Communications.

Our Washington Correspondence.

To the Editor of the Scientific American:

Mr. Hunt, the gentleman whose patent was withheld as mentioned in my previous letter, feeling himself aggrieved by the Commissioners in that matter, has issued a circular hinting at collusion between the Commissioner and his ex-partners, and denouncing the former for his action in the case. This has been followed by an order from the Commissioner, approved by the Secretary of the Interior, suspending Mr. Hunt from practice before the office.

After a contest of about two years between Faber, of Munich; Jacobson, of Berlin; Schwanhausen, of Bavaria; Batchelder, of Boston; the American Pencil Company, and the Eagle Pencil Company, of New York, as to the priority of the invention of what is known as the copying pencil, by the use of which a transfer copy can be taken by moistening the paper, the controversy has been concluded by a decision of the Commissioner in favor of the Eagle Pencil Company, as assignees of Charles Walpouski, who is adjudged to be the original inventor.

Gen. W. G. Le Duc, of Minnesota, has been appointed Commissioner of Agriculture. The papers here speak very highly of his knowledge of the science and practice of agriculture, and assert that he has always been prominently connected with the agricultural interests of his State.

The June reports of the Agricultural Department indicate a better prospect than usual for wheat. The report of June, 1876, made the average for the country thirteen percentum below the standard of normal condition, and the subsequent returns of condition and yield were still lower, forecasting the scarcity which has occurred. The average for winter and spring wheat together is one hundred this year, winter wheat being above that figure and spring wheat below it. There are 227 counties reporting winter wheat in full normal condition; 494 counties above one hundred, and 183 below it. Spring wheat in 92 counties is reported at one hundred, 117 counties above that figure, and 137 below. The reports from California indicate only half a full crop, from a deficiency of winter rain fall. Fewer injuries than usual from insects and rust are reported. In the Ohio valley nearly every return is favorable, but in Pennsylvania and Tennessee a slight depreciation is caused by the Hessian fly. The only serious injury is that caused by the grasshopper, which has been most destructive in Minnesota, hatching numerously through all the settled portions of the State. In the west of Iowa and throughout the wheat fields of Kansas and Nebraska the losses from the hopper are reduced to a minimum by the effects of wet and cold weather after hatching and subsequently by the successful warfare of the farmers. In some portions of Texas the destruction of wheat by grasshoppers has been quite heavy.

Reports to the Department from the South indicate that the total average of cotton planted this year is nearly four percentum in excess of that of last year. The season is stated to have been too wet at the time of planting, and too dry since in all of the cotton growing districts except Texas. The growth now, however, although small, is generally healthy, clean, and in a good condition for rapid improvement with favorable weather.

The prospects of the peach crop this year are exceedingly good. The Delaware growers are watching their trees with great interest, feeling certain that, without some extraordinary misfortune, the yield will exceed anything heretofore known, and feeling puzzled what to do to realize the most money from what promises to be a glut. Notwithstanding the great efforts made last season to find new outlets for the surplus, there remained a vast quantity of fruit which could not be utilized. Peaches rotted by the millions, and the hucksters in some of the cities had hard work to dispose of their stock at any price when the season was at its height. The experiment of sending fresh peaches to England was a failure, but fruit preserved by evaporation can be and has been sent in great quantities. For the year ending June 1876, dried fruits to the value of $600,000 were exported, while during the same period of time ending on the first of the present month this amount was increased to $2,500,000. By the new apparatus now in use for drying fruit, called "evaporators," the fruit is left in such a natural condition that England is calling for it in vast quantities; and France is also using large quantities of dried fruits, especially apples, which are made into wine and reshipped in that form to the American market. The Delaware peach growers are now preparing to dry their fruit by the "evaporators," and expect to find a ready and profitable market for it. Peaches dried in this way bring from twenty-five to thirty-five cents per pound, and each basket of peaches will turn out three and a half pounds of evaporated fruit—hence higher prices can be obtained from England than by glutting the market in this country. The only drawback to the use of these evaporators is their great cost, and there appears to be a demand for apparatus that will accomplish the same results at a less price.

