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Mechanical Literature.

THE ADVENTURES OF THREE JOURS.

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CHAPTER V.

THE good steamer *St. Nicholas* was advertised to leave for Montgomery and all intermediate landings on Saturday, the 5th day of May, and our friends decided, as they had finished off all of Mr. Hardy's work, to take passage thereon. Perhaps a hint thrown out by Miss Linden a few evenings before had something to do with that decision, on the part of Gloner, at least; but of that hereafter.

"Business of all kinds will be dull now until fall trade begins, which will be about the first of September, when the new cotton crop commences coming in," said Mr. Hardy, when he settled up with them. "If you come back this way at that time—and I think you will, for I don't see how a person of intelligence, who has lived in Mobile once, can go away for good—and if you do return, give me a call, and if you want for anything to do, I'll see if I can't accommodate you. I am well pleased with your work, and the same jobs, if sent to one of the repairing shops here, would have cost me twenty-five per cent. more, and not been half done at that. When you come round to bid us good-by, I'll give you a letter to a Montgomery friend of mine—it might do you some good—at all events it will do no harm."

On the 1st day of May our friends attended a May-day festival, when, in the expressive language of Loring, "they had a high old time." And then the intervening time was passed in calling on their lady friends, and in wandering about the city, which now, off of the business streets and outside of the quarter devoted to cotton warehouses, was one dense wilderness of roses. And then one day was passed across the bay, on the eastern shore, where they found the most delightful bathing, the finest fishing and hunting, as well as the best tables they had ever seen. But, alas! all pleasures have an end, and the 5th of May arrived.

Mr. Hardy was called on, the letter of introduction was received, and then they went aboard the *St. Nicholas*,

and, lighting their cigars, they took seats on the deck where they could have a free view of the busy scene before them. In the year 1857, nearly all the planters in the interior of Alabama, and a good part of Mississippi, too, obtained their supplies from Mobile, consequently the scene was a busy one. Great hogsheads of bacon, barrels of mess pork and flour, tierces of rice, and all kinds of groceries were hauled on the wharf by the dray load, and then rolled on the steamer by a score or two of stalwart deck hands. Then, as the hour for departure drew near, coach after coach drove up and deposited loads of passengers. One in particular attracted Loring's attention, and when the occupants alighted, he slapped his companion, and exclaimed, "Ah, ha! my boy, Miss Linden and her father; I see now why you were so anxious to come on this boat. You knew Miss Lucy was to be one of the passengers."

A smile played on the face of Gloner as he replied, "I certainly did, and of course when one can have pleasant company, one is unwise not to profit by it."

A nod and sweet smile of recognition was bestowed on both as she passed by and disappeared in the lady's cabin, after which they saw her no more until next day; then they met and passed several hours together, viewing the ever-varying scenery along the romantic banks of the Alabama, and when night came, through her our friends became acquainted with nearly all the lady passengers on board.

Now, we know that the professed novel reader will censure us for our lack of skill in depicting and introducing startling adventures, for we well know that we ought to have the steamer blown up, or get snagged, just for the express purpose of having Gloner rescue Miss Linden and her sire from a "watery grave," while Loring swims ashore with all the rest of the lady passengers, but we plead guilty to a most deplorable aversion to "hairbreath escapes," as well as to a sacred regard for truth, and as the wreck of the *St. Nicholas* is to this day visible in the Bigbee River, where she sunk in 1867, surely the lovers of the marvelous will see the utter impossibility of causing her to "go up" ten years prior on the Alabama. Therefore, we only have to record the fact, that our friends, after a most agreeable and pleasant trip of three days and some odd hours, landed safely at Montgomery, and put up at the Exchange Hotel.

The next morning, as Mr. Linden's carriage had ar-

rived, he and his daughter left for their plantation some ten miles distant.

"If you remain in the city, I should be pleased to have you both call out and see us," said Mr. Linden, as he shook them warmly by the hand at parting; "I will try and make your visit agreeable and pleasant, in which I know I will be assisted by Lucy."

"Thank you for your kindness," said Gloner, "and if we do remain here, we shall certainly profit by it, and more particularly," he added in an under tone, "if it would be agreeable to Miss Linden."

A smile from her answered him most fully.

Now for work, said Gloner, as the carriage disappeared at the next corner; "we must make hay while the sun shines, so let us look up the carriage factories here, and see what can be done. Let me see, where is Hardy's letter. Ah, yes, here it is! By Jove! 'Lamer & Fountain, proprietors of Exchange Stables and Montgomery Carriage Factory.' So they build carriages and wear them out too, hey? Come on, and let's see what they can do for us."

They soon found the Exchange Stables, and inquiring for Mr. Lamer, they found that worthy seated in the office with his boots elevated on a table, while he smoked a cigar and read the morning's paper.

"You will find Fountain in the shop," he said, as he glanced over the letter; "take this to him. Shop fronts the next street, and you will reach it by passing through the stable," and he resumed his cigar and paper.

On reaching the shop, all hands apparently were gathered at the front door, where quite a crowd of persons had collected. A single glance told our friends that there had been a runaway, and the crowd were examining the wreck and listening to the driver, who was a little hurt and a good deal scared, tell about "how de t'ing happened."

"A bad smash up," said a gentleman in his shirt sleeves, as he re-entered the shop; "a bad smash up—would not have had it happen for one hundred dollars—the only fine Clarence coach we've got, and no one that can repair it the same as it was."

"Is this Mr. Fountain?" asked Gloner, as he advanced towards him.

"Yes, sir; that's my name, sir."

"I have just arrived from Mobile, and have a letter from a friend of yours there, Mr. Hardy."

"Ah, indeed, from Hardy, eh? Well, what does he have to say?" and taking the letter, he read it eagerly. "Well, Hardy says here that one of you is a first rate body-maker, and the other a very fine painter. Are you the body-maker?"

"Yes, sir, and my friend here, Mr. Loring, is the painter."

"Well, I do not know but what you are lucky in arriving here just now," said Mr. Fountain; "go out and look at that coach, and tell me what you'll do the repairs on it for."

It did not take Gloner long to decide, for the carriage, as is generally the case with a runaway, looked a good deal more damaged than it really was. Two of the lower quarter panels were split, the glass door frames were both broken, one wheel injured, and all the carving on one side more or less defaced.

"Well," said Gloner, when he returned, "I will do all

the wood-work for twenty-five dollars, and make it look as good as new."

"Well, but how about the carving? Did you notice that some of that was broken?"

"Yes, I noticed it all, and will carve it just the same as it was before the accident occurred."

"Well, if you can do that, I'll give you twenty-five dollars willingly. And can your friend there paint it so as to correspond with the balance?"

"Certainly," said Loring; "I can paint it for, let me see, say ten dollars, and not one in a hundred would ever know it had been damaged."

"Well, you can go right to work on it then, Mr. Gloner. And as for your friend here, I'll give him something to do in the paint shop until you are ready for him."

"Very well, sir. Have your smith take off the body and bring it before the bench I am to occupy, and after dinner we'll be on hand."

On leaving the shop they happened to pass the post-office, when Gloner proposed stopping, as a letter might be there from Margrave. And, sure enough, he did receive one, wherein that worthy stated that he had written to Mobile, and receiving no answer, had concluded to write one to Montgomery. It was dated the last of April, and further informed them that he expected to leave the place he was then stopping at, and try to get to a civilized county, when they might expect to hear from him again.

"Poor Margrave," said Gloner; "I fear he has not had as easy, nor as pleasant times as we have. And I presume he is about broke, too. Wish I knew where some money would reach him, for a ten dollar gold piece would be very acceptable just now, I warrant you. Well, I hope he'll write soon, at all events."

After selecting a pleasant-looking boarding-house in that most beautiful part of the town known as Capitol Hill, and moving their trunks thereto, they partook of a good dinner,—although rather late, as it was two o'clock when the bell rang,—and then proceeded to the shop and commenced operations. During the afternoon Gloner managed to get out all his stuff, and two more days of rather hard work saw the job finished.

"Very well, very well, indeed," said Mr. Fountain, as he looked at it most critically. "I don't see but what that's just as good a job as they could do up North, or anywhere else, for that matter. Now we'll have the smith-work done, and then Loring here can try his hand. In the meantime, I want a neat express wagon to carry baggage to the river, and you might as well make the body, I guess."

"Very well, sir; what's the size, and how do you want it made?" asked Gloner.

"Oh, as for that, just suit yourself," returned Mr. Fountain. "You know what I want it for, and you know how it ought to be made as well as I do, so just go ahead."

"Pretty rapid progress already," thought Gloner, as he proceeded with his job.

When Loring applied the last coat of varnish, and pronounced the coach done, the delight of Mr. Fountain knew no bounds, and he was not satisfied until he had his partner in the paint-shop looking at it.

"Isn't it a first rate job," he said. "Now, who would have thought such a thing possible. Why I couldn't tell

that it had been repaired myself, if I didn't know it. It looks just as good as it did before the run-away, and I don't know but what better. We must have all our carriages repaired and painted up now, while we've got the opportunity," which assertion convinced Loring that they both had a good summer's job.

Montgomery did not prove as social a place as Mobile, yet our friends managed to get along very well. They were fortunate in having a good boarding-house and a very pleasant room, where Gloner passed most of his leisure hours. At the shop they each had a little darkey to wait on them—to tote water, heat the glue, grind paint, wash off old carriage parts, take work to pieces, and, in fact, all the drudgery; for your jour in the South in those days would soon lose *caste*, and be considered nobody, if he stooped to such menial work. Then the money was always ready, and our friends were never questioned about their prices. "What is such a job worth?" Mr. Fountain would ask. "So much," would be the reply. "All right, sir," and the amount was put down without another word.

And so a month passed away right pleasantly, and quickly, too; and then the hot weather came on. But as work was not pushing, they consulted their own inclinations, and thus managed to put in the time rather easily.

About this time Gloner received a letter from Margrave, written at Columbus, Miss. "I have finally reached this place," he wrote, "a rather pleasant inland town, and have a job at a very good carriage factory, but only to trim two buggies. Had a terrible time in getting here. Walked all the way from Yazoo City—but I'll tell you all about that when we meet. If you get this, do write to me, and get a job for me near you, for I'm tired of this kind of living."

As Mr. Fountain said he could give him something to do, Gloner wrote to him the same day, and each one enclosed a ten dollar bill therein, with instructions to come on direct to Montgomery as soon as he had finished his buggies.

"Suppose we should go out and test the sincerity of Mr. Linden's invitation," said Loring one evening, as they were returning to their boarding-house. "The boss is in no particular hurry for our work, and I think a few days recreation out in the country would do us good."

"No doubt of it," returned Gloner; "and nothing would please me better, for I have a great desire to see how the planter lives, as well as to have a look at the country itself, and learn how they make cotton."

"Then let's speak to Mr. Fountain for a team, and we'll start, say next Saturday, and remain over Sunday, at all events, and as much longer as we may decide upon at that time. What say you?"

"Very good; I will speak to Mr. Fountain to-morrow about it."

The next day he did so, and Mr. Fountain declared that he would fit them out with the best the stable afforded. "You will have a fine time out there," he added. "Mr. Linden lives in style, and being one of the old-school Virginia gentlemen, he will leave nothing undone for your pleasure and comfort. And then his daughter, Miss Lucy, is one of the sweetest and most charming creatures you ever saw,—but then you know that already, as you are acquainted with her."

And so everything was arranged, and, with one at

least, Saturday morning was looked forward to with a good deal of interest. A note was duly despatched announcing their contemplated visit, and then they could only await with patience for the auspicious morning to arrive.

