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Mechanical Literature.

TREATISE ON THE WOOD-WORK OF CARRIAGES.

(*Continued from page* 149.)

Having the two projections ($l\ u\ o$, $l'\ O'$) above the molding of the rounding, on plans P and Q, there will be no difficulty in constructing the projection of this molding on plan R. The two extremities l_1 and o_1 of its farthest extension having already been marked down on this plan, it is sufficient to construct the projection of an intermediate point, so as to allow the tracing of the whole line.

We take this intermediate point in the middle of the angle formed by the line, and this angle being perceivably projected in all its extensions on plan P, we find the position of the point at u on this plan; then carry through projection u a perpendicular to X Y, prolonged on the vertical plan to reach u' on line $l'\ O'$; this point u' is the projection of the desired point on plan Q. Carrying next through this newly obtained projection a horizontal line, $u'\ u_1$, we note on it the distance $u_o\ u$ of plan P, commencing from Y' Y to u_1; this last point is the projection sought. Joining l_1, u_1, o_1, line l_1, u_1, o_1 we obtain on plan R the extreme circuit of the rounding. Finally, we draw this line parallel to the first, projecting its height, as found on plan Q.

The lines of plans, P, Q, and R, give the projections of all points of the body, from below, the side and behind; and there is not a single point of any projecting part of the body, the exact position of which could not be ascertained in the manner we have shown with point (u, u', u_1), line $O'\ K'$ on the vertical plan, and line $l_1\ J_1$ on the anxiliary plan, give us, also, the appearance of the circuit of the round seat on these two plans.

In practicing, it is not necessary to find out for a phaeton body all the projections of different points on the horizontal and auxiliary plans, as we have done here. All that is necessary are projections $l\ u\ o$, $j\ v\ k$, of the round seat of plan P, and $l_1\ j_1\ i_1\ b_1\ c_1$ of plan R. But as our foregoing explanations, from No. 38 to No. 62, were intended to give a full treatise of the body, it was required to demonstrate on every plan of projection all points visible to the eye, together with their construction.

LXIII. As we have now represented on Fig. 47 all the projecting points formed by the intersection of a phaeton body in perspective, as given on Fig. 28, we can easily explain the rules for, and the mode of, proceeding in the system of projections for designating a point, a line, or a surface, of which manner we have already given an abstract in Art. LX.

Let us consider any point of the body; for example, point B, situated at the solid angle of the three sides, L, M, N, of Fig. 28 (page 82). Here point B indicates perfectly the solid angle required, and there can be no mistake for another point, the figure being perspective. But in the three plans of Fig. 47 there is no point, taken singly, which indicates the same angle. In order to determine this point, it requires two plans of projection, which give two separate and distinct positions of the same point. Accorded that point, b_1 is one of the projections of this point on the vertical plan; we further find that this point b' indicates on this plan the exterior intersection of the top and hind side of the body, such as shown by plans P and R at $b_o\ b$ and $j''\ b_1$; consequently all the points making out this line will project on the vertical plan at b', which latter point for itself determines no certain point. But adding now to the vertical projection b' the horizontal projection b, the proposed point is perfectly stated; in fact, distance $b_o\ b$ of the vertical plan in the horizontal projection, gives the distance of the point in the middle of the body; the same the height $b_o\ b'$ of the horizontal plan, in vertical projection, gives the elevation of the point on top of box on the horizontal plan. Or, in other words, the point sought is at the intersection of two parallels, run on each plan P and Q through projections b and b' (Art. 45); the first, even to $b_o\ b'$, the other, to $b_o\ b$; and, therefore, there are more than two perpendiculars found on the plan at point B of Fig. 28, determined perfectly on Fig. 47, by its two projections, b and b'. That is why it is expressed on those plans by notation ($b\ b'$), or ($b\ b_1$), if we want to express the point on the plans Q and R.

We remark here, that the projections of any point ($b\ b'$) to be determined, are always connected by a straight line ($b\ b_o\ b'$), perpendicular to the common intersection, X Y, of the two plans of projection.

The same mode is applicable to a line as well as to a point; for example, the outside line, B C of Fig. 28. Here the intersection of the sides, L and N, is not stated

by the vertical projection $b' c'$, Fig. 47. In fact, this line (B C) projects on the vertical plan as the whole hind side of the body, so that any line at all which we would draw on this side would follow the projection of $b' c'$; or, in other words, no settled projection. When we now add to the projection $b' c'$, of the vertical plan, the projections $b\ c$ and $b_1\ c_1$ of plans P and R, the course of line B C of Fig. 28 will be perfectly given on Fig 47. On the two plans, P and Q, this is marked by $b\ c$, $b'\ c'$, and on plan Q and R by $b' c'$, $b_1\ c_1$.

The same demonstrations are also applicable to any surface. Surface L of Fig. 28 is not fully laid out on Fig. 47, by the vertical projection $a' b' c' d'$; in fact, the contents of this figure, taken singly, express on the plan the projection of the whole space of the box. But adding to the vertical projection, $a' b' c' d'$, another projection, either of the horizontal plan $a\ b\ c\ d$, or of the auxiliary plan $b_1\ c_1$, we obtain surface L of Fig. 28 perfectly determined on our Fig. 47. This is given on the two plans, P and Q, by the letters $a\ b\ c\ d$, $a' b' c' d'$, and on plans Q and R by $a' b' c' d'$ and $b_1\ c_1$.

Still, in many positions, a point, a line, or a surface, can be sufficiently determined by one of their projections only. The points, lines, and surfaces, on which we have treated in the foregoing, give us a proof for this in their projection on the horizontal plan, because on this plan the projections are shown in their last state, and cannot serve for finding other projections of the box. Nevertheless, it is always better to put down every projection on two plans, first to avoid confusion, and next so as not to make an exception to the rule.