Professor Baird, of the United States Fish Commission, is about to leave here for the purpose of collecting information and statistics in regard to the food fishes of the New England coast, between Salem and Portland, and will have his headquarters at the former place. Particular attention will be given this season to the collection of information in regard to the cod, mackerel, blue fish, tuntog, menhaden, sear herring, haddock, pollock cusk, and hake. During the past season the Commission have hatched out about 9,000,000 young shad in the Susquehanna, at Havre de Grace, over 1,000,000 of which have been distributed in Western and Southern waters, and about 1,000,000 are now *en route* to the waters of California. Active preparations are now being made to distribute a large number of salmon eggs and young salmon next fall throughout the country. Over 5,000,000 eggs and young were distributed last fall, but a much larger number will be sent off this season. The principal salmon hatching establishment is at MacLoud river, California, the species of salmon found there being most suitable for Eastern rivers, like the Susquehanna, Delaware, Potomac, and Cape Fear. Professor Baird has recently given considerable attention to importing carp from Germany, as the finest fish of this kind is found there. Four hundred and fifty large carp were recently imported by the steamer Neckar. They are now in the ponds of the Maryland Fish Commission for breeding purposes, and their young will be distributed throughout the South. Other importations will be made soon.

Major Powell, who has charge of the geological and geographical survey of the territories, has already sent out five surveying parties, all of which are at work in Utah. A triangulation party, under Professor Thompson, is located on the eastern slope of the Wasatch mountains; three geographical parties, under Messrs. Renshaw, Wheeler, and Graves, are at work on the Uintah, Price and Lower Green rivers; and a geographical party, under Captain Dutton, is located on the Sevier Plateaus. The major is about to leave for the field himself, but before starting will fit out two other parties, one of which will make a specialty of the subject of irrigation in Utah.

Preparations for an improvement in the devices on the coins of the United States have been going on for nearly a year, and the various dies are approaching completion. As soon as finished. specimen coins will be struck and submitted to the Secretary of the Treasury for appropriate action under the law. One of the objects in view is to have the devices, inscriptions, etc., so finely engraved upon the coins as will render successful counterfeiting almost, if not quite, impossible. At the request of the Committee on Coinage, the Secretary has instructed the Director of the Mint to have an experimental $50 gold coin struck. These dies are nearly finished, and will, it is said, make the largest gold coin ever issued by any government. While on this subject I may state it is estimated by a prominent Treasury official that the total amount of gold and silver in the United States is $225,000,000, and that the increase during the year ending June 30 is not less than $45,000,000. As the imports are expected now to nearly, if not quite, balance exports, and the balance of trade is in our favor, it is believed that the accumulation of specie in this country will be still more rapid hereafter. Dr. Linderman, the Director of the Mint, expects to spend some time in California and Nevada investigating the gold and silver mines, to determine upon the supply of the precious metals which the government can count upon for coinage purposes. From a recent official report it appears that no small amount of gold and silver is obtained from the Atlantic coast, as the amount deposited at the mint and assay offices to the close of the fiscal year ending June 30, 1876, is as follows: North Carolina, $10,335,-209.31; Georgia, $7,379,495.51; South Carolina, $1,381,521.06. Total $19,096,225.88.

An official comparative statement just issued of the exports and imports of the United States for the month ended May 31st, 1877, and for the eleven months ending at the same time, compared with like data of the corresponding year immediately preceding, in specie values, shows as follows: Excess of exports over imports, including merchandise and specie, for the month of May, 1876, $13,040,906. For the eleven months ending May 31, 1876, $103,109,473. For the month of May, 1877, $12,312,309. For the eleven months ending May 31, 1877, $166,372.093.

Recent railroad statistics show that 73,508 miles of road were in operation this year, against 71,759 in the previous year. The gross earnings, $497,558,000, against $503,066,000; the net, $186,453,000, against $182,506,000; dividends paid, $68,040,000, against $74,294,000.

There appears to be considerable doubt here about the Paris exposition being opened at the appointed time, although Secretary Evarts has received no official information as to postponement, but, on the contrary, all communications received from France give assurance that the exposition will be open next year as announced. Notwithstanding this, the opinion appears to gain strength in the State Department that a postponement will be decided on before long. In addition to the war now exciting all Europe, which is likely to prove an insuperable obstacle to holding a satisfactory international exhibition, there is now a new difficulty in the political crisis in France. The election which follows the dissolution of the assembly will greatly agitate the country, and would seem to make it impossible to develop that degree of interest in the exhibition essential to success in such a tremendous undertaking. In consequence of this no steps have been taken by the department toward organizing the provisional commission that has been heretofore proposed.

Mr. C. C. Andrews, our minister at Stockholm, informs the State Department that an agricultural exhibition will be held at Christiana, from the 2d to the 7th of October next, which will be open to foreign nations, and appropriate awards given to the successful competitors. The time of exhibition is short, yet it may be sufficient to introduce some of our agricultural implements to the notice of the farmers of that region.