(To be continued.)

TREATISE ON THE WOODWORK OF CARRIAGES.

Continued from page 53.

THE size of an angle does not depend upon the length of its sides, but upon the space between them.

There are three kinds of angles: the right angle, the acute angle, and the obtuse angle.

XII. When an upright, $A D$, meets another, $B C$, (fig.

3), in such a manner that they form two equal angles, $B A D$, $C A D$, these angles are right angles, and the upright, $A D$, is said to be perpendicular, or square to the line, $B C$.

In order to raise a perpendicular on the line, $B C$, from the point, A , two equal distances are taken, $A B$, and $A C$, respectively, on each side; then, with a pair of compasses extended farther apart than $A B$ or $A C$, two segments of circles are drawn from points B and C , the point of junction, D , determines one of the points of the perpendicular. By drawing a line between A and D the perpendicular is obtained. In the art of drawing, this operation is effected by means of a rule or a square.

XIII. All angles, for instance $E A C$, being less than a right angle, are acute angles, and all angles, such as $E A B$, being larger than right angles are obtuse angles. The line, $A E$, in common with those two angles, is oblique to the line $B C$.

XIV. Two angles, $C A E$, $E A D$, are called complementary to each other when their united sums are equal to a right angle. Two angles, $C A E$, $E A D$, are supplementary to each other when their sums are equal to two right angles.

From the foregoing it will be seen that the sum of all the angles formed around one point, A , of a line, $B C$, and on the same side of the line, is equal to that of two right angles.

XV. When two straight lines, $A B$, $C D$ (fig. 4), cross each other, at point O , in any manner whatever, they form four angles around that point, the sum of which is equal to that of four right angles.

Angles such as $A O C$, $D O B$, opposite angles at the point of crossing of the two lines, are equal angles. Therefore, these two angles are supplementary either to the angle $A O D$ or $C O B$. By the same fact it is proved that the angles $A O D$, $C O B$ are equal.

XVI. PARALLEL LINES.—When two straight lines,

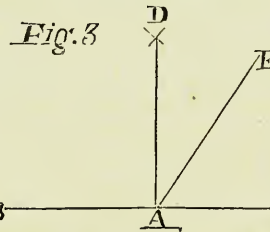


Fig. 3

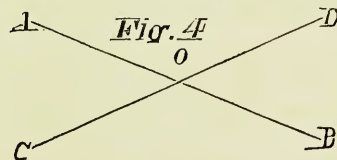
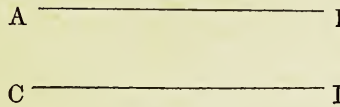


Fig. 4

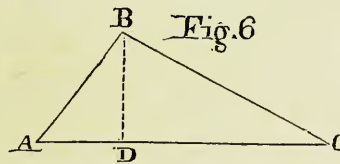
such as A B and C D (fig. 5), have the same direction, in such a manner that, if they are infinitely prolonged, they will not meet, they are named parallel lines. The property of such lines is, that they preserve an equal distance between each other over their entire length.

Fig. 5.



XVII. TRIANGLES.—A triangle is the space between the lines that cross each other, respectively; here in this description we shall only consider those triangles formed by straight lines. There are two facts to be noticed in all triangles—the lines by which the surface is bounded, and which are designated the sides of the triangle, and the angle formed by the junction of those lines. Thus the lines A B, B C, C A, are the sides of the triangle, A B C (fig. 6); and each of the points A, B and C, are at one of the angles of the triangle.

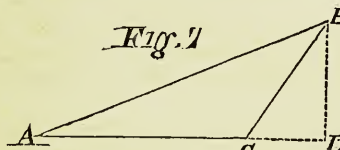
Fig. 6.



Where either side of the triangle is taken as the base, the opposite angle, as here the angle B, is called the top angle.

The height of a triangle is determined by a plumb line starting from the point B, and prolonged through the base line, as line B D, in fig. 7.

Fig. 7.



XVIII. When two sides, A B, A C, of a triangle, A B C (fig. 8), include a right angle, α , the triangle is styled a rectangular triangle. The two sides, A B, A C, are the sides of the right angle. The side, B C, opposite the right angle, is the hypotenuse.

Fig. 8.

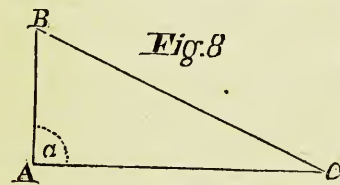
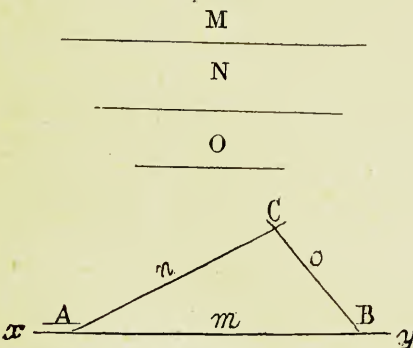


Fig. 9.



XIX. To construct a triangle from three given sides. Suppose M N O (fig. 9), are the three given sides. One of the sides is placed on a straight line xy , say m , the extremities of which are A B, then take each of the other sides respectively, between the compasses, and describe the arc of a circle from each of those points. From the point of junction, C, draw two lines respectively to points A and B, which will give lines A C and B C, which in their turn are respectively equal to n and o , and will produce the required triangle, A B C.

XX. To construct a rectangular triangle, the two sides

of the right angle being given. Suppose A C and B to be the two sides of the right angle (fig. 10), then, by means of a rule or a square, erect a perpendicular (A B) on the extremity of one of the sides, for instance, A C, on which place the side, n , from A to B. On joining the extremities, B and C, the required triangle, A B C, will be the result.

Fig. 10.

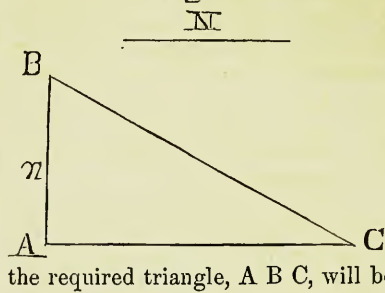


Fig. 11.

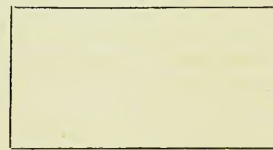


Fig. 12.

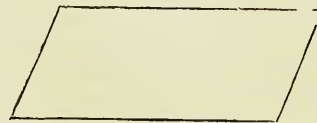


Fig. 13.

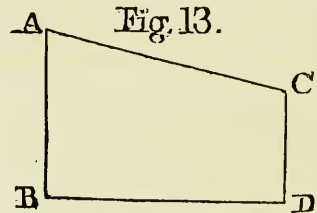
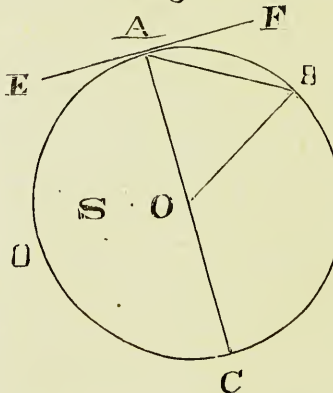


Fig. 14.



XXI. QUADRILATERALS.—By quadrilaterals it is meant to indicate figures enclosed within four lines. Those that we shall employ are—the rectangular (fig. 11), having four right angles, the four sides of which are consequently equal and parallel. The parallelogram (fig. 12), the opposite sides of which are equal and parallel, without having any right angles. The rectangular trapezium (fig. 13), two sides of which, A B, C D, are parallel with the angles, B and D, right angles.

XXII. CIRCLES.—The circle (fig. 14) is a plane surface, S, bounded by a curved line, A B C D, called the circumference, all the points of which are at an equal distance from the center point O.

The radius is a straight line that joins the center to the circumference, such as A O.

The chord is a straight line, A B, drawn within the circle, and communicating to two parts of the circumference.

The diameter is a chord, A C, passing through the center.

The segment of a circle is a portion of the circumference cut off by a chord, or included between two radii, such as A B.

A tangent is a straight line, such as E F, that touches at any point, A for instance, which is styled the point of contact.

The normal or perpendicular, is a straight line, A O, bearing on a point, A, of a curved line, and perpendicular to the tangent at that point. In general, a normal is a perpendicular to a curved line or to a curved surface; and in a circle the direction of that line passes through the center and becomes confused with the radii and the diameters.

THE RELATIONS BETWEEN LINES AND SURFACES IMAGINED IN SPACE.

XXIII. The elements that we have just had under our consideration, are supposed to be on the same plane. When lines and surfaces, and surfaces with each other respectively, are not in one and the same plane, they are said to be in space. It is in this light that we shall consider them in the following.

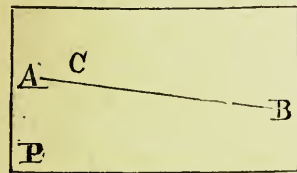
In order to figure a plane it is generally represented by a quadrilateral, A B C D (fig. 15), traced on its surface, but as the plane is an unlimited surface, it must always be considered to be extended beyond the lines that appear to form its boundaries.

A plane is generally designated by a letter; excepting in the case when the lines by which it is determined are mixed with others. Then a sufficient number of letters are employed in order to distinctly determine it.

XXIV. *Relative positions of a straight line in respect to a plane.*—A straight line can occupy four different positions in respect to a plane, which are:

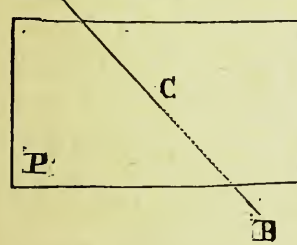
- 1st. It can be entirely within the plane.
- 2d. It can be perpendicular to the plane.
- 3d. It can be oblique to the plane.
- 4th. It can be parallel to the plane.

Fig. 16.



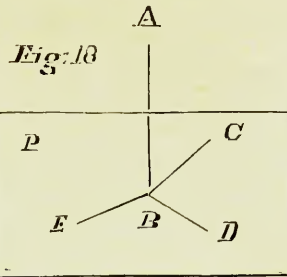
When a straight line, A B, has two points, A and C, within a plane, P (fig. 16), it is entirely within: this is a consequence of the definition of the plane (art. 9).

Fig. 17



XXV. When a straight line, A B, traverses a plane P (fig. 17), the intersection of the plane and of the straight line takes place in a single point, C. The line thus becomes divided into two parts by the plane, one of which, A C, is above and visible, and is represented by a full line; the other part, C B, is below, and wholly or partially hidden by the plane; the hidden part is represented by the punctured line.

XXVI. A straight line, A B, is perpendicular to a

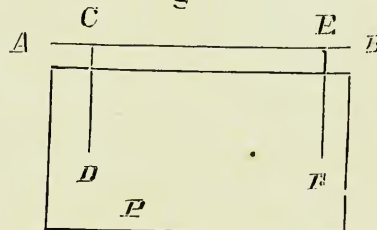


plane, P (fig. 18), when it forms right angles with all the lines, B C, B D, B E, bearing on the base of the plane. The line, A B, would be oblique to the plane if it did not fulfill this condition.

Reciprocally, all lines, B C, B D, B E, brought from a point, B, of a line, A B, perpendicular to that line, determine a plane, P, perpendicular to the line A B.

Two perpendiculars, B C, B D, not straight lines, bearing on the point B of the line A B, are sufficient to determine a plane perpendicular to that line.

Fig. 19.