(*To be continued.*)

GEOMETRICAL EXERCISE.

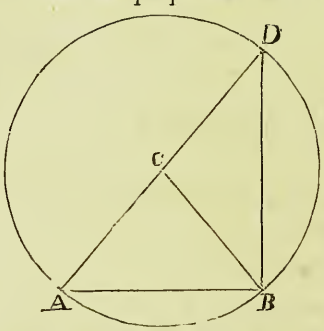
BY P. B. J.

A knowledge of geometry is so essential to the practical coachmaker, that it would seem surprising that so little has been done toward rendering that science a popular study with them. It is scarcely becoming in a writer on the same subject, to censure his predecessors on account of the inadequacy of their works to effect emulation among the artisans of our trade; nor, do I think that preceding writers deserve censure, for their object has not been so much to facilitate the acquisition of a course of problems which may be required in the practice of our particular trade, as to create a spirit of philosophical inquiry, and make a race of speculative geometricians. However, so far as my limited acquaintance with the employments which require the aid of geometrical knowledge qualifies me for the task, I shall gladly contribute to my country's welfare, in the preparation of a few problems for the use of my fellow craftsmen. I had, indeed, some time ago, projected a course, commencing with the first principles of science, and the rudiments of lineal drawing, and had collected a large stock of materials for the purpose of illustration; but, finding a similar undertaking, translated from the French, and feeling assured of the author's extensive learning, as a geometrician, I am satisfied to give the task into other hands. My determination not to trespass upon the rights of the gentleman, however, does not forbid my entering upon geometry, as used in our every day practice.

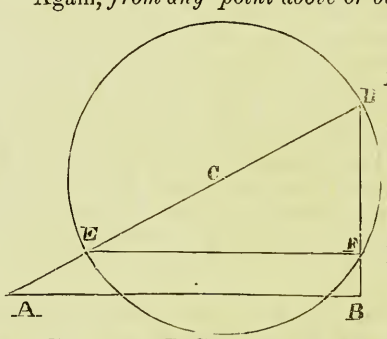
This branch has scarcely been noticed, with any special object in view, except so far as the French or *more properly* the Square Rule, is concerned. I shall therefore (as heretofore, in one or two illustrations) endeavor to place geometry in so familiar a point of view, as to be easily apprehended by those whose minds have not been very long initiated in such pursuits. Such is my aim: how far I succeed is not for me to even guess: all I can say is, that I have intended well.

I shall close the present paper by remarking, that another grand object which will be attained by exercises of this kind, is, that it will enable carriagemakers to read philosophical works with greater ease and pleasure, by giving them some idea of equation.

Our first proposition will be—*From any point in a given line, to draw a line that shall be square to a given line, from any point in that line*—Let A B, be the given line, and B the point from which we wish to draw a line square to it, without the use of the square or mitre level. To begin, draw any line, as B C, from the given point B, making any angle with A B, and center, C; next describe a circle, A B D, cutting A B in A; then through A and C draw a line, until it cuts the circle in the point, D, joining D B; then D B will be perpendicular or square to A B, and drawn from the point B as required. The angle, A B D, is a semicircle, of which A D is the diameter, consequently the angle A B D is a right angle.



Again, *from any point above or below a given line to draw another line which shall be perpendicular or square to it.*—Let A B be a given line, and D a point above it. It is required to draw a line from the point, D, that shall be perpendicular or square to A B. From D, draw any line, as D A, to cut A B; take any distance as D C, on the line A D, and with that as radius, describe a portion of a circle, as E F D, then from E draw E F parallel to A B, and from where E F cuts the circle in F, draw D F B, which will be square or perpendicular to A B, as was required; for the angle, D F E, is a right angle, and as E F is parallel to A B, the angle D B A is equal to the angle D F E, or a right angle. If we had made C D equal to half A D, we should not have had to draw the parallel E F, for the figure to the last problem shows that when C D is equal to C A, the circle will pass through B; but as we have not yet shown the method of bisecting or dividing a line into two equal parts, I will give a method independent of this, in my next, which in many cases in real practice, will be found useful to the workman. Again, if we had taken C D greater than the half of A, the parallel E F



would have been below A B also. It will be remarked, if the given point, D, had been below the line, A B, the operation would have been just the same, only the figure would have been reversed.

THE ADVENTURES OF THREE JOURS.

BY H. S. WILLIAMS.

Chapter X.

The long, hot summer passed rapidly away, and the cool nights of October followed. No frost had yet fallen, and the gardens still presented an abundant supply of vegetation, and the yards a gorgeous array of flowers. Of all seasons, it is the most delightful at the South, for the summer here is as tedious as the long, dreary winter at the North, and one feels a sense of relief that is in itself a great pleasure, when the cool nights give token of an early frost.

It was after midnight, yet Gloner was still sitting by his table, deeply engaged in the middle of a ponderous volume before him. So deeply was he absorbed, in fact, that he failed to hear heavy and rapid footsteps on the stairway, and it was not until the door was quickly opened, and Loring entered the room, that he raised his eyes from the page.

"What has brought you home at this time of night?" he exclaimed, as Loring walked across the room, and tossed his riding gloves and whip on a sofa, then, turning, made the circuit of the room without speaking.

"You are excited, my dear boy; sit down; take a cigar; compose yourself, and tell me what has happened. Has the bonny Kate politely hinted that your visits were no longer agreeable, or, without her saying so, have you seen enough to convince you that there was a more favored Richmond in the field?" and, closing the book, he placed it on the table, when, opening a cigar box, he pushed it across to where Loring had now taken a seat.