Washington, D. C. OCCASIONAL.

Iron Bridges.

To the Editor of the Scientific American:

When a railroad train falls through an iron bridge, an iron truss sinks beneath the roof of a public building, and an engine boiler bursts at ordinary working pressure, all within a short period of time and each endangering, if not destroying lives—no wonder that some persons are led to ask whether we are not advancing too rapidly in the applications of art and without sufficient precaution. In perhaps no other branch of industrial science has a quarter century's research been so universally beneficial and of extensively practical a character as in metallurgy and uses of iron.

It is not unnatural, then, to suppose that iron would be the first of our artificial productions to come into too general use. Nor would it be anything but strange if some conservative voice did not rise to "brake up" our headlong rush to that unhappy state of things which would result in the mortification of science.

We have listened particularly to arguments (?) against the use of iron as a bridge material—against the replacement of the stone arch by the iron girder.

One remarks upon the loss of life by the Ashtabula disaster: "No such thing could have happened if that bridge had been a stone arch. Who ever heard of a stone bridge falling through?" Now the fact that stone bridges never fall (allowing such, for a moment, to be the case), while iron ones do, is no reason for abolishing iron as a bridge material. Let iron and stone bridges, under the same traffic, be built with the same safety factor, and the imperfection that will cause a downfall will, in nine out of ten cases, exist in the stone.

The fact that all iron before being used is molten, and therefore becomes homogeneous, is in itself a strong argument in favor of its use. Another is the ease with which a whole truss may be tested in one or two of its members before erection, while to test an arch would necessitate the awkward and tedious performance of testing each stone.

Stone bridges of long span, especially with us, are of comparatively rare occurrence. The voussoirs of a short span are, for looks alone, large enough to insure many times the requisite strength, and any mason who has an eye for symmetry and enough of that indispensable article known as "cheek" to style himself an engineer, may with safety to his own reputation erect an ordinary stone bridge.

The reason, then, why a stone bridge does not fall is because it is unnecessarily strong. Let iron be used as profusely and in correct proportions, and no iron bridge would ever fall.

Stone bridges as well as iron trusses, do fail when not securely built. An inspection of the Boston Railroad depots will show the remains of an arch whose load is supported by an iron girder. Even while we are many times safer in the railway car than in our own private carriage, we cannot doubt that iron, especially in trusses, is sometimes too sparingly used.

It is asked: "Is not some legislation necessary to prevent such rapid introduction of iron bridges upon our thoroughfares?" I say, "No."

But let us have legislation that will be a damper to the erection of cheap bridges by money-eyed corporations, and that will, without excessive material, as in the case of stone bridges, give the passenger over the suspension or truss bridge the same feeling of security as when over the arch. In the above-mentioned, as in all such cases, failure was due to incompetent or untrustworthy engineering rather than to the iron.

In what respect is iron inferior to any other bridge material?

Let iron be used, then, but let men use it who will prove it free from silicon, phosphorus, etc., before computing for pure bar iron.

Marston's Mills, Mass. H. V. HINCKLEY.

Instinct of the Swallow.

To the Editor of the Scientific American:

On page 407, vol. xxxvi., of THE SCIENTIFIC AMERICAN, Thos. Edward gives an account of the conduct of the tern. Having seen a similar display among barn swallows, I am prepared to believe the narrative.

A swallow, on rapid wing, thought to take an insect near the water. His wing dipped, and not being properly on his guard, he was turned on his back, and floated like a cork on the surface, feet up, and perfectly helpless. He uttered a few cries of distress, and almost instantly a multitude of deeply-sympathetic companions filled the air above and around him, each clamorous with excitement, and all running to realize the situation, and to comprehend what was required, but many fruitless efforts were made before he was successfully caught by the wings, raised, and partly turned over. They were finally successful, and I was left standing on the bank, meditating over the popular errors in regard to instinct and reason. S. L. N. FOOTE, M.D.

Yellowbud, Ohio.

Enemy of the Potato Beetle.

To the Editor of the Scientific American:

I send by mail a small box containing a bug which seems to be a new destroyer of the Colorado beetle, or potato bug; it has a proboscis somewhat resembling the house-fly, but seems to be of a hard nature like bone. The bug strikes the beetle with this proboscis, and seems to suck the life out of it, when he is ready for another. First, Would like to know whether it is an injury to the potato plant; Second, What class of beetle it belongs to, with its proper name. It seems to be a new discovery. I have not had time to watch it very much, but have seen it kill two bugs in ten minutes. Seems to destroy the most from three o'clock P. M. until dark. Would be pleased to have an answer through your paper.