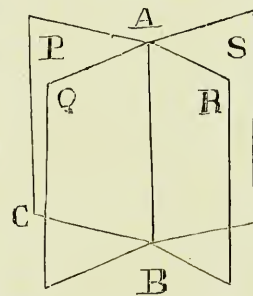


XXVII. A line, A B, and a plane, P (fig. 19), are parallel when they cannot possibly meet, even if infinitely prolonged.

All perpendiculars, C D, E F, of the plane, P, starting from the different points, C and E, of a line, A B, parallel to that plane, are equal and parallel, and measure the distance from the line A B to the plane P.

XXVIII. The position of a plane in the space is determined by those of three points not in a straight line.

Fig. 20



Suppose A and B (fig. 20) to be two of those points; a plane merely compelled to pass by A and B could occupy an infinite number of positions, P, Q, R, S, in space, by revolving round the line, A B, that joins the two points, A, B; but if the plane is forced to pass by a third point, C, placed outside of the line A B, its position becomes definitely determined, and the plane P is the only one that can be formed by the three points, A, B, C.

The position of a plane is determined by that of two straight lines that intersect each other; for three points not in a straight line can be taken as extremities and the points of intersection of those two lines. Consequently:

The position of an angle formed by two straight lines determines the position of a plane, which is the plane of that angle.

The position of a rectangular triangle determines the position of a plane, which is the plane of that triangle.

Two parallel lines determine a plane, without which they cannot be parallel.

XXIX. *Relative position of planes to each other.*—Two planes can occupy four different positions in respect to each other.

- 1st. They can coincide.
- 2d. They can be perpendicular one to the other.
- 3d. They can be oblique to each other.
- 4th. They can be parallel to each other.

When two planes coincide, they then form one and the same plane.

XXX. Any plane, P, passing through a line, A B, perpendicular to a plane, Q, (fig. 21), is perpendicular to that plane. The line X Y, on which line two planes intersect each other, is their common line of intersection. In general, when two planes, P and Q, are perpendicular to each other, it is necessary that any line, A B or B C, drawn upon one plane, and perpendicular to their common line of intersection, must be perpendicular to the other plane. Two planes that intersect each other without fulfilling this condition are oblique to each other.

Two planes, P and Q, perpendicular one to the other, are said to be coordinate planes.

XXXI. The intersection line, X Y, of two planes is a straight line. In fact, if three points could be found on this line of intersection that were not in a straight line, the two planes would be coincident, and would therefore not intersect each other.

XXXII. When a plane is made to revolve around a fixed axis within that plane, all the points of the plane describe segments of circles in space, the planes of which are perpendicular to the axis.

Suppose A B an axis fixed in a plane P (fig. 22), which is obliged to revolve around that axis, and C a point whatever taken on the plane P. From point C, drop a perpendicular, C D, on the axis. By turning the plane, P, round the fixed axis, A B, the point C, will describe the circumference of a circle, C C' C'', the plane of which is perpendicular to the axis, A B. By this movement the line C D will not have ceased to be perpendicular to the axis; therefore, the plane that it determines by two of its successive positions, C D, C' D, not in a straight line, is perpendicular to the axis, A B (art. 26). But this plane includes the segment of the circle described by the point C, and comprised between two successive positions of the straight line C D, therefore, the plane formed by that segment of a circle is perpendicular to the axis, A B.

XXXIII. Two planes, P and Q (fig. 23), are parallel when they are so placed that they cannot meet, even if infinitely prolonged. Their lines of intersection, A B and C D, made by a third plane, R, are parallel lines. The distance between two parallel planes is measured by any perpendicular, such as E F, drawn from one to the other.

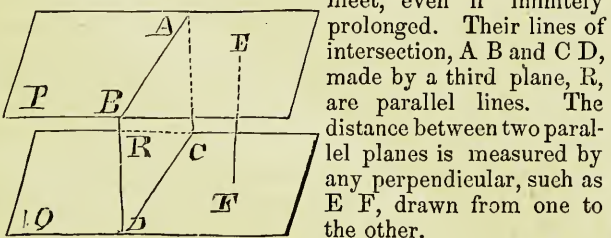
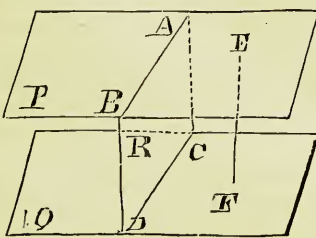
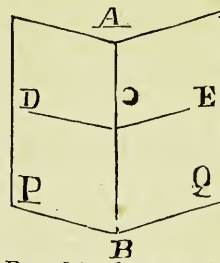


Fig. 23



XXXIV. (*) The junction of two planes, P and Q (fig. 24), form an angle that is styled the dihedral angle; the straight line, A B, along which the two planes meet, is the edge of the dihedral angle; and the planes, P and Q, are the faces. A dihedral angle is distinguished by its edge when it is alone, and by the edge and the two faces when there are more dihedral angles around the same edge. In the first instance it would be the dihedral angle, A B, and in the second case the dihedral angle, P A B Q or Q A B P, by placing the two letters forming the edge in the middle.



The dihedral angle formed by two planes is measured by the rectilinear angle formed by two straight lines, C D, C E, drawn in each plane, P and Q, from a point, C, on the edge and perpendicular to that edge. The rectilinear angle, D C E, thus obtained is the plane angle of the dihedral angle, A B.

All that has been already mentioned in articles 11, 12, 13, 14 and 15, rectilinear angles can be applied to the plane angles of the dihedral angles, either to indicate the kind of angles, acute, right, or obtuse, or the relation to another angle, opposed, complementary, or supplementary.

In joinery it is of little importance to know the kind of dihedral angle; the chief point is to know how to construct it. There are two manners of conducting the operation; directly or indirectly. The indirect construction is effected by the aid of either complementary, supplementary, or angles opposed to the edge. Considering the importance of the dihedral angles, we will repeat what we have already mentioned on rectilinear angles (art. 14 and 15).

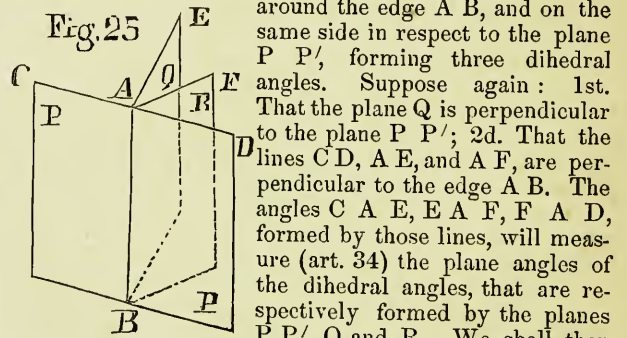
XXXV. Suppose P P', Q, R (fig. 25), are three planes around the edge A B, and on the same side in respect to the plane P P', forming three dihedral angles. Suppose again: 1st. That the plane Q is perpendicular to the plane P P'; 2d. That the lines C D, A E, and A F, are perpendicular to the edge A B. The angles C A E, E A F, F A D, formed by those lines, will measure (art. 34) the plane angles of the dihedral angles, that are respectively formed by the planes P P', Q and R. We shall then have two plane angles (art. 14), D A F, F A E, complementary to each other, the sum of which will be equal to a right angle; and two plane angles, D A F, F A C, which will be supplementary to each other, their sum being equal to two right angles.

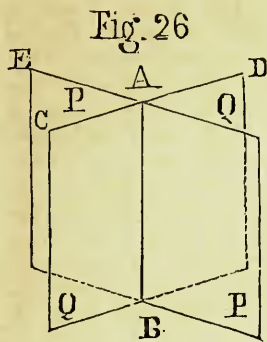
The sum or addition of all the plane angles, D A F, F A E, E A C, of the dihedral angles, formed around the same edge, A B, and on the same side in respect to a plane, P P', is equal to that of two right angles.

XXXVI. Suppose P P' and Q Q' (fig. 26) are two

* In carpentry this angle is designated by the name of scarfing, and is generally the angle formed by the contingent surfaces of two frame pieces, dressed by the long plane.

Fig. 25

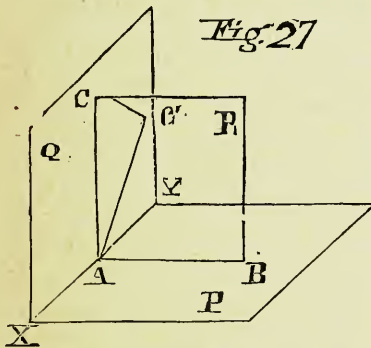




By the same operation it is proved that the two latter angles are equal.

The same of all the plane angles, $C A E$, $E A D$, $D A F$, $F A C$, of the dihedral angles formed around the same edge, $A B$, is equal to that of four right angles.

XXXVII. Any plane, R , perpendicular to two planes, P and Q (fig. 27), is perpendicular to their common line of intersection, $X Y$, and reciprocally.



Suppose a case where the two planes, P and Q , are coordinate, and let us draw two perpendicular lines, $A B$, $A C$, through a point, A , on their line of intersection, $X Y$, and perpendicular to that line of intersection; the two lines, $A B$ and $A C$, will determine a third plane, R , which will be perpendicular to the other two. Therefore, the plane passing the line $A B$, is perpendicular to the plane Q , because it cuts a line perpendicular to that plane (art. 30); and again, the plane cutting the line $A C$, is perpendicular to the plane P . Consequently, the plane R , that likewise cuts those two lines, is perpendicular to the two planes, P and Q . But the plane R passes through two lines that are perpendicular to the line of intersection, $X Y$, of the two first planes, and is therefore perpendicular to that line of intersection (art. 26).

This condition exists, whatever may be the dihedral angle formed by the two planes P and Q . Suppose that one of those two planes is placed on the other, the plane Q for instance, and is made to turn round the common line of intersection, $X Y$, as the axis of rotation. By that movement, the line, $A C$, will describe a segment of a circle, $C A C'$, the plane of which is perpendicular to the line of intersection, $X Y$, (art. 32). Moreover, the plane Q , cutting a line, $X Y$, perpendicular to the plane of the segment of the circle $C A C'$, is also perpendicular to that plane (art. 30). The plane R is but the plane of that segment of a circle. Therefore, any plane, R , being perpendicular to two planes, P and Q , is perpendicular to their common line of intersection; and reciprocally, any plane, R , being perpendicular to the common line of intersection, $X Y$, of two planes, P and Q , is also perpendicular to those two planes.

This problem is of great importance in the solution of dihedral angles, where the nature of the given parts

does not always give the demonstration, as we have done by the figures here selected, that a plane perpendicular to the edge or common line of intersection of two planes, is at the same time perpendicular to those two planes. Therefore, as the dihedral angle of two planes is equal to the rectilinear angle formed by their trace on a third plane perpendicular to them, it suffices to construct this third plane perpendicular to the edge of a dihedral angle, because it necessarily follows that it is at the same time perpendicular to the two faces of that angle.

(To be continued.)

Home Circle.

OCTOBER.

BY CARRIE M. WHITNEY.

There's a gold and purple glory
Filling Autumn's balmy days;
Distant mountains, grim and hoary,
Seem transfigured by its rays.
Russet tints are deeper glowing
Through the leafy forest aisles;
Shortened days are shorter growing,
While the earth in plenty smiles.

Woodland brooklets' saddest toning
Falls upon my list'ning ear,
Like some sorrow, faint with moaning,
Flushing up its grief and fear.
Dying insects, feebly piping,
Creep beneath the scattered leaves;
Roguish squirrels, briskly skipping,
Rob the yellow harvest sheaves.