"No, I want none!" exclaimed Loring, in a hoarse voice, as he waived away the proffered civility with a motion of the hand. "I am perfectly cool and self-possessed, although I may appear excited—perhaps I was, an hour ago, but the excitement has passed off now."

"Well, do tell me, what is the matter?" said Gloner, lighting his cigar. "You see I am all attention—and impatience."

"A series of the most commonplace circumstances," continued Loring, "has involved me in a most serious difficulty, which is to be settled this morning, at sunrise."

"You don't mean to say you are going to fight a duel?"

"Exactly! this morning, at six o'clock, or before. It is now quarter of one. I have rode ten miles in the last hour and a half, and I've been in town for full fifteen minutes. Of course, you know what I came for?"

"Certainly; but give me the particulars of the affair, as explicitly, and, at the same time, as briefly as possible. You surprised me so suddenly that I am slightly confused, and this is a matter that requires a cool brain to think it over."

"Well, it is at best a brief story. I reached Miss Corneil's last evening—this is morning, now, remember—about eight o'clock, and was somewhat surprised, not to say chagrined, to find three gentlemen already there. One of them was young Ward—you have met him. The two others were strangers to me, but I learned that their names, as they were introduced, were Nelson and Masters. You may not remember hearing them spoken off as old admirers of Miss Corneil's, but I did, as soon as I learned their names. I tried, however, to make myself as agreeable as possible, but I quickly noted that both the last named gentlemen treated me rather coolly, or, rather, with a certain air of contempt, creating the impression that they were far superior to me. But although, as you are well aware, very sensitive on that point, yet, as Miss Corneil showed a decided preference for me, I was very well satisfied. About eleven o'clock we all took our leave, and, as Mr. Ward gave me a cordial invitation to pass the night with him, I assented. We mounted our horses at about the same time, and as our road, part of the way, lay in the same direction, we rode on together. For a time the conversation was commonplace enough, various topics were touched upon and disposed of in a few words, until finally, I made an assertion that Nelson, as I thought, very rudely dissented from. Of course, I replied by presenting reasons and arguments for my views of the subject, which caused him to reply still more rudely. We had now reached a point where our roads separated, and we all halted, while the dispute waxed warmer and more bitter every moment. If the controversy had been confined to its original subject, I do not think any difficulty would have occurred; but somehow Masters brought in Miss Corneil's name. I remember well the words; he mentioned her name, and then, in a sneering tone, added, "She evidently intends to outrival Lucretia Borgia, for Lucretia had only five victims, while Loring is Miss Corneil's sixth." It was both slanderous and insulting—slanderous to her, insulting to me, and it was only from the fact that we were on horseback, that kept me from knocking him down, although it would have probably cost me my life at the same moment, for both of them were armed. I tried to choke down the rage that followed that insult, and, before I could reply, Nelson, with a laugh, replied:

"You are about right, Masters, but, in this last case, it is Loring, here, who is deceiving, for, in order to get in Miss Kate's good graces, he boldly asserts to her that he is of a high and very wealthy family, only stooping to the menial service of a hireling to please the fancy of a passing whim."

That was too much for a Quaker to stand, much less one of my disposition, so, with a full knowledge of the inevitable result, I spurred my horse a step nearer, and standing in my stirrups, I coolly and most emphatically replied:

"Now, Nelson, you are a coward, a slanderer, and a liar—so take that," and I deliberately raised my riding whip, and struck him fairly across the face.

I do not think they expected so decided an action on my part, but, as you well know, there was but one course left for Nelson, according to the rigid and inexorable laws of custom, after such an *insult*, as he would term it, from me. In ten minutes, the challenge was given through Masters, I had accepted, and the arrangements were all made through Ward on my part, who, at my request, acted as your proxy in the matter, for, although I believe he is a friend of mine, yet he is, I fear, too young for such a serious and so responsible a position."

"What are your weapons?"

"Pistols! The distance is to be decided this morning, after we get there. When we separated, Ward insisted on my going home with him, and getting his dueling pistols, which I did, and here they are. I think you will find them in good order. He also gave me some valuable hints, and, by what he said, I am confident they met at Miss Corneil's on purpose to insult me, although I do not think they had any thoughts that it would terminate as it did. They had no idea I would fight, but thought I would take their insults tamely, when they could easily have kept me from the neighborhood, and gained me every person's contempt, by branding me as a coward."

"Is Nelson a good shot, or does not Ward know?"

"I asked him, and he said he might be a *good* shot, but not a *sure* one. I do not think he is any better than I am, if as good. He has passed several years in Paris, and is an expert swordsman, which, I doubt not, he would much prefer to a pistol. But I must write two or three letters and you can busy yourself with those pistols, so don't disturb me for just one hour."

"What arrangements have you made for a physician?" asked Gloner, after the hour had passed and the letters were written.

"Young Ward attends to that. He will be on the ground with one."

Just then the bell rang. "There are our horses. It is now three o'clock. Take a flask of brandy, and put in your pocket. I shall want a drink just before the ceremony, and after, too, if I want any thing."

It was a half hour longer ere they got off, and then they rode slowly and in silence. Just before reaching the ground, Loring gave several directions, and mentioned some things he wanted attended to, in case the worst should happen, and then added, "Every thing else you will find in a letter on the table in our room, directed to you. I do not think you will ever read it, however, for, up to the present time, I have had no serious fears of the result. I am now as cool and self-possessed as I ever was, and I feel none of that depression of spirits which generally forebodes any coming evil with me."