Sandusky, Iowa. F. A. WHITNEY.

The rust-gray, angular, and somewhat flattened animal referred to in the above letter is not a beetle, but a genuine bug(order, *heteroptera;* family, *scutelleridæ*), popularly known by the name of the spined soldier-bug (*arma spinosa dallas*). It is an old acquaintance, and every reading farmer protects it as far as possible in his warfare with the potato beetle.

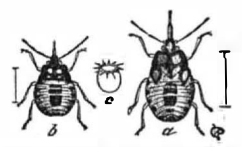
The specimen sent by Mr. Whitney was a female, and had just laid 22 eggs by the way. These eggs are pretty little cauldron-shaped objects, with a convex lid, around which ciliate from 15 to 20 delicate white spines. The color of the egg is at first pale bluish gray, but the shell being translucent, the black and red colors of the embryo within soon show through it, and give the egg a bronze hue. Carefully examined, the surface is seen to be studded, especially on the convex lid, with what, under the microscope, appear like blunt spines, and which give the egg a slightly specked appearance to the naked eye. The convex lid opens with a spring of marvelous delicacy, when the hatching period arrives.

SPINED SOLDIER-BUG—*a*, enlarged beak; *b*, bug with right wings expanded.

These eggs are neatly placed side by side, in clusters of a dozen or more, upon leaves and other objects, and are so much subject to the attacks of a minute hymenopterous parasite, that those who undertake to hatch such as are found out-doors will more often get flies than bugs.

The newly hatched bugs are broadly ovoid and swollen-backed creatures, which congregate together, and look quite unlike the parent. The color is polished black, except the abdomen, which is crimson, with transverse black bars on the middle of the back and at the sides.

In the full-grown larva, the black still predominates on the thorax, but some four yellowish spots appear, and the abdomen becomes more yellowish, though still tinted with red. In the pupa, which is readily distinguished by the little wing-pads, the ochreous-yellow extends still more, and finally, with the last molt, the black disappears entirely in the perfect insect. Throughout the immature stages the shoulders are rounded, and not pointed, and the antennæ, or feelers, have but four joints, instead of five as in the mature bug, while there are but two visible joints to the feet, or tarsi, instead of three.



SPINED SOLDIER-BUG.—*c*, egg; *b*, larva; *u*, pupa.

The writer thus speaks of this gallant little fellow in his work on "Potato Pests":

"This is one of the most common and efficient of doryphora's enemies, occurring in all parts of the country, and seeming to have a decided fondness for our potato-destroyer, especially for the soft larva. . . . Thrusting forward his long and stout beak, he sticks it into his victim, and in a short time pumps out all the juices of its body and throws away the empty skin.

"We have been taught to admire the muscular power of the lion, which is enabled to grip and toss an animal larger than itself with its powerful neck and jaws ; but feats performed by these young soldier-bugs throw the lion's strength completely into the shade, for they may be often seen running nimbly with a doryphora larva, four or five times their own size, held high in air upon their outstretched beak.

"The spined soldier-bug by no means confines himself to potato-beetle larvæ, but attacks a great number of other insects."

Water Pipe Pressures.

A series of important experiments, having for their object the settlement of several important questions in connection with the extinction of fires, were carried out at Grays on behalf of the Metropolitan Board of Works by Sir Joseph Bazalgette and Messrs. Branwell and Easton, C.E. The experiments were classed under three heads, the first being to test the effect produced by a pressure of 40 feet (that being the greatest height above road level to which the East London Waterworks Company are required to deliver water under their Act), using various lengths of hose and sizes of jets. The second was to test the effect of varying pressures under differing conditions of hose and jets. The third was to experiment with jets of great height. The basis from which the experiments started was the assumption that the value of a jet for extinguishing fires will be according to the height to which it can be thrown and to the quantity of water delivered, both of which depend on the elevation or head of reservoir, the lengths and sizes of the mains and pipes, and the dimensions of the hose and jet. Thus three things had to be considered—namely, the pipe friction, the hose friction, and the ratio between the height of the jet and the pressure immediately producing it. The results of the experiments proved that in overcoming the friction due to driving 600 gallons of water per minute through one-eighth of a mile of 4-inch pipe, 225 feet of pressure would be exhausted. If these 600 gallons were separated into the four jets of 150 gallons, each with their 200 feet of hose, there must be added to the 225 feet the loss of 55 feet in delivering 150 gallons per minute; and to throw that quantity to a height of 50 feet by jet would exhaust a further 80 feet of pressure. The inevitable conclusion, therefore, is that to deliver these quantities through the stated lengths of pipe and hose, and to throw it to a height of 50 feet, would exhaust a pressure of 360 feet. It may be as well here to observe that one-eighth of a mile of 4-inch pipe appears to be a very long length for the delivery of so large a quantity of water, and, as shown by the second experiment, the reduction of the quantity of water to one-half reduced the pressure from 250 feet to 63 feet, 6 inches. A proportionate enlargement of the pipes to deliver the larger quantity of water would effect an equivalent reduction of pressure, so that with high pressures it is clear that at the same time there must be pipes of sufficient size not only for the delivery of water extinguishing fires, but also, at the same time, for supplying the domestic requirements of the surrounding district. It must also be borne in mind that if these high pressures are introduced into the metropolitan district, the whole of the house pipes and fittings must be strengthened so as to be able to withstand them. The cost of that alone has been estimated by Mr. Muir, of the New River Water Company, at £40 per house. As there are about 400,000 houses to be dealt with, that means an expenditure of somewhere about four millions of money.—*London Building News.*