Misty curtains, hillward swinging,
Sometimes hide them from our view;
Graceful vines, all summer clinging,
Fade and droop with frost and dew.
Nature all her garb is changing;
Summer's gone, with flowery hues;
Autumn o'er the hills is ranging
In a browner pair of shoes.

Sweet October, in thy glory
There's a sadness undefined,
Like some music's mournful story,
Faintly coming back to mind.
But we hear of glories brighter
Than earth's changing seasons bring;
Glories tinting bright and brighter,
Where immortal flowers spring.

WINTER RAMBLINGS IN KENTUCKY.

BY PORTE PENCIL.

(Continued from page 40.)

"Beshrew yon nimble deer."—SCOTT.

THE forests in the valley of Green River abound with game. Deer, especially, are found in large numbers. Now and then an elk is seen, and not unfrequently, raccoons and opossums, with a variety of smaller animals, as common as the inhabitants of those regions may perhaps desire.

As is the case in most newly-settled regions, every able bodied man is possessed of that necessary, and it may be added, that faithful and unerring friend—the rifle.

It is the heirloom of every family, and, essentially, their household god. For it is, indeed, their safeguard and security, and a refuge from the encroachments of famine. In the use of that instrument, I considered myself not unskillful, and longed for a trial in that excellent school—a *deer chase*. A slight snow had fallen, and it being propitious, many hunters had been out. As evening approached, they were to be observed in their white hunting shirts and caps, coming in from all quarters, most of them disappointed, but now and then an individual dragging a victim behind him, or carrying a saddle of venison across his shoulders. A deaf and dumb man held up his fingers in answer to "How many have you seen?" but he very significantly indicated that they were quickly off. Another individual, more successful, had met a buck attempting to swim Green River, and killed him with an ax.

Early in the morning, the preliminary of cleaning rifles, preparing ammunition, and lining our pocket with luncheon, being completed, a party of four or five ventured in pursuit of the noble game. We were not permitted to take hounds with us, under penalty of death to said hounds, and riding on horseback was out of the question in a country of such unmitigated rudeness. We steadily pursued our course down the river about four miles. Here, several of our party crossed in a skiff, or batteaux, there being a portable saw-mill in the woods on the opposite side, and we then pursued a southwesterly course. I soon came upon a fresh trail. Two deer had evidently passed but a short time before. I eagerly embraced the opportunity of following the tracks, and left the remainder of the party. I moved slowly along, step by step, as slyly as a pilferer, carefully avoiding to make the slightest noise, optically visiting every nook and corner of the woods at every remove, with a penetration not unworthy of an Argus, and stifling my breath, that nothing should escape my searching eye or listening ear. Nothing was heard in the midst of that awful stillness but a small woodpecker scratching the bark of a tree, and *my heart* thumping tremendously against the sides of my chest. Hark! there was a beat! Jehu! carefully, not a breath! See! there they are! One is cropping the underbrush, and the other is smelling the moss! One step more, and then—confound that stick! they are off like a flash! But the feverish excitement had subsided, and I brought the rifle to my face with a manly and determined energy. They were nearly one hundred and fifty yards off, but the ball sped. The doe is struck! Jehu! What a leap! See them bound away! How noble! How graceful! The very poetry of motion! Alas! they are out of sight.

The gun was quickly recharged, and I in pursuit. I soon discovered that I had hit the mark, for the blood was scattered profusely along the snow, and seemed to indicate a mortal wound. One of our original party joined me. We hurried on steadily, and, as the snow grew more and more bloody, and our quarry seemed to be trailing one of her legs, as though one of her shoulders were broken, we anticipated a speedy triumph. The tracks very soon began to indicate a walk, and occasionally a stop; and, whenever the latter occurred, the snow was completely saturated with blood. Still we kept on, and still the game eluded our sight. My companion spied them once, and on we followed. They led us a chase over hill and through valley, now rising over craggy

precipices, now trudging windfalls and ravines, now sliding down a bank, now leaping a log or fording a stream. Still excited, warm, perspiring, we eagerly hastened on. But one care, one thought, one passion possessed us—the focal object of all our present aspirations was still ahead. Did we stop to rest? Not we. Had we one thought of the world and all its mazes of care and perplexity? Not we. Had we a care of our bodies and souls, or murmured we at the hollowness of earthly pleasures, and the unsatisfactory results of worldly pursuits? Not we. Our mental and bodily vision glanced only from the game to the rifle, and from the rifle to the game. From all things else we were abstracted—in these we were absorbed.

We have heard people talk of the philosophy of deer hunting; what is it? There *is* philosophy in deer hunting, but I opine it is seldom taken into the account of that pseudo philosophy which some pretend to find, and is too unfrequently carried into practice anywhere.

Deer hunting *may* develop two of the noblest qualities which appertain to the character of a great man; these are, forbearance and humility, or rather the mastery of pride. Pride is at the bottom of all the excitements of the chase. It is because a man is elated at the idea of manifesting his superiority, and of asserting his title to the lordship of creation. Perhaps fear also operates, and the fear of defeat and its consequences excites. He has an object to accomplish. Here is the timid deer that flies at his approach, and it is fortified with an ear too quick for abrupt or easy intrusion. And there is, for instance, the cunning fox, the soaring osprey, the cautious yet feline tribe, the wild horse, the furious and untameable gnu, the sagacious elephant, and the unwieldy whale, and an innumerable variety of other animals, whose wildness, timidity, nature or cunning, fortify them against the rapacity of each other, and enable them to elude the frequent or easy approach of man. But notwithstanding the various endowments of these animals, man *is* lord over them all. All of them are liable to his approach, and accessible to his hands. And man is proud of it, and because, perhaps, this individual has never felt the reality, he feels elated when an animal is brought to the test, and he begins to realize that he is superior to all its instinctive cunning and device. His reason has compassed the instinct. Is he satisfied? Does he forbear? No, too often other passions usurp the place of reason, and he heedlessly destroys, lest he should have no testimony of his triumph. A man who can master his pride will be magnanimous enough to forbear. He will be satisfied in knowing his power without permitting it to degenerate into reckless tyranny.

In our case, we were so elated with the idea of catching a deer, that for the moment we were unconscious of anything else, we should doubtless have destroyed, had it been in our power, but we should have done so for the virtue of a saddle of venison; I had possessed the power, probably, had I possessed a true gun. At one time a fair broadside chance presented itself within a hundred yards, my piece was up, and the precious thing snapped; we pursued; all day long had we tramped through that interminable forest, and still we pursued the track, climbing over and creeping under, winding and meandering about, we reached a creek as twilight came upon us. The deer were still ahead, though they were evidently fatigued, and one of them mortally wounded; but here we per-

mitted our pride to humble itself, our excitement to be subdued, and we had the magnanimity to forbear. Relinquishing the *dear* chase, we continued our course up the creek, supposing it to be the identical stream that carried us homeward, which we had left in the morning, and that, therefore, we should find our way home with convenience. But alas, we there again predicated too much upon our superior sagacity; we hurried on, pursuing the circuitous meanderings of the stream with exemplary patience. The darkness grew intense, and we still pressed on, not, however, without an intrusive thought, occasionally, relative to "camping out." We were frequently thrown into troublesome dilemmas and grievous embarrassments in consequence of the extreme darkness, from which nothing but extraordinary *elasticity*, great patience, and long suffering could ever extricate us. To "run a muck" up to your waist in mud and mire in a cold, dark night, in the midst of a wilderness, is a grievous embarrassment. To fall headlong from the prostrate trunk of a tree into a quadrangular log pen of formidable height, formed by the various interlocutory proceedings of a windfall, in a similar night, and in a similar wilderness, is to fall into a troublesome dilemma. To be scratched at by a wild cat in times and circumstances similar to the aforesaid, is to meet with a very disagreeable *catastrophe*. But, thank Heaven, we were finally emancipated from these troublesome dilemmas, grievous embarrassments, and disagreeable *catastrophes*. We emerged upon the banks of Green River in the course of the evening. We discovered lights upon the opposite side, and our cries were answered by a boy who came across for us in his skiff, and were soon snugly seated by the fireside of a settler. To our great surprise we learned that we were the guests of persons residing at the settlement about thirteen miles below the point whence we started in the morning.

That, according to moderate calculation, we had tramped about thirty miles, in the pride of our superiority, in pursuit of two deer.

On reaching Mason's Ferry, the point from which we started the day before, we were greatly astonished to hear all sorts of noises resounding on every hand; there were yells and bells, horns and guns, and

"To many a mingled sound at once
The awakened mountain gave response."

We discharged our rifles several times in rapid succession, and very soon, to our great amusement, some half dozen of the good citizens of Mason's Ferry, came galloping in, with countenances full of anxiety, flourishing the aforesaid instruments of detonation. They treated us like brothers who had been lost and found, or like captives rescued from the barbarity of an enemy. It seemed that the whole village had been awakened by the presumption that we, being strangers, were lost in those interminable woods infested with wild animals. We satisfied them, however, that we had not been altogether unworthy disciples of Nimrod, and returned to the village, not a little pleased at the whimsical result of our adventures in a deer chase.

(To be continued.)

PADDY'S WILL.—"I will bequeath," said an Irishman, "to my beloved wife, all my property, without reserve, and to my oldest son, Patrick, one-half of the remainder, and to Dennis, my youngest son, the rest. If anything is left it may go to Terrence McCarty, in sweet Ireland.

Vol. xi.—10

Pen Illustrations of the Drafts.

DROP-FRONT ROCKAWAY.

Illustrated on Plate XVII.

THIS original and unique design, if carried out in building, strictly according to the plan of the draughtsman, will make a very pretty and light vehicle for the family of a person of moderate means. Some labor has been expended in studying out the best mode of making a *short* body *long* enough for two seats, and this has been effected by extending the forward seat in front of the standing pillar, and dropping the toe-board so as to give sufficient leg-room to the passenger. The high door-panel and sliding window will be found exceedingly useful when the carriage is used in rainy or cold weather, with the curtains down. A shifting-front to a carriage of this kind is very desirable and useful in securing the occupants against the inclemencies of the weather.

Linings, blue broadcloth, edged with patent leather.

Painting, body, English patent black; under carriage, crimson; striping, broad line black, fine line edged white.

Wheels, 3 feet 6 inches and 4 feet 2 inches high; hubs, 4 by 6½ inches; spokes, 1 inch; rims, 1½; tire, steel, ½ by 1 inch. Price of carriage, about \$800, currency.

EXCELSIOR DOG-CART.

Illustrated on Plate XVIII.

OCTOBER furnishes ample game for the exercise of the sportsman; and since our Nimrods *may* require *something* in which to stow away the victims of their marksmanship, we have thought it advisable to present them with an excelsior dog-cart of the latest type. This, the reader will see, is a genuine dog-cart, with all the sliding fixtures for balancing the body as occasion may require, and breathing openings in the sides for the dogs, which are supposed to be stowed away therein.

Linings, for these vehicles, are best made of some kind of leather.

Painting, body, black; carriage, vermillion, striped black and white.

Wheels, 4 feet 10 inches; hubs, 4x7 inches (*unboiled!*); spokes, 1½ inches; felloes, 1½ inches. Price, about \$575.

TROTting COAL-BOX BUGGY.

Illustrated on Plate XIX.

OUR artist has in this design combined several new features decidedly original. The side moulding for this body should be triangular and raised. This should be painted with some color in strong contrast with the side panel, to show off well.