The spot selected for the meeting was most gloriously beautiful. Daylight was just beginning to break as they reached it, and they both stopped to take a survey of the scene. It had formerly been an avenue leading to a fine country residence, but, as they afterward learned, the house had been destroyed by fire some years before, and the grounds had never been improved since. A thick sward of Bermuda grass covered the old carriage road, while, on either side, were huge oaks that linked their long branches above, while here and there were a few scrawling evergreens and rose bushes, that plainly told of neglected years.

"No better place could have been selected for a meeting like this," exclaimed Gloner, who now looked upon it only with an eye to business.

"A splendid place, and, if I can be lucky enough to win the choice of positions, I think we'll come out all right. Ah, here comes Ward and your physician. Let's meet them."

In a few minutes, Nelson, Masters, and their physician also arrived, and Gloner, on being presented to Masters, took him one side to decide the choice of position, distance, and other minor matters. In a few minutes he returned, and exclaimed, in a low tone, "I am in luck, I have the choice of position, and give the word to fire! Here, drink this brandy. Now keep perfectly cool, and fire *quick* at the word. Be in a hurry; I want it all over before sunrise."

Swallowing the stimulant, Loring took the position designated by Gloner, and then, the distance being measured, his antagonist confronted him. The avenue ran nearly east and west, and as the east was now all aglow with light, Gloner's quick eye detected the vast advantage of a light background over a dark one, so he placed Loring to the west, while Nelson was to the east, his whole figure clearly defined.

"Stand with your right side to your opponent. Present the smallest possible surface for a shot; beside, a side shot is not so necessarily fatal as a front one. The one will stand ten chances to glance over the other," and then he added, in a whisper, "At the word 'three,' fire. There's your pistol." Then stepping back, he exclaimed, "Are you all ready?"

"Yes!" replied Masters, "all ready."

What a scene was that for a moralist to muse over! Two young men, who had never met but twice, and this their second meeting—death to death. And then the surroundings were so gloriously and grandly beautiful. The noble old oaks, the rough, rambling hedge-rows between, the scrambling rose bushes, on some of which a few flowers yet bloomed, and then the numerous song birds that warbled their morning hymns from every tree and bush, and then the time, just at the birth of a new day, with countless dew drops sparkling on the grass at their feet, and the air so cool, so sweet, and so refreshing, and yet all to be marred by the shedding of human blood. No wonder that Loring, as he took in this scene—perhaps for the last time—sighed heavily, but then, grasping his pistol, pressed his teeth firmly together, and his nerves became as iron.

"One"—"Two"—"Th—"

Before the word was uttered, Nelson raised his pistol and fired. Loring staggered slightly, but it was only for a moment, then advancing a step, he cried, in a tone of most supreme contempt, "Last night I called you a coward. You have proved its truth, and you would be a murderer. I could now shoot you down like a dog, but I would not have your paltry blood on my hands!" and he sent his bullet into the heart of a small tree to the right, then turning toward his second, he fell to the ground.

"This is most outrageously dishonorable, Mr. Nelson. I thought I was attending gentlemen. Mr. Masters, take him away, and, my advice would be, to revisit Europe!" and Nelson's physician passed him by in scorn, and advanced to where Loring had fallen, where he stood and looked on in respectful silence, while Gloner held Loring's head in his lap, as his doctor, assisted by Ward, examined the wound. The blood, and the hole in the lower part of his vest, told where the ball had gone. "It can't be a really fatal wound!" exclaimed the doctor, as he tore and cut away the clothing, "else he would have fallen immediately, much less taken a step or two, talked a whole breath, and fired his pistol. Ah, ha! just as I thought. Ward, a flask of water and one of brandy, from my saddle bags, and a couple of lemons. The ball has struck pretty well front on the third rib there, and, glancing downward, has ranged just under the skin across the abdomen, and lodged against the left hip; there it is; he'll want to save that; so, Mr. Gloner, just keep it for him. Now we'll bring him to," he added, as Ward handed him the

water, brandy, and lemons, and, in another minute, his patient opened his eyes and breathed quite heavily.

"This brandy, tinctured with lemon, will bring him out all right. You see, it was not the loss of blood that caused him to faint or swoon away, nor the pain alone, but the latter with a very sudden and very deathly sickness. As soon as I can dress this wound, he will be able to stand up."

When the wound was dressed, and after Loring had swallowed half a tumbler of brandy and water, he was able to stand alone, and one of the first to seize his hand was Nelson's physician, who exclaimed, "Your pardon, Mr. Loring, for my consenting to serve your unworthy opponent; but I thought him a gentleman. I was deceived, however. You have my best wishes for your recovery!" And turning, he left them. On looking for Nelson and his second, they had both disappeared.

"Now, Ward," cried the doctor, "go and bring your buggy up. You see," he added, "we kept it hid from view, as I did not want my patient here to think for a moment that there would be any use for it on our side;" and he smiled to think how providently he had conducted his part of the programme.

The buggy soon arrived, a roomy physician's phaeton, in which they assisted Loring, while Ward took a seat beside him. Then the doctor poured out all the brandy in his flask but about half a tumbler full, took a cup of water, and, squeezing a lemon in it, poured the mixture in the flask, and handing it to Loring, said, "If you feel faint, sip this occasionally, it will strengthen you any way. Now, Ward, drive slowly, and pick out the best road. Of course, you will go to Miss Corneil's. She has got to nurse you through this little affair, and you couldn't find a better. Mr. Gloner and myself will ride on more rapidly, so as to prepare her for your arrival. Remember my instructions, now;" and Ward drove slowly off.