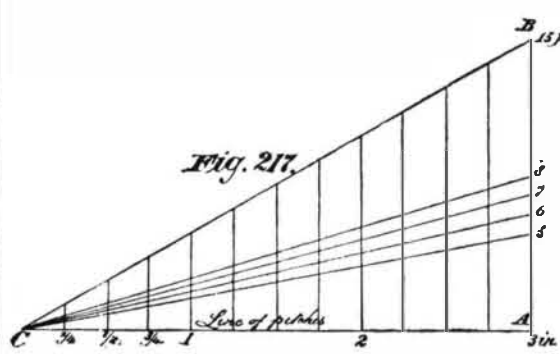
PRACTICAL MECHANISM.

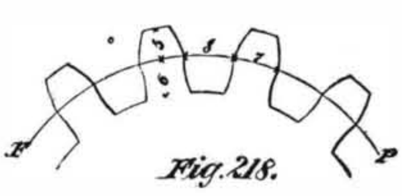
BY JOSHUA ROSE.

NEW SERIES—NO. XXX.

PATTERN-MAKING.—WHEEL SCALE.

The accompanying illustration (Fig. 217) represents a very serviceable article for those who may be called upon to lay out gearing. It is not new to the mechanical world, but as the author never happened to meet with but one man who actually had made himself a scale of this kind, he considers it will prove a novelty to a large class of the readers of THE SCIENTIFIC AMERICAN.





Draw the lines AB and AC at right angles to each other. Make AB equal to three inches; the line AC may be any convenient length, say six inches, as by observing this proportion the scale will be in addition a very useful set square with the angles at B and C 60° and 30° respectively. Join BC; divide AB into 15 parts; from C draw lines to the fifth, sixth, seventh and eighth part, as in the figure. Divide AC into as many parts as there are inches in AB, number the divisions, and erect perpendiculars to AC. These are for the even inch pitches. To make the scale serviceable for the fractional parts, divide and subdivide again, and erect a perpendicular at each division. This process in our figure is carried out to quarter inches. It may, however, be further extended, if desired; but inasmuch as it is so little trouble to draw a perpendicular at any time for any fractional pitch required, it may be preferred by some that the scale should not be overcrowded with lines.

Brass is probably the most suitable material, as it takes the lines readily, does not oxidize, and is sufficiently hard to stand considerable wear.

The method of using this scale will be clear from the following example. Let O, Fig. 2, be the center of a tooth wheel or pinion, and PP the pitch circle, which we will suppose already divided off, and that the pitch is one inch; on the perpendicular marked take with the compasses the distance up to line 5, and set this off outside the pitch for the tops of the teeth; on the same perpendicular take the distance up to line 6, and mark this inside the pitch circle for the roots of the teeth. With center, O, and the points so found as distances, describe circles.

Make the thickness of the tooth equal to the distance on the scale up to line 7 ; the width of the space will then be equal to the distance up to line 8—all of course measured from the base line, AC.

Scales upon this principle may be made to accommodate any preferred proportions of the teeth of wheels.

Naphtha Explosions.