Wheels, 3 feet 10 inches and 4 feet 1 inch high; hubs, 3½ by 6 inches; spokes, ¾ inch; rims, ⅞ inch; tire, steel, ½ by ¾ inch. Price of buggy, \$325.

COAL-BOX, WITH TOP.

Illustrated on Plate XLX.

WE present the reader, in this design, with one of the best we have lately come across, and which we trust will give satisfaction to men of refined taste. Except the front pillar, slightly raised, the side is quite plain, with rounded back-angles, a little concave. The builder will find some useful instructions in forming round corners in Volume X, page 99, of this Magazine.

Wheels, 3 feet 10 inches and four feet 1 inch; spokes, 1 inch; hubs, $3\frac{1}{2}$ by $8\frac{1}{2}$ inches; rims, 1 inch. Price \$450 to \$460.

CANOE COAL-BOX, WITH TOP.

Illustrated on Plate XX.

IF this should not prove all our readers could wish, they will yet find it of sufficient novelty to recommend it to their attention. All combinations of this kind are attended with more or less difficulty, and some allowance, perhaps, should be made by the critic, on this account, in making up his judgment as to the merits of the design under consideration. If customers will have variety, the carriage-maker *must* stand ready to supply the article when called upon to do so, or suffer the losses involved in such refusal.

In this instance it is advisable to have a little swell on the canoe panel, which may be effected by working-out in the solid, and paneling the upper side-quarter with white-wood deal, lapped thereon and glued; the joint being afterwards covered with a moulding, in the shape of that in our design. The back panel, as will be observed, is rounding.

Wheels, 3 feet 10 inches and 4 feet 1 inch high; hubs, $3\frac{3}{4}$ by $6\frac{1}{2}$ inches; spokes, 1 inch; rims, $1\frac{1}{2}$ inches; tires, steel, $\frac{3}{8}$ by 1 inch.

Our remarks on painting and trimming the "scroll coal-box buggy," on Plate IV, page 10, of this volume, are applicable to this likewise. Price of buggy from \$460 to \$475, according to finish.

Sparks from the Anvil.

BLACKSMITHS' "DEVIL" OR BACKING CHISEL.

MR. EDITOR: Notwithstanding that many carriage-smiths use the new patent bolt-cutter, some still prefer the old fashioned "devil." For this reason I deem it proper to give you a description of an improvement made in this tool. No doubt, many have felt themselves in danger while holding the "devil" or "backing chisel," fearing lest the ends of the cut-off bolts should fly and



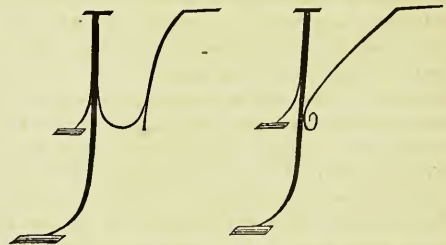
IMPROVED BOLT CUTTER.

strike them in the eye or face; the accompanying cut will show how to prevent such accidents. A is a guard turned up the width of the cutting part B; the guard also acts as a preventative against skinning the knuckles when a bolt is cut suddenly off by the cold chisel.

CINDER HEAD.

DESIGNS FOR BUGGY STEPS.

THE carriage step is a very important portion of the vehicle, and offers a wide field for the exercise of talent in a designer. Without claiming any great merit for those connected with this article, we present them to our



readers, in the hope of awakening an interest in this direction among our correspondents which may produce something of superior design.

WHEN ARE CARRIAGE WHEELS PLUMB?

"MR. EDITOR: I wish to know when a wheel is considered as set on a plumb. I am a carriage-smith, and my plan is to take, for instance, two carriage wheels with dodged spokes, and set my axle so that it will measure the same distance from one spoke to the other at the hub that it does at the head. I mean, of course, the front spokes. Others contend you must measure from half way between the dodged spokes on each wheel. Which is correct?"

The above, among numerous other questions which we cannot find time to answer in detail, comes from a journeyman carriage-smith in Michigan. As the "plumb spoke" theory has lately been agitated in certain localities, we have thought it advisable to append a few remarks on the subject for the satisfaction of others interested therein. To begin, we must make a distinction between the plumb wheel and the plumb spoke. A plumb wheel would be that set with the face sides of the felloes to a plumb line, without reference to the position of the spokes. A plumb spoke would imply one standing perpendicular with a line touching a point at the centers of the sides of a spoke at both shoulders. It is quite evident that where the spokes dodge—that is, are set zigzag—one-half the number must be out of plumb. For this reason, we have always contended that the spokes in a business wagon should be set on a line with each other. The *dodging* practice adopted in modern times is simply a mistake, intended to make a wheel look lighter at the expense of practical utility. To have all the spokes as nearly plumb as possible in a spoke-dodged wheel would undoubtedly require that it be measured "half way between the two dodged spokes."

In this connection it may be asked: Is it advisable to set an axle so as to have the spokes plumb? We answer, yes. And why should this be done? Because *in that*

Trimming Boom.

SHIFTING-CUSHIONS AND OTHER LININGS IN ONE.

In the American Institute Fair, elsewhere noticed in this number of the Magazine, we saw a novel mode of trimming—at least new to us—which impressed itself upon our mind as being a good thing, especially for cities, where room for carriage-houses is too expensive and valuable for men of limited means always to command. This was the lining to a three-quarter buggy, on exhibition by Geo. J. Moore, carriage-maker, of this city. The entire lining was in one compact whole—squab, cushion, and all—easily put in or taken out at will, when the carriage is not in use, and stored in a box, secure against moth or dirt. A little care with such linings would for a long time preserve them in good condition, or nearly as good as new.

The cushion, in this instance, was about three inches high in front, and about six inches back, something after the pattern of the driver's seat to a coach, stuffed, and tufted with covered buttons; cloth and buttons all blue. To the made cushion, the squab, made of cloth-covered buckram, with a neat roll on the top, was sewn, so that when the two united were placed in position, the roll formed a perfect finish, flush with the inside edges of the close-paneled seat. The fall, sewn to the lower front end of the cushion, and all trimmed with patent leather lace, completes the job. With our description, which cannot be well explained in the absence of a diagram, we think our trimmer readers will know how to go to work and make one for themselves. Customers who are not blessed with the most perfect carriage storage will no doubt properly appreciate this improved mode of trimming carriages, and thank us for the suggestion.

CLEANING CARRIAGE LININGS.

THERE are several modes in which cloth linings may be improved after becoming soiled, but none in which they can be expected to look as good as new. Pearl-ash and hot water, in the proportion of a pound of the former to a pailful of the latter, well dissolved, may be applied to the lining with a soft brush, and well rubbed. While wet, wash the lining with vitriol in water, weakened to the strength of three ounces of oil of vitriol in half a pail of cold water. The vitriol should not be too strong, as in that case it would injure the fabric.

Editor's Work-bench.

NATIONAL LABOR CONGRESS.

THE so-called National Labor Congress, which lately met in the city of Philadelphia, is, in all quarters, conceded to have been a failure. The varied elements of which it was composed operated with too much friction, under incompetent and uneducated leaders, without definite purposes. The proceedings consisted of desperate clutches at something altogether beyond their reach, and consequently ended in fruitless labor, as might have been

foreseen. In the confusion which transpired indiscriminate attacks were made upon the government, and especially upon the most enterprising and industrious classes, who, by patient care and prudent lives, have accumulated wealth, without which, to pay for labor, these grumblers would soon die of starvation. The currency, by the way,—what did these men know of finance?—was in one hour praised, and in the next as earnestly condemned. The national debt was in the same breath repudiated and approved. Free trade was also advocated and condemned; while the Chinese importation was looked upon as detrimental to the *dearest* interests of labor, and therefore should be discouraged. The legitimate and proper business for such an assemblage was entirely overlooked, in the pursuit of an *ignis fatuus* which led them into muddy pools and quagmires innumerable, without any adequate or practical results. Narrow adherence to unionism seems to have entirely absorbed every consideration of anything calculated to benefit the industrious and well meaning man, who confidently expected some good as the result of taxation from his representative.

The peculiarly arbitrary and tyrannical conduct of these unions, was strikingly exemplified in the action of the delegates towards Susan B. Anthony, the delegate from the Working Women's Union of New York City. Following the instructions of the Engineer's Protective Society, to vote against her admission, as noted in our last issue, they spent about two days in making up their minds what to do with her—the first day shutting the door against her entrance, and the next inviting her to come in. Every law tending to the safety of personal effects were indiscriminately condemned, and the most deadly ideas of agrarianism heartily approved. Not content with condemning the laws in this country, they even went abroad and pitched into those of England. They, in fact, seemed to have entertained but one idea, which was, that labor is king and capital, should be made to succumb to its power, and then the laboring man's millennium will commence.

Since the above was written, the members of the Working Men's Union, in New York City, have held a meeting for the purpose of repudiating the action of the Philadelphia Labor Congress to which they had sent delegates. Very little progress was made in the matter, action being postponed until another day, when it is contemplated holding a mass meeting to ventilate the subject.

WHY DO WE OIL OUR WHETSTONES?

It is an admitted fact, that water increases friction, and oil diminishes it. What, then, is the reason why a steel-edged tool is quicker set upon a Turkey stone with oil than with water? What, then, does the abrasion pro-

ceed from, a chemical or mechanical action, or from both? Great men sometimes give utterance to arrant nonsense, when weighed in the minds of practical mechanics. Professor Tyndall, in his work, "Heat considered as a Mode of Motion," asks the same question that we have placed as a caption to this article, and replies in general terms, "that it is to prevent friction." We have seen it stated somewhere that a little carboic acid dissolved in water used to moisten a whetstone or a grindstone will greatly increase the amount of friction, and thus promote the action of the stone upon the steel tool. If this be true, and there be no unforeseen drawback, carboic acid will prove invaluable to all who have to sharpen tools or grind metallic surfaces.

We oil our stone for several reasons. The first is, that almost all stones, unless oiled, become glazed or burnished on the surface, so that they no longer abrade the tool. The second is, that most stones, after being oiled, give a finer edge than they do in a dry or merely wet state. The pores of the stone become in a manner filled up, and while the action thus rendered continues, its character is altered. A dry stone is very apt to give a wire edge to a tool, and although this sometimes happens when oil is used, yet it does not occur nearly so often. It has also been lately ascertained that soap and water are as good as either oil or water, being less expensive, more efficacious, and more cleanly.

AN HOUR AT THE AMERICAN INSTITUTE FAIR.

WE took a look into the American Institute Fair a week after the opening. All the carriage work then in consisted of one buggy, made by Geo. J. Moore, and what John C. Ham, who contributes it, calls a "six-seat-circular-clarence-front-Westchester-family-carriage." The buggy, weighing only 150 pounds, is very well finished, but there is nothing (unless it be the trimming) particularly new in the composition. The clarence, Ham's make and invention, may answer the purpose it is designed for, but is unnecessarily heavy, and faulty in design. We regret, on several accounts, the poor show made by the craft this year so far, and hope it will improve before this exhibition ends.

The show of velocipedes is much better, but as these are getting rather out of date, an examination of them here may well be omitted. The exhibition otherwise is very fine, and should anything be added of interest to our readers hereafter, we shall return to the subject in our next.

BOILING HUBS.