"I know a nearer way than round the road," said the doctor, as they mounted their horses, "so we'll beat them half an hour. See, the sun is just rising. By Jove, but this is a lovely scene. Look at that river, the sky, the few brilliant clouds, these trees, and then this atmosphere; one can't take too much of it in his lungs. It is the healthy season now. No malaria in this air, nor will there be until after frost comes to kill vegetation, and then a rain or two to cause them to decay. Poor Nelson! how he feels just about now,—the rascal, I can't help but pity him for all. It will be years before we see him in this neighborhood again, if ever. I never was engaged in a little affair of honor that terminated so pleasantly as this; no one killed, and your friend, Mr. Loring, the accepted lover of my bonny Kate. You see, I have heard of his weakness in that way; and, of course, if he has not already proposed, he will before he leaves her house, and will be accepted, too, even though at this moment she may not care a snap of her finger for him. Like all your real women, Kate worships courage, admires magnanimity, and opens her innermost heart to suffering, especially when she is the cause of that suffering;" and the worthy doctor run on in his rattling way until they entered the Corneil plantation.

"We will enter this gate," he said, turning as he spoke, and passing into an immense field of cotton. "By following these rows we will reach the turning row up yonder, when we will find a good path leading to the house. It will save fifty—yes, seventy-five yards, and distance, you see, is every thing with us physicians; it's what time is with you artisans. By Jove! there she is now; just as I expected, too. See her way up yonder, against the woods. Why, your eyes ought to be better than mine, especially when a young and pretty lady is to be seen. You go up and tell her to come home, and I'll ride on to the house, present my compliments to her aunt, and—order breakfast for three more. This ride has given me a marvelous appetite;" and he was off.

Miss Corneil did not seem to notice Gloner until he had passed over half the distance, when, leaving the hands she was instructing as to their day's work, she advanced to meet him. When near enough to see who it was, Gloner saw her color pass away; then, with a touch of the whip, she bounded to his side, and was the first to speak. "What brings you so early?" she exclaimed, quietly. "Is any thing going to happen?"

"Nothing *is going* to happen, nor nothing has happened to give you the least uneasiness. I was in hopes that you was entirely ignorant of any cause for any thing 'happening,' but I see you anticipated a difficulty;" and Gloner noticed with delight that the color was returning to her cheeks.

"Yes, I dreaded a meeting, and passed a sleepless night for thinking about it. I saw by Mr. Nelson's excitement, and Mr. Masters' cool, sneering tone when they left last night, that they were plotting revenge on Mr. Loring; for, blind as I was, I treated them with coolness during the evening, and Mr. Loring, with, perhaps, a little too much preference. But tell me, what has happened?"

"There was a duel, this morning, at sunrise, a mile below here;" answered Gloner, "the principals being Mr. Loring and Mr. Nelson. The latter fired before the time, and wounded Mr. Loring slightly in the side. Mr. Loring sent his ball in the trunk of a sapling near by, and is now on his way to your house; so come on, and receive him."

During the ride to the house Gloner explained every thing connected with the affair, to which she listened with marked attention, and then said, "Thank God! it was not Masters who challenged him. Nelson, I know, is a coward; but Masters has a nerve of iron, and the heart of a fiend on such an occasion. It was his intention to do the fighting, but by some means Nelson blundered into it by being too hasty; but it was a blessed blunder for—us all." She almost said "we;" and that sentence told that Loring already had possession of her heart.

Reaching the house, they were met on the piazza by her aunt and the doctor, and the latter, coming toward her, seized her hand, and exclaimed: "Ah, you little rascal, you have no idea of the trouble you are to a neighborhood—making two young fools get up before day, to take a pop at one another, and rousing up an old man like me to see if its well done. You little rogue, you. Come, I'm terribly hungry; so go and see about breakfast; then come and make what reparation lies in your power for your wickedness, by nursing your victim. But mind you, now," and his voice changed from raillery to the firm tones of authority—"not a word about love; not one word, for he can't bear the least excitement." Raising the riding whip that she still held in her hand, she gave the worthy doctor a smart cut across the shoulders, and exclaimed: "I wish you to remember that you have a hundred victims to my one, and yours are all dead; while mine are——"

"Only heart-broken and perforated with pistol balls; ah, ha!" and the doctor laughed heartily, as he stepped back a pace or two to escape the whip, which was again raised menacingly.

Just as Loring was safely stowed away on the sofa in the parlor, breakfast was announced. Miss Corneil, of course, remained with the wounded man; but her aunt presided over the table, and a right royal feast they made of it. The doctor was full of his talk. Gloner, assisted by Ward, had to narrate the whole circumstances attending the duel, for the enlightenment of the aunt, and then they discussed the whole matter, and finally wound up by sending a special message to Miss Kate, with the assurance that it was well worth fighting a duel at daylight, just to get such a breakfast as she had served them.

Again examining the wound, and moistening the bandages with cold water, the doctor told Gloner when he reached town, to send out twenty-five or thirty pounds of ice, and promising to drop in toward night, he took his departure.

An hour afterward, Gloner was galloping toward town with a much lighter heart than when he passed over the same road four or five hours before.

(*To be concluded in our next.*)

