPROVED GOVERNOR FOR STEAM ENGINES.

Harris Tabor, Corning, N. Y., assignor to B. W. Payne & Son, of same place.—This is an improved governor for steam engines, which acts in the customary manner when applied to an engine with single valves, and also as an automatic cut-off. When the speed increases over that required by the tension spring, weights are thrown out by centrifugal force, and the eccentric moved across the shaft, thereby reducing the travel of the valve until the engine is brought back to its former speed. If there is a tendency to decrease the speed the spring draws the eccentric in opposite direction, so as to impart a longer stroke to the valve and re-establish the required speed. The joint action of the tension spring and weighted levers on the sliding eccentric serves to keep up the uniform motion of the engine, according to the degree of speed to which the spring has been adjusted.

IMPROVED HEATING FURNACE.

Stephen W. Morgan, Winona, Minn.—This furnace saves fuel by means of reheating the smoke and passing the same again through a series of radiating pipes or drum. The invention consists, mainly, of a fire box with a system of horizontal pipes extending therefrom, and returning to a reheating box placed centrally in the fire, the gases of combustion being there reheated and conducted through a second system of heating pipes, and finally out to the chimney.

IMPROVED SAFETY VALVE.

Frank B. Scovell, Waterford, Ontario, Canada.—The steam is admitted to the space in a cylinder above a piston. The said piston being greater in area than the valve, the counter pressure exerted on it is more than sufficient to hold the valve to its seat. When the pressure of steam rises above the prescribed limit, a piston in the valve is forced upward against the pressure of a spring carrying a small sliding valve with it, so that it covers ports. The steam above the piston is thus permitted to escape when the valve is raised by pressure of steam from below, and steam escapes from the boiler until the normal pressure is regained, when the spring throws the small piston downward, moving the sliding valve, admitting steam to the space in the cylinder above the piston, when the steam so admitted will force down the piston, and cause the valve to regain its seat.

IMPROVED MACHINE FOR SANDING BRICK MOULDS.

Samuel W. Babcock, Haverstraw, N. Y.—To a shaft are attached rows of paddles, the different rows being set at a different lateral inclination. The shaft is revolved by a belt passing around a pulley attached to its end, and as it revolves the paddles take the sand from a box and project it through the slotted top of the table into the inverted moulds standing upon said table beneath the platform. A hopper having its bottom inclined from the middle to a hole on each side is connected by spouts with the apertured sand box, to enable the sand to flow automatically from the former into the latter.

IMPROVED TOOL HANDLE.

Levi H. Roberts, Morley, Mich.—The end of the handle is cut off about half an inch within the eye of the tool, and in the part of the said handle that enters the said eye is formed a transverse mortise, in which is loosely fitted a nut. In the end of the handle is bored a longitudinal hole to receive the bolt, the forward end of which is made conical. A plate, made a little larger than the eye of the tool, is rabbeted upon its inner side, to allow its middle part to enter said eye, and upon its inner side and upon the opposite sides of the hole for the bolt are formed two wedges. Slits are sawed in the end of the handle to receive the wedges. To the bolt is secured a collar. This arrangement allows the bolts to be started a little before it begins to withdraw the plate and wedges, so that should the said plate and wedges stick, they may be started by means of a chisel, or other suitable instrument.

IMPROVED MARINE ENGINE GOVERNOR.

William A. Brice, London, England.—This is an improved means of governing the speed of marine engines, to prevent what is known as "racing," when the screw is momentarily raised out of the water. The device consists in a centrifugal governor, of any suitable construction, driven by toothed gear direct from the screw shaft, and operating a throttle valve of any kind in one of two steam pipes, by which steam is supplied to the engines. Where one pipe has been used before to convey steam from the boiler to the engines, two pipes are used, and in one of them is applied a valve operated by the governor, as above described, so that immediately the screw commences to turn at a higher speed the valve will be closed, and the steam cut off through that pipe. If the sectional areas of the two pipes be equal, half the steam supply is thus cut off, the other half through the other pipe being intended to keep the engines in motion at the same speed.

NEW AGRICULTURAL INVENTIONS.

IMPROVED RECIPROCATING CHURN.

Eliza Brough, Greenville, Mich.—By suitable construction, as the churn body is oscillated upon its pivots, the milk is dashed back and forth, and is thrown into violent agitation, bringing the butter in a short time.

IMPROVED CATTLE STALL.

Ephraim E. Waddell, Gallipolis, O.—This consists in the combination, in a cow stable, of a frame, pivoted side gates, cross beam, and floor steps, the gates being pivoted in cross beam and steps, and between the front and rear ends of the stalls.

IMPROVED PLOW.

John D. Bowen, Roseburg, Oregon.—The invention consists in a share land-side and land-side share made in one piece, cut out of sheet steel struck up into proper shape, or cast of cast steel, and provided with lugs and a slot for the attachment of other parts of the plow. The whole may thus be made of less material, lighter, and cheaper, the shares being self-sharpeners.

IMPROVED MOWER.

James H. Cain, Cana, N. C.—When the cutter blades are thrown into downward position by the lever, they are rigidly braced by a rod and retained in position for work by a hook, binding on a lever, so as to be operated by the reciprocating motion of the cutter bar as imparted by the gearing of the wave wheel with the main wheel. The swinging up of the cutter blades interrupts the gear of main wheel and wave wheel by joint action of levers, and gives, in this manner, to the attendant a full control over the mower.