ONE of the "most reliable" mechanical journals published in this country, not long since recommended its readers, if they would improve their hubs, to boil them

in the way they do their cabbages, as the dry and hard material—you know—is not the "fresh" mode of *doing the thing*, in the line of making wheels. When our eye fell on the article, we could not for the life of us, avoid laughing heartily over the matter, but we did not then suspect that any one would follow such silly advice. But it seems we were mistaken. Many persons, to their sorrow, have tried the experiment, and come out—with loss, as any man of practical experience ought to have known beforehand. We hear of one man who had two sets boiled, and others who tried one, with the like result. In every case the spokes loosened soon after being driven, the wheels proving a complete loss. The three-dollar advice their victims followed, they now pronounce a humbug, and are down on the editor in consequence. That "whistle" *was* dear, was it not? Suppose you try green hubs, and save your firewood. But experience keeps a dear school, yet —

VELOCIPEDE SUITS.

IN answer to the correspondents who have inquired about the progress of the law suits instituted against the manufacturers of velocipedes, in New York, for alleged infringements thereon, by Witty & Smith, we can only say that nothing has been done more than the service of notice on the parties complained of. Of course the proper answer will be forthcoming in time, but we question whether the trial will ever take place. Those who are interested can now afford to wait until they hear more from us on this subject, *and keep their money*. Those who have settled the "trespass," will reflect upon their folly at leisure. Meanwhile, we venture the opinion that, with the waning popularity of these boyish playthings, these law suits will find a premature grave.

IMPROVED HUB AND AXLE-BOX.

OUR readers will find in our advertising columns a notice of the Patent Excelsior Hub and Axle-box, manufactured by the enterprising Elizabethtown Steam Manufacturing Co., located at Elizabethport, New Jersey. We have not, ourselves, seen the invention, but learn, through a source entitled to credit, that it is a great improvement over former experiments in many particulars, causing a carriage, to which they are applied, to last longer, ride easier, and run less noisily. When we receive the proper illustrations of this invention, we intend to refer to the subject again. In the meantime we invite a careful perusal of the advertisement.

LITERARY NOTICES.

MAN in Genesis and in Geology; or, the Biblical Account of Man's Creation tested by Scientific Theories of his Origin and Antiquity, by Joseph P. Thompson, D.D., LL.D., is the title of a new work, just published by S.

R. Wells, 389 Broadway, New York. Price \$1. This little volume is a valuable contribution to literature in showing the harmony of the word of God with scientific facts as revealed in geology. In discussing the subject, the Doctor goes back through ethnology to the origin of the human race, and examines critically the theories of older as well as those of modern writers and philosophers on the Development Theory, in order to arrive at the facts and thus settle the question. This he has accomplished in an able and satisfactory manner to the friends and lovers of sacred history.

EVERY SATURDAY, published in Boston, by Messrs. Fields, Osgood & Co., has now reached its 195th number, and, if anything, is more interesting to-day than it was in the earlier issues. Those who have leisure and taste for the choicest literature—the very cream of the foreign publications—and wish to avoid the cost and trouble of selecting it for themselves, will find it all here ready to their hand. Price, 10 cents a number or \$4 a year.

EDITORIAL CHIPS AND SHAVINGS.

ORIGIN OF COACHES.—The invention of coaches, even to the name, is claimed by Hungarian writers in behalf of their country. They say the place where they were made was called Kottse; and Lithius, Bishop of Wesprim, writes concerning King Matthias Corvinus, that he rode in a *Kochy* (pronounced *Kotsi*) carriage, of which he was the original inventor. Coaches were introduced into England in 1580.

WRINKLES SHOWING THE AGE OF HORSES.—It is said that after the horse is nine years old a wrinkle comes on the eyelid, and every year thereafter he has a well-defined wrinkle for each year over nine. If, for instance, a horse has three wrinkles he is twelve, if four, he is thirteen. Add number of wrinkles to nine and you will always get it. As a good many people have horses over nine it is easily tried. If true, the horse dentist must give up his trade.

PRESERVING WOOD.—A new process for preserving wood by means of borax is announced. The wood, it is said, can be made impermeable to water by dissolving some shellac in a solution of borax.

DUMPING WAGON.—Some one, writing from Maine, thus describes a new one: "There is a hard wood beam extending from the rocker to the rear axle, on each side of the body, which beams support the body in dumping *only*, as they rest upon the rocker at the fore end, and upon the iron rod, hereafter described, at the rear end, when the wagon is in motion. But when the body is dumped, it turns upon an iron rod which extends from beam to beam and through the sills of the body, thus making a hinge upon which it dumps. The body extends back only to the rear axle, and the side-boards are cut obliquely, so they will not touch the axle in dumping. The loss in the side-boards is made up by the triangular pieces built upon the tail-board. The tail-board is hung by a hinge upon the axle, and may be turned down or not, when the body is dumped, at the pleasure of the operator.

"The body, when loaded, is supported upon the rocker at the fore end, and at the rear end by an iron rod running from beam to beam, just in front of the axle, which is grooved just enough to permit the rod to be withdrawn from beneath the bottom of the body (which is trimmed with sheet iron two inches wide to prevent wearing), when

the load is dumped, which is done by means of the upright lever, which is a continuation of the rod, and is bent upwards at a right angle as soon as it passes through the beam, and it works the rod back into the groove in the axle to let the body dump, or it pushes the rod under the body to hold it up and sustain the load.

"This lever is held in place, to prevent accidental dumping, by a spring attached to the beam at one end and running back to the lever, and has a notch in it, into which the lever slips, and is firmly held. The load may be easily dumped with one hand. No other fastening is needed. The beams for a single wagon should be five inches wide and one and a quarter inch thick. They should extend above the rocker and axle about an inch."

INVENTORS.—It is reported that one day, when Lord Brougham had driven to the House in the vehicle of his own invention, which Robinson the coachmaker had christened after him, he was met in the robing room by the Duke of Wellington, who, after a low bow, accosted him: "I have always hitherto lived under the impression that your lordship would go down to posterity as the great apostle of education, the emancipator of the negro, the restorer of abused charities, the reformer of the law; but no—you will hereafter be known only as the inventor of a carriage." "And I, my lord duke, have always been under the delusion that your grace would be remembered as the hero of a hundred battles, the liberator of Europe, the conqueror of Napoleon; but no—your grace will be known only as the inventor of a pair of boots." "Confound the boots," said the Iron Duke; "I had forgotten them—you have the best of me."

TARIFF OF CARRIAGE REPAIRS.—Under this heading the *Hub*, in its issue for September, gives a list of prices charged in New York for repairs on old work, which in the main is a fair statement. Some items, however, are a little too high to correspond with the facts, and therefore should be taken *cum grano sativis*. The same publication promises a similar list for Boston, in October.

DEATH OF THE PARISIAN OMNIBUS FOUNDER.—Moreau Chaslon, founder of the original omnibus company of Paris, has just died in that city. For thirty-five years he conducted it with such skill and energy that when, in 1834, the various concerns passed into the hands of a single body, he was appointed general manager, and continued in that position till his death. The scale on which omnibus traffic is carried on in Paris may be judged from the fact that, during the year 1868, the number of persons carried in these vehicles amounted to 120,000,000, or nearly sixty-five times the entire population of Paris, while during the same period the number of passengers conveyed by the French railways was only 115,000,000. The average fare being four and a half sous (six sous in the interior and three on the impériale), the gross receipts must have amounted to about 27,000,000 francs.

FIRES IN CARRIAGE SHOPS.—On Friday evening, the 27th of August, a fire broke out in a wood yard in the rear of Henry G. Power's carriage shop, on Atlantic street, Brooklyn, N. Y., which, connecting with the shop, completely destroyed it. His loss amounts to about \$25,000—\$15,000 on stock and \$10,000 on buildings. . . . The carriage factory of Robinson & Brothers in Wilmington, Del., was burned down some weeks since. . . . Trethewey, Hartmeyer & Co.'s carriage manufactory in East Melrose, was burned on the morning of the 10th of September. Loss, \$24,000.

MULE RACE.—FUN IN WESTCHESTER CO., N. Y.—The mule race on the 10th ult., at White Plains, as an absurdity, was a success. There were six animals, all of which were mounted by riders unfamiliar with them—two colored men, and the rest country boys. The scene at the start was lively. No stirrups were used, and the riders held on by pulling at the bridle. The brutes were therefore perpetually on the gape, with their tongues run out. Sly cuts were given them by the whips of bystanders, and they gave vent to their misery by kicking their heels and braying. A bell was rung for starting, and off they went. One soon sidled against the chains and frightened the women, another sent his driver over his head, a third careered among the carriages and nearly upset a team, and a fourth, when half round the course, backed against the fence, and would not move. The fifth and sixth kept ahead, but one of them made up his mind to eat some grass, and no number of whacks could move him. The winner, therefore, came in nearly five minutes before any others.

UNIFORMS NEEDED FOR THE DRIVERS OF HEARSES.—One of the most incongruous features of the American high society is the costume worn by the drivers of hearses and carriages at funerals. Even when the vehicles are good and clean, the drivers are often dressed without regard to uniformity, or even to good taste and cleanliness. This was especially conspicuous in the funeral of Gen. Rawlins at Washington on Thursday. The hearse was gorgeous, and the carriages in the procession, two hundred in number, were as good as could be hired in Washington—that is to say, they were very poor indeed. But the absence of any uniformity of dress, and the general shabbiness of the coachmen, made the pageant the reverse of imposing. Indeed, but for the solemnity of the occasion, it would have been ridiculous. This is apt to be true also of the most carefully arranged funerals in New York, for the same reason.

DUTIES ON CARRIAGES IN 1868.—From the report of Gen. F. A. Walters, chief of the Bureau of Statistics, we learn that \$10,313.86 were paid as the amount of duties on carriages for 1868.

REPENTANT.—An editor, famous for allowing his correspondents, in connection with himself, to slander and libel his cotemporaries, tells us that hereafter all personalities will be avoided in his journal. We have very little confidence in such late repentance, and, therefore, shall await with some anxiety after results, especially as exposures of certain transactions of his in our pages have had some effect upon the *sick sinner*.

PUBLISHER'S THANKS.—We have to thank a number of our friends for the prompt manner in which they have responded to our call for the amounts due us in subscriptions to the present volume. There are a few, however, from whom we have not heard. Such will doubly oblige us, if they will mail the sum due, and save us the very expensive costs of collection by express. Friends, please attend to this matter.

CENTRAL PARK NOVELTIES.—An enterprising party in this city has obtained permission from the Commissioners of the Central Park to run a number of little goat teams therein for children's use. These small-size four-in-hand "turn-outs" will be constructed in the exact proportions of a six-seat phaeton, and large enough for six boys of the

age of thirteen. These will be richly finished with gold platings, lamps, and everything constituting a first-class turn-out. As they will be driven on the sidewalks by the boys, and accompanied by a keeper, there will be no danger of accidents. Every child will get, after the ride, a photograph of the team, with a number on its back, which entitles the holder to a prize in a monthly gift distribution, consisting of toys and other small articles. All for 25 cents.

CARRIAGE-MAKERS' RELIEF SOCIETY.—The annual picnic of this society was held on the 7th of September at Mr. Henry Menshausen's Grove Hill Park, Morrisania, N. Y. Among the invited guests we noticed Messrs. Brewster and Britton, of the firm of Brewster & Co., of Broome Street; Mr. Henry Scharch, of the firm of Corbett & Scharch, Twenty-fifth Street, and others. Target practicing was one of the amusements of the day, and a number of valuable prizes were contributed, the first, being a splendid gold watch given by Mr. Brewster, was won by an employee of the firm.

CARRIAGES FOR CALIFORNIA.—Quite a number of wooden side-spring wagons are now being built by Rahway, New Jersey, carriage-makers, for California. These wagons, although looking heavier than our Eastern styles, are of very handsome appearance and fine finish.