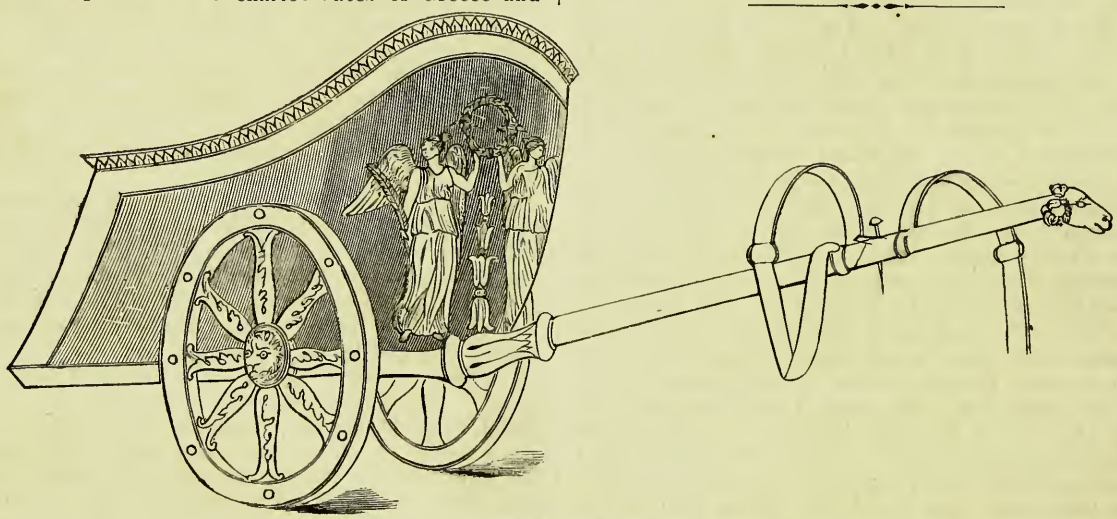
OUR GRECIAN CARRIAGE MUSEUM—VI.

Poets and historians of antiquity have left on record glowing descriptions of the chariot races of Greece and Rome. Even sacred writers have not hesitated to use them figuratively, as illustrations in teaching some of the most sublime and interesting truths in Christian theology. These contests were looked upon as the most noble of an enlightened age of the world, and a victory obtained at one, second only to a victory in the field of battle. We give an illustration of one of the racing chariots of Greece, in connection with this article.

Those selected as charioteers were specially trained to the business, under competent instructors. Historians have named several individuals who have acquired honor and fame, as experts. Plato mentions one Anniceius, a native of Africa, who had acquired great dexterity in driving his steeds harnessed to a chariot. This dark-skinned charioteer, desirous of giving the celebrated philosopher practical proof of his skill, in presence of a great multitude, drove several times around the Academy with such a steady rein, as to have left but one print of his chariot wheels in the circle.

The pages of Homer present us with charming pictures, in which chariots figure. One of the most interesting of these, is that in which Nestor instructs Atilochus in the art of driving. "One man," he tells us, "who is confident in his steeds and chariot, turns imprudently hither and thither over much ground, and his steeds wander through the course, nor does he rein them in. But he, on the contrary, who is acquainted with stratagem, though driving inferior steeds, always looking at the goal, turns it clear, nor does it escape him in what manner he may first turn the course, with his leathern reins; but he holds on steadily, and watches the one who is before him. But I will show thee the goal, easily distinguished, nor shall I escape thy notice. A piece of dry wood, as much as a cubit, stands over the ground, either of oak or larch, which is not rotted by rain."

The chariot which illustrates this article is of an elegant pattern, and is highly ornamented. The winged figures painted on the front, supporting a wreath, or crown of laurel, are splendidly executed and singularly appropriate. The wheels, with eight spokes, peculiarly shaped, and the pole setting into a socket at one end, and terminating in a ram's head at the other, are worthy the study of every lover of art, even in modern times.



GRECIAN CHARIOT.

Incipient Art.—The first invention of man to effect transportation by mechanical means was the Wheel—that is, a disk—held upright by a cross bar called the axletree. Rude carts with two wheels were first constructed; and these simple vehicles were drawn by the animals already tamed, over the rough surface of the ground, which was the primitive road-bed of man. Next, wagons with four wheels were devised, and roads were made by grading the uneven surfaces; then springs were added to diminish the jolt—an invention unknown to the Greeks and Romans; and, lastly, relays of horses and Macadam roads were introduced, marking the higher development attainable under the system that employs horse power and the earth as a road bed.

Home Circle.

A HAPPY HUSBAND.

BY MRS. EVA ROSS.

"For heaven's sake, Emma, do be serious, if you can, for five minutes. Pray, cease this trifling, which is but cruel playing with my feelings, and let us treat this subject as it deserves, soberly and seriously."

"Well, there, then;" cried the laughing, black eyed girl, to whom Henry Gale spoke; "there, then, is that grave enough? See the corners of my mouth turned down, and my eyes rolled up, and I am as sober as a patient who has caught sight of the dentist's instrument. Do I suit you so?"

"You suit me anyhow, and you know it well, you witch!" cried Henry, gazing with a smile at the pretty face puckered up in its affectation of demureness. But he was not to be driven from his point. So he resumed, gravely, after a pause: "That time has come, Emma, when I have a right to demand an explicit answer to my suit. You have trifled with my earnest feelings long enough, and I have grown restless under my fetters."

"Shake them off, then, Henry;" interrupted the saucy girl, with a defiant toss of the head, which plainly said, "I defy you to do it!"

"I cannot, Emma, and you know it;" replied the hapless lover.

"That being the case," said Emma, "take my advice —wear them gracefully, and don't pull and jerk so; it only makes them hurt you."

The young man turned away, and walked up and down the room, evidently fretting and foaming internally. Emma, meantime, looked out of the window, and yawned. Henry continued his moody walk. "O! what a beautiful bird is on that lilac tree," cried Emma, suddenly; "do come and see it." Henry approached the window, and looked out. "Do you think, Henry," said Emma, laying her hand on his arm, and looking up eagerly in his face: "Don't you think you could manage to—"

"What, Emma?" asked Henry, all his tenderness awakened by her manner.

"Drop a pinch of salt on his back," replied the provoking girl, with an affectation of simplicity; "for then, you know, you could easily catch it."