At noon, May 28th, an explosion and fire occurred on a barge which was discharging naphtha in front of the pier of the Metropolitan Gas Company, on the North River, near New York city. There had been about 95 barrels in the cargo, of which about one-half was pumped into a receiving tank, and the accident occurred just as the engineer, who was on the pier, was about starting the donkey pumps for work, after the dinner hour. The captain of the barge and two men were killed, and the engineer seriously injured. The barge and pier were damaged to an amount of about $3,000, but the receiving tank, which was not far off, most fortunately escaped. It was unusual to receive the naphtha in barrels—it generally having been sent in bulk, and pumped to this same receiving tank. Possibly a pipe or match used by one of the men killed ignited the inflammable gas evolved from the naphtha, or a spark may have originated from the iron implement used to remove the bungs, striking a nail.

June 2d, an explosion took place at the residence of C. B. Shoemaker, 1504 Swain street, Philadelphia. Mr. S. had procured five gallons of "benzine" to use as a moth preventive, and, with a watering-pot, had sprinkled the carpet and furniture of the parlor with the fluid. At 8·45 A.M., Mrs. Shoemaker and Mary Hall being in the parlor, a violent explosion occurred in the lower rooms, setting fire to the clothing of the two ladies, and causing the death of Miss Hall at noon of the same day, and of Mrs. Shoemaker about midnight of June 3d. The benzine in the can held by Mr. Shoemaker, in the second story at the time, did not ignite. There was no fire either in the parlor or dining room, and the only theory which seems possible is, that the volatile gas extending through the dining room to the kitchen—a distance of about 40 feet—and forming an explosive mixture with the air, ignited at the range in the kitchen.

At the coroner's inquest it was shown that Mr. Shoemaker had for four years past used benzine in a similiar way without accident. The can in the present case was labeled "Parlor Oil, Non explosive." The portion remaining in the can, upon being analyzed by Shippen Wallace, chemist, was found to be "a light naphtha, partaking, however, more of what would be termed gasoline, commercially, than naphtha." The specific gravity was only 75° Baumé. In his testimony, Mr. Wallace said :

"It is extremely volatile, giving off inflammable vapors at the ordinary temperature, and can be ignited when a flame is held within half an inch of it. By submitting the fluid to distillation, I succeeded in obtaining 64 per cent below the temperature of 170° F., and the balance between that and 205°. In the process of refining petroleum, the oil coming over from the still at a temperature below 170° F. is termed gasoline, and has a specific gravity from 80° to 90° B.; I would therefore call the fluid a light naphtha, partaking, however, more of what would be termed gasoline, commercially, than naphtha. By the name 'naphtha' is, at the present time, by chemical writers, embraced most of the inflammable liquids produced by the dry distillation of organic substances; commercially, as applied to the products of petroleum coming from the still, between 150° and 278°, and having a specific gravity of 71°–76° B., while the liquid obtained below 150°, and which generally has a specific gravity of 80° to 90°, is termed gasoline."—*American Exchange and Review.*

Priming.

Never prime a piece of wood, especially hard wood, unless certain there is no moisture in it. Run all wheels out in the sun, or dry by artificial heat before priming, and if painted as described in hurried work, they will not scale, crack, nor blister. Use more or less oil, according to the time required for finishing; on slow work oil will take the place of varnish. Do not put on one coat and let it stand a long time without sanding, and never put a thick coat on bone dry work. A job painted in this way, with an extra coat of rubbing varnish, allowed to stand a week or more, then rubbed out and well varnished, and kept away from mud and water for one month, will hold its gloss equal to oil work, and will not crack nor have the small-pox, and come off generally. If necessary to hurry it still more, use more japan and varnish and less oil, thinning well with turpentine.

Do not put a dry flat coat on glossy oil, nor *vice versa.* Be sure your job is free from moisture, so that it will drink in the priming. Make your priming thin enough with turpentine, so that it is drink and not victuals. Make each coat as near like the last as possible, put them on as soon as dry, and they will form one solid coating; then if you have time, let them thoroughly dry before varnishing. For wood work to keep in stock a long time, prime with best pail lead, boiled oil and a little turpentine.—*Carriage Monthly.*

A Steel-Clad Bullet-Proof Car.

A car of this sort has recently been constructed at York, Pa., for the Spanish Government, for use in Cuba. The steel slides, which are pierced with loopholes for musketry, and which take the place of windows, have been so cunningly planned by the painter's skill to resemble the decorated ground-glass sometimes used in cars, as to deceive the unwary at a little distance. The car is 31 feet long, 8 feet wide, of the usual height, and is mounted on the Pennsylvania Railroad standard passenger car truck. Its weight is about 24,000 lbs. No finer work of the kind has ever been made.