MAKING STEEL.—Judging from the "improvements," we find so often alluded to in scientific journals, steel ought to be far superior to anything known in former days. Perhaps it is. At any rate manufacturers would have us think so, and some consumers use Bessemer's name as an instrument in obtaining custom. The Bessemer process is covered by numerous patents, and with the object of avoiding the law relating thereto, numerous expedients have been resorted to to escape its enactments, and secure a profitable business, both in America and Europe.

LONDON TIMES ON TRADES UNIONS.—In a late editorial the *London Times* says, the rapid spread of the fallacies of the trades-unionists is deserving of more than mere attention. The unions will flourish; and as associations for mutual assurance, and as organizations for supporting the bargains of individual laborers they serve useful purposes. But in molesting non-members they violate freedom in a way which the state cannot tolerate. It is essential not to abolish the unions, but to convince the members of the errors they have embraced.

ENTERPRISE IN BRIDGEPORT.—The labor of twenty-five to forty hands, employed by the White Manufacturing Company, aided by a thirty-horse power engine, is required for the manufacture of about fifty pairs of coach and carriage lamps per month—a fact which conclusively proves that the lamps are of the most thorough workmanship and best quality. This company has been established in Bridgeport twenty-five years, and for ten years have occupied the same location. Their factory is sixty by forty feet, and three and a half stories high; and their engine was built by the Pacific Iron Works. The manufacture of the finest coach, carriage and signal lamps, lined with gold and silver foil, is their specialty; but they also do an extensive business in carriage trimmings, gold and silver plating, etc.

A FEW MORE LEFT.—We have a few copies of Nos. 5, 6 and 7 Carriage Charts still on hand, which we sell for

\$1 a copy, single, or the three for \$2.25, when purchased together. The three embrace about eighty designs of buggies, dog-carts, rockaways, victorias, phaetons, bretts, coaches, coupés, etc., useful in any carriage factory, in securing custom. Sent by mail on receipt of price.

A NICE POINT DECIDED.—An English paper has discovered the line which divides a distinction from a difference: "A little difference frequently makes many enemies," while "a little distinction attracts hosts of friends to the person on whom it is conferred."

CURRENT PRICES FOR CARRIAGE MATERIALS.

CORRECTED MONTHLY FOR THE NEW YORK COACH-MAKER'S MAGAZINE.
NEW YORK, SEPT. 20, 1869.

Apron hooks and rings, per gross, \$1.25 a \$1.75.
Axle-clips, according to length, per dozen, 50c. to 80c.
Axles, common (long stock), per lb. 8c.
Axles, plain taper, 1 in. and under, \$5.50; 1½, \$6.50; 1¾, \$7.50; 1⅞, \$9.50; 1⅞, \$10.50.
Do. Swelled taper, 1 in. and under, \$7.00; 1½, \$7.50; 1¾, \$8.75; 1⅞, \$10.75; 1⅞, \$13.00.
Do. Half pat., 1 in. \$10; 1½, \$11; 1¾, \$13; 1⅞, \$15.50; 1⅞, \$18.50.
Do. do. Homogeneous steel, ¾ in., \$11.00; ¾, \$11; ¾, \$12.00; long drafts, \$2.50 extra.

☞ These are prices for first-class axles. Inferior class sold from \$1 to \$3 less.

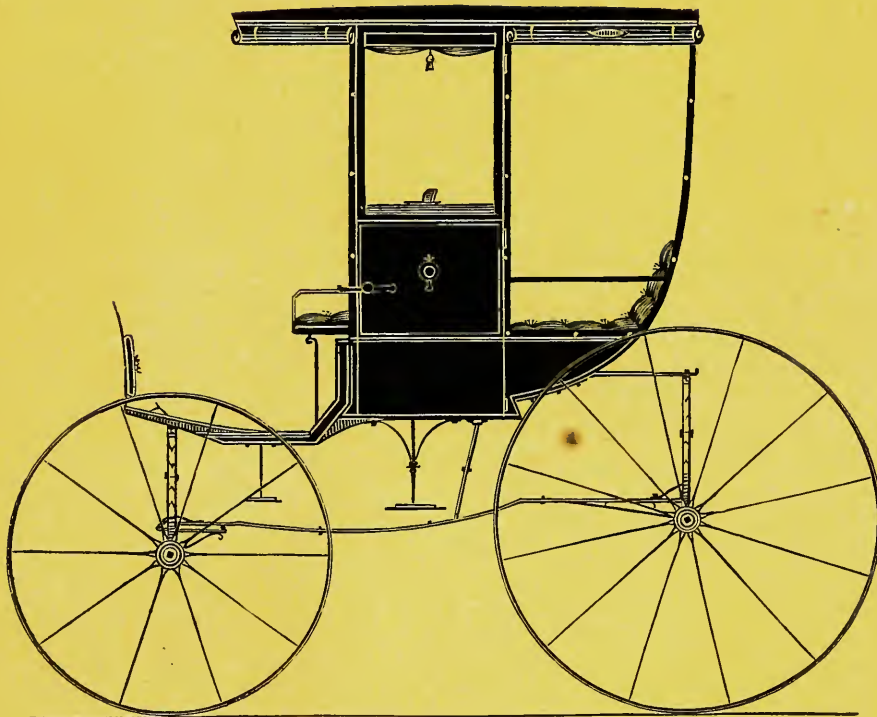
Bands, plated rim, 3 in., \$1.75; 3 in., \$2, larger sizes proportionate.
Do. Mail patent, \$3.00 a \$5.00.
Do. galvanized, 3½ in. and under, \$1; larger, \$1 a \$2.
Bent poles, each \$1.00 to \$1.50.
Do. rims, extra hickory, \$2.75 to \$3.50.
Do. seat rails, 50c. each, or \$5.50 per doz.
Do. shafts, \$6 to \$9 per bundle of 6 pairs.
Bolts, Philadelphia, list. 30 off.
Do. T, per 100, \$3 a \$3.50.
Bows, per set, light, \$1.00; heavy, \$2.00.
Buckles, per grs. ¼ in., \$1; ¾, \$1.12; ¾, \$1.25; ¾, \$1.75; 1, \$2.00.
Buckram, per yard, 18 a 23c.
Burlap, per yard, 14 a 16c.
Buttons, japanned, per paper, 20c.; per large gross, \$2.25.
Carriage-parts, buggy, carved, \$4.50 a \$6.
Carpets, Brussels, \$1.75 a \$2; velvet, \$2.75 a \$4; oil-cloth, 45 a 70c.
Castings, malleable iron, per lb. 15c.
Chapman rubber, \$2.50 a \$3.00, doz. pr.
Clip-kingbolts, each, 40c., or \$4.50 per dozen.
Cloths, body, \$3.50 a \$5; lining, \$2.50 a \$3. (See *Enameled*.)
Cord, seaming, per lb. 35c.; netting, per yard, 8c.
Cotelines, per yard, \$4 a \$8.
Curtain frames, per dozen, \$1.25 a \$2.50.
Do. rollers, each, \$1.50.
Damask, German cotton, double width, per piece, \$15 a \$22.
Dashes, buggy, \$1.75.
Door-handles, stiff, \$1 a \$3; coach drop, per pair, \$3 a \$4.
Drugget, felt, \$1.75 a \$2.
Enameled cloth, muslin, 5-4, 40c.; 6-4, 75c.
Enameled Drills, 48 in., 55c.; 5-4, 50c.
Do. Ducks, 50 in., 75c.; 54, 70c.; 64, 80c.
☞ No quotations for other enameled goods.

Felloe plates, wrought, per lb., all sizes, 20c.
Felloes (Rims), \$1.50 a \$3.
Fifth-wheels, wrought, \$1.50 a \$2.00.
Fringes, festoon, per piece, \$2; narrow, per yard, 18c.
☞ For a buggy-top two pieces are required, and sometimes three.

Do. silk bullion, per yard, 50c. a \$1.
Do. worsted bullion, 4 in., 35c.
Do. worsted carpet, per yard, 8c. a 15c.
Frogs, 50c. a \$1 per pair.
Glue, per lb. 25c. a 30c.
Hair, picked, per lb. 40c. to 65c.
Hubs, light, mortised, \$1.20; unmortised, \$1. Coach, mortised, \$2.
Japan, per gal., \$1.75.
Knobs, English, \$1.40 a \$1.50 per gross.

Laces, broad, silk, per yard, 60c. a \$1.25; narrow, 10c. to 16c.
Do. broad, worsted, per yard, 40c. a 50c.
Lamps, coach, \$10 a \$30 per pair.
Lazy backs, \$9 per doz.
Leather, collar, 26c.; railing do. 24c.; soft dash, No. 1, 15c.; do., No. 2, 13c.; hard dash, 15c.; split do., 15c.; No. 1, top, 26c.; enameled top, No. 1, 26c., do., No. 2, 24c.; enameled trimming, 24c.; harness, per lb., 50c.; flap, per foot, 25c.
Moss, per bale, 8c. a 15c.
Mouldings, plated, per foot, ¼ in. 14c.; ⅓, 16c. a 20c.; ½, lead, door, per piece, 40c.
Nails, lining, silver, per paper, 7c.; ivory, per gross, 50c.
Name-plates. (See Advertisement.)
Oils, boiled, per gal., \$1.25.
Paints. White lead, extra, \$13.00, pure, \$14.00 per 100 lbs.; Eng. pat. black, 20 to 25c.
Permanent wood-filling, \$6 per gallon.
Poles, \$1.25 a \$2 each,
Pole-crabs, silver, \$5 a \$12; tips, \$1.25 a \$1.50.
Pole-eyes, (S) No. 1, \$2.25; No. 2, \$2.40; No. 3, \$2.65; No. 4, \$4.50 per pr.
Sand paper, per ream, under Nos. 2½ and under, \$4.50.
Screws, gimlet, manufacturer's 30 per cent. off printed lists.
Do. ivory headed, per dozen, 50c. per gross, \$5.50.
Scrims (for canvassing), 16c. a 22c.
Seats (carriage), \$2 a \$2.75 each.
Seat-rails, 75c. per doz.
Seat-risers, Linton's Patent, \$2 per pair.
Seats, buggy, pieced rails, \$1.75; solid rails, \$2.50.
Shafts, \$12 to \$18 per doz.
Shaft-jacks (M. S. & S.'s), No. 1, \$2.40; 2, \$2.60; 3, \$3.00.
Shaft-jacks, common, \$1 a \$1.35 per pair.
Do. tips, extra plated, per pair, 25c. a 50c.
Silk, curtain, per yard, \$2 a \$3.50.
Slat-irons, wrought, 4 bow, 75c. a 90c.; 5 bow, \$1.00 per set.
Slides, ivory, white and black, per doz., \$12; bone, per doz., \$1.50 a \$2.25; No. 18, \$2.75 per doz.
Speaking tubes, each, \$10.
Spindles, seat, per 100, \$1.50 a \$2.50.
Spring-bars, carved, per pair, \$1.75.
Springs, black, 16c.; bright, 18c.; English (tempered), 21c.; Swedes (tempered), 26c.; 1½ in., 1c. per lb. extra.
If under 34 in., 2c. per lb. additional.
☞ Two springs for a buggy weigh about 28 lbs. If both 4 plate, 34 to 40 lbs.
Spokes (Best Elizabethport), buggy, ¾, 1 and 1½ in. 9½c. each; 1¼ and 1½ in. 9c. each; 1½ in. 10c. each. 10 off cash.
☞ For extra hickory the charges are 10c. a 12½c. each.