Without answering, he turned angrily away. His walk this time was longer than before, and his cogitations were more earnest; for he did not heed any of Emma's artfully artless devices to allure his notice; but at last, turned about, and said:—"Emma, for three long years I have been your suitor, without either confession of love or promise of marriage on your part. Often as I have demanded to know your sentiments toward me, you have always coquettishly refused me an answer. This state of things must cease. I love you better than my life; but I will no longer be your plaything. To-morrow you are going away, to be absent for months, and if you cannot, this very day, throw aside your coquetry, and give me an honest 'yes' for my answer, I shall consider that I have received a 'no,'—and act accordingly."

"And how would that be, and what would you do?" asked Miss Emma, curiously.

"Begin by tearing your false and worthless image from my heart;" cried Henry, furiously.

"It would be a rash piece of business, Henry; and you would not succeed, either;" said Emma.

"I should, and would succeed;" said Henry; "as you shall see, if you wish; you cruel, heartless girl!"

"But *I* don't wish, Henry dear; I love dearly to have you love me;" said Emma.

"Why, then," cried the generous youth, quite won over again—"why, then, dearest Emma, will you not consent?"

"Remember, I said I liked to be loved;" replied Emma; "I did not say any thing about loving. But pray, how long did you say you had been courting me, in that pretty little speech of yours?"

"Three long years;" replied Henry.

"Neatly and accurately quoted, Henry. But you know my cousin Rachel was only won after eight years' courtship. You don't suppose I am going to rate myself any cheaper than she did, do you? Suppose we drop this tiresome subject for two years. Perhaps by that time I may be able to work myself up to the falling-in-love point. There is no knowing what wonders time may effect."

"If you are not in love now, you never will be;" returned Henry, sturdily; "and *I* will have my answer now or never."

"Never, then;" laughed Emma. But she had gone a step too far. Her often severely tried lover was now too much in earnest to bear her trifling any longer.

"Never be it, then;" he cried; and seizing his hat, he strode from the room.

Emma listened to his receding footsteps with dismay. Had she, indeed, by her incorrigible love of coquetry, lost him? It smote her to the soul to think so. As she heard him open the front door, impelled by a feeling of despair, she raised the window sash, and leaning forward, whispered: "Henry, Henry! you will be at the boat to-morrow to bid me good-bye, wont you? Surely, we are still friends!"

As she spoke, she tore a rose from her bosom, and threw it after him. It lodged on his arm, but he brushed it away as though it had been poison, and passed on without looking up.

Emma spent the remainder of the day in tears. Early the next day the bustle of departure began. Emma was going to accompany her widowed and invalid mother on a trip for her health. As they reached the wharf, and descended from the carriage, Emma's eyes made themselves busy, searching for a wished-for face, but it was nowhere to be seen. The steamboat was panting and puffing, seemingly impatient to be let loose, when Emma's mother, aided by the servant who had accompanied them, was crossing the gangway which lay between the wharf and the boat, and Emma was reluctantly following, when the sound of a voice behind—the very voice she had longed to hear—startled her. She turned to look, and, missing her footing, fell into the water. Another instant, and Henry had thrown off his coat; and calling, loudly, "Tell the captain not to allow the wheel to stir, and to throw me a line;" he sprang into the water. But of her for whom he was risking his life to save, he was unable to perceive a trace. Judging that the current of the river might have carried her a little forward, he swam around the wheel, but still saw her not. Despair had nearly seized his heart as he conjectured that she might be under

the boat; but, straining his eyes to see through the water, he at length discerned, far below the surface, what seemed to be the end of a floating garment, lodged between the wheel and the bottom of the boat.

If this were, indeed, the unfortunate girl, the least movement of the wheel must inevitably strike her; and Henry, in his terror, fancied it was already beginning to turn. Diving, he clutched at the garment, but missed it. He rose panting, and almost exhausted; but scarcely waiting to get breath, he again plunged below the surface. This time his efforts were rewarded by success, at least so far that he was able to bring Emma's form to the surface of the water; but she seemed totally lifeless. Henry was now so nearly exhausted that he had only sufficient presence of mind left to clasp Emma convulsively, while he kept himself afloat by holding on to the wheel. But this, his last hope of support, seemed also to fail him soon, as he perceived that it was now really beginning to turn slowly around. By a desperate effort, he struck his foot against one of the paddles, so as to push himself off as far from danger as possible. As he did so something touched his head, and his hand grasped a rope. New life seemed now infused into him, and summoning all his energies, he fastened the rope around Emma's waist, after which consciousness entirely forsook him. In the mean time, the witnesses of the scene, after giving Henry's instruction to the captain, had watched his struggles and exertions with breathless interest. The friendly rope had been flung to him again and again; but in the excitement of his feelings, and his semi-insensibility, he was incapable of availing himself of the proffered aid. At last, perceiving that he was quite exhausted, and must inevitably soon let go his hold on the wheel, and then probably sink to rise no more, the captain ordered the small boat to the rescue, and the result of this experiment was successful. Emma was raised from the water by means of a rope, and the boat reached Henry in time to save him also. Both sufferers were then taken on board the steamboat, which now moved off to make up for lost time.

And thus, when our hero regained his consciousness, he found himself miles from home. Of course, his first anxious inquiry was for Emma, and when informed that she was rapidly recovering, his happiness seemed complete.

About sunset of the same day a message came to him that Miss A—— desired to see him. Answering the summons, he found her lying on a sofa in the captain's state-room, which had been considerately given up to her. Her mother was sitting beside her, who looked very pale, and somewhat suffering; but she held out her hand to Henry very gracefully, while the tears stood in her eyes.

"Henry," she said, without offering a word of thanks, "I want to see a clergyman. Is there a clergyman on board the boat?"

"I will go and see," said Henry, moving to the door; but a dreadful thought entered his mind, as he turned, exclaiming, "Emma, you don't think that ——"

"That I am going to die? No, Henry; but I want to see a clergyman."