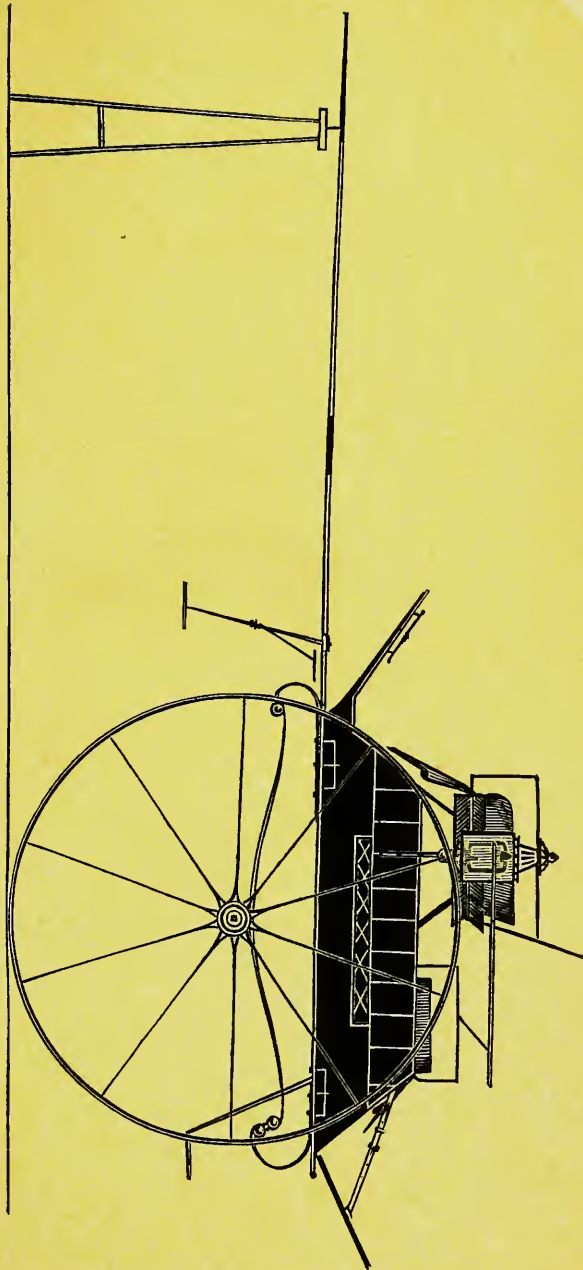
Steel, Farist Steel Co.'s Homogeneous Tire (net prices): 1 x 3-16, and 1 x 1-4, 20 cts.; 7-8 x 1-8 and 7-8 x 3-16, 23 cts.; 3-4 x 1-8, 25 cts.; 3-4 x 1-16, 28 cts.
Steel Tire—best Bessemer—net prices: 1-4 x 1 1-8, 15c.; 1-4 x 1, 15c.; 3-16 x 1 1-8, 16c.; 3-16 x 1, 16c.; 3-16 x 7-8, 17c.; 3-16 x 3-4, 17; 1-8 x 7-8, 20; 1-8 x 3-4; 1-16 x 3-4 23c.
Stump-joints, per dozen, \$1.40 a \$2.
Tacks, 7c. and upwards.
Tassels, holder, per pair, \$1 a \$2; inside, per dozen, \$5 a \$12; acorn trigger, per dozen, \$2.25.
Thread, linen, No. 25, \$1.75; 30, \$1.85; 35, \$1.80.
Do. stitching, No. 10, \$1.00; 3, \$1.20; 12, \$1.35, gold.
Do. Marshall's Machine, 432, \$3.25; 532, \$3.75; 632, \$4, gold.
Top-props, Thos. Pat, wrought, per set 80c.; capped complete, \$1.50.
Do. common, per set, 40c. Do. close-plated nuts and rivets, 75 a 80c.
Tufts, common flat, worsted, per gross, 15c.
Do. heavy black corded, worsted, per gross, \$1.
Do. do. do. silk, per gross, \$2 Do. ball, \$1.
Turned collars, \$1.25 a \$3 per doz.
Turpentine, pr gl., 60c
Twine, tufting, pr ball, 50c.; per lb. 85c. a \$1.
Varnishes (Amer.), crown coach-body, \$5.00; nonpareil, \$5.25.
Do. English, \$6.25 to \$7.50 in gold, or equivalent in currency.
Webbing, per piece, 65c.; per gross of 4 pieces, \$2.40.
Wheels, \$12 to \$22.
Whiffle-trees, coach, turned, each, 50c.; per dozen, \$4.50.
Whiffle-tree spring hooks, \$4.50 per doz.
Whip-sockets, flexible rubber, \$4.50 a \$6 per dozen; hard rubber, \$9 to \$10 per doz.; leather imitation English, \$5 per doz. common American, \$3.50 a \$4 per doz.
Window lifter plates, per dozen, \$1.50.
Yokes, pole, 50c.; per doz, \$6.50.
Yoke-tips, ext. plated, \$1.50 pair.



DROP-FRONT ROCKAWAY. — $\frac{1}{2}$ IN. SCALE.

Designed expressly for the New York Coach-maker's Magazine.

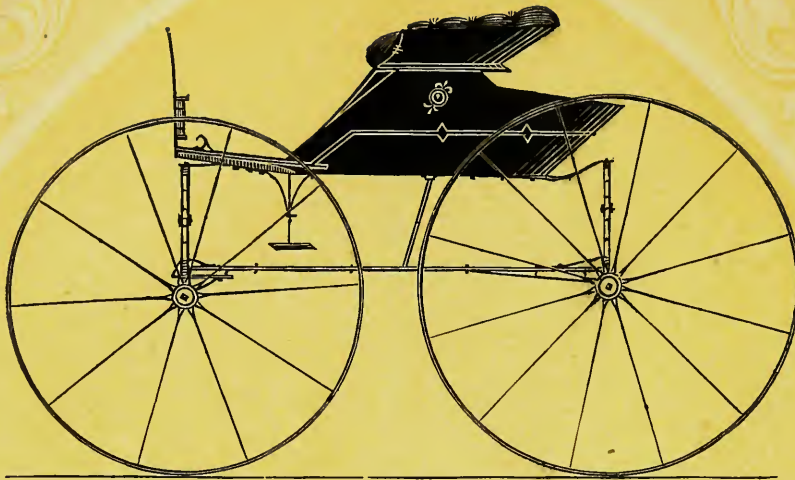
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EXCELSIOR DOG-CART.— $\frac{1}{2}$ IN. SCALE.

Designed expressly for the New York Coach-maker's Magazine.

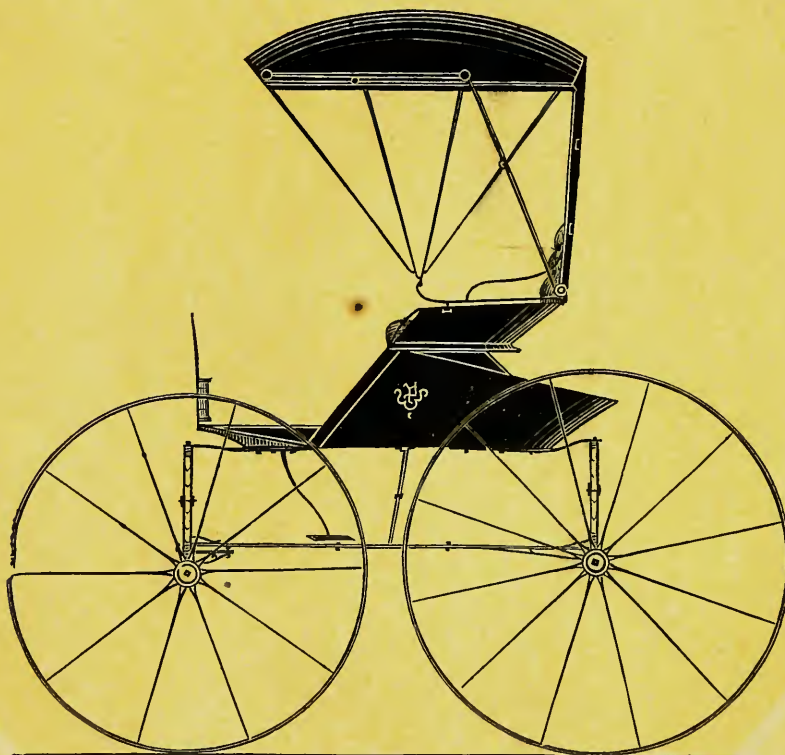
Explained on page 78.



TROTTING COAL-BOX BUGGY. — $\frac{1}{2}$ IN. SCALE.

Designed expressly for the New York Coach-maker's Magazine.

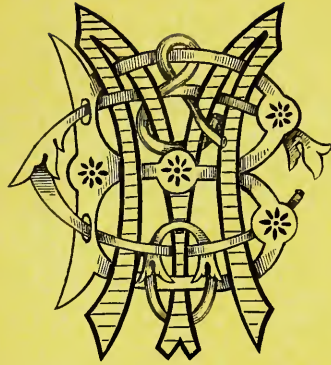
Explained on page 73.



COAL-BOX, WITH TOP. — $\frac{1}{2}$ IN. SCALE.

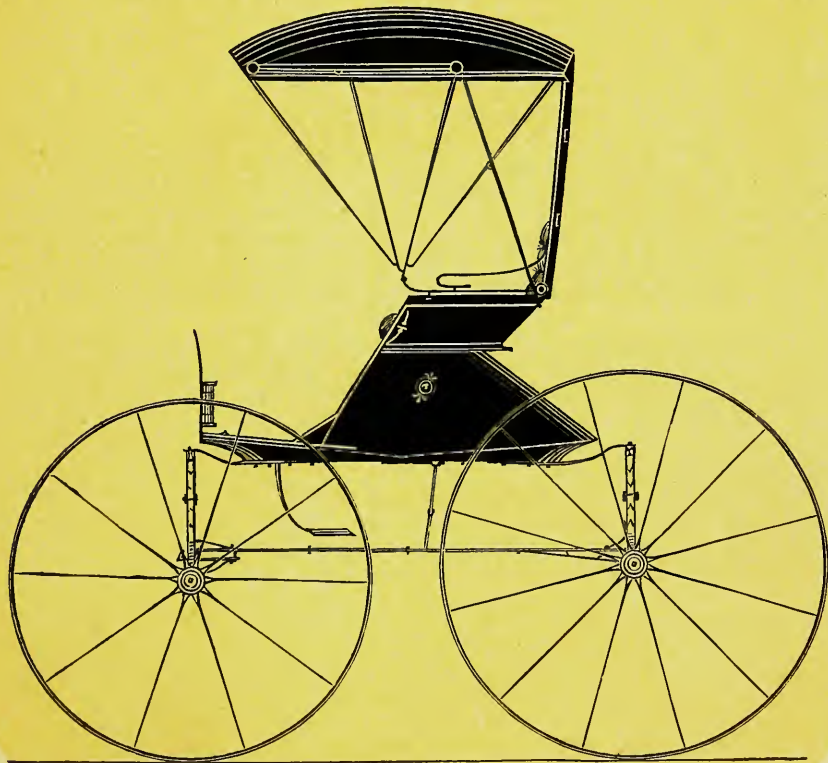
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Explained on page 74.



ORIGINAL MONOGRAM.—M. B. & CO.

Explained on page 75.



CANOE COAL-BOX, WITH TOP.— $\frac{1}{2}$ IN. SCALE.

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Explained on page 74.