Henry went, and soon returned accompanied by a minister.

"I thank you, sir, for coming to me," said she to the latter, as he entered; "I have a strange request to make of you. Would you object, sir, in the presence, and with the consent of my mother, to unite me to this gentleman in matrimony?"

If the minister was astonished at this request, Henry was still more so. "What did you say, Emma?" said he. "Did I hear aright?"

"I believe so," said Emma, smiling at his eager amazement. "Does the scheme meet your approval?"

"It was heaven inspired," cried the poor fellow, frantic with joy; but a shade coming over his face, he added gravely, "but, Emma, have you considered? Remember, I want your love, not your gratitude. I will be satisfied with nothing less."

"Do not be concerned about that, dear Henry," replied Emma, gazing at him very tenderly through her tears. "You had that first, long, long before you had the last."

"But, Emma, you said only yesterday ——"

"Never mind what I said yesterday," interrupted Emma, with some of her old spirit breaking out. "*Just mind what I say to-day.* If I was a fool once, is that any reason I must be one always?"

"But, indeed, Henry," she added more softly, "I have always meant to be your wife. The only scruple I have is, that I am not half good enough for you."

It is needless to say how the discussion ended, for the reader has already divined that.

Henry continued his journey; and thus, in the course of one eventful day, he risked his life, saved that of another, and set out on an unexpected wedding tour, a happy man!

Pen Illustrations of the Drafts.

LANDAU.

Illustrated on Plate XLI.

Landaus, very common in Europe where they originated—some say, at a town of the name in Germany—are becoming very popular with the aristocracy of this country, which term includes all those of sufficient wealth to enable them to support such an "institution." Wishing to render all the aid in our power, tending to the development of art, we this month furnish our readers with an original drawing, in which we have endeavored to include all the latest improvements both in design and fashion. The manner in which the body is suspended, renders the vehicle one of the most easy riding ever made. The width of the body across the seat should be about 50 inches in the clear; axles, $1\frac{3}{8}$ inches; wheels, 3 feet 5 inches and 4 feet 1 inch; hubs, $4\frac{1}{2}$ by 7 inches; spokes, $1\frac{1}{8}$ inches; rims, $1\frac{1}{4}$ inches deep; tires, $\frac{3}{8}$ by $1\frac{1}{8}$ inches.

Painting.—English patent black ground work, the under-carriage striped with a three-eighths inch line in blue, over which, near the edge, put two narrow lines in white.

Trimming.—Since this carriage is often open, exposing the linings to the action of the atmosphere, care should be taken to have the linings fast colors, for nothing injures

the reputation of a builder more than to have his cloths fade. Simply remarking, that as nearly all the fancy colors possess this failing, such should be used with caution, we leave the builder to exercise his own judgment in selecting his material for *inside* linings.

Workman's price for building the body, from $150 to $160; for carriage part, $22; for ironing, with seat-leg, book steps, and French clips, $110; for painting, $72; for trimming, including all the leather work, $85. Manufacturer's charge to a customer is from $1,800 to $2,000, according to finish. Our charges for working drawings, full size, on wall paper, will be—for the body, $15; for the carriage part (including wheels), springs, &c., $15 more, or $30 for all. Orders to be accompanied with the cash, and plans to be mailed within eight days after the order is given.

New York Charges for Repairs.— *Wood-work:* Hub, $5; new spoke, $1; rimming wheels, $20; half rim, $2.50; drafting wheels, $1; furchell bed, $10; bolster, $8; back spring bar, carved, $9; furchells, or horn bars, $8; fifth-wheel bed, $2.50; splinter bar, $3; perch, $20; pole, $10. *Iron-work:* New iron tires and bolts, $38; resetting tires, $9; tire-bolts, each, 30 cents; carriage-bolts, each, 50 cents; resetting axles, $10; oiling and washering axles, $2. *Trimming:* New leather top (both heads), $175; new head lining, both heads of silk goods, $175. *Painting:* Burning off old paint and repainting, $185. *Plating:* Recapping axle-nuts, $6; hub bands, silver, $8; door handles, $10 to $12.

ROCKAWAY WITH TURN-OVER SEAT.

Illustrated on Plate XLII.

This light one-horse rockaway, the seat to turn over, with high paneled doors, is nicely calculated for a family carriage. Width of body, 48 inches; wheels, 3 feet 6 inches, and 3 feet 11 inches high; hubs, 4 by 7 inches; spokes, $1\frac{1}{8}$ inches; rims, $1\frac{1}{4}$ inches; tires, $\frac{5}{16}$ by $1\frac{1}{8}$ inches.

Painting.—Body, black; carriage part, brown, striped with black in broad stripe, with two narrow ones red.

Trimmings.—Blue-black cloth.

Workman's charge for building body, $62; manufacturer's charges for the carriage, nicely finished, $700.

New York Charges for Repairing.—*Iron-work:* New tires and bolts, $26; drafting, $1; resetting, $7; tire bolts, 25 cents each; carriage bolts, 30 cents. *Wood-work:* Hub, $5; spoke, 75 cents; rims, $18; axle bed, $3.50; perch, $5; spring bars, each, $2; shafts, each, $4; shaft bar, $1.75; head block, $3; new set of wheels, complete, $75. *Trimming:* Retrimming shafts, $4.25; covering glass frames, $4; leather washers, $1.25. *Painting:* Burning off old paint, and repainting and striping, $95; coloring and varnishing body and carriage part, striping, &c., $75.

STANDING-TOP PIANO-BOX BUGGY.

Illustrated on Plate XLIII.

We have on this plate a very unique and original design for a depot wagon. The moulding extending around the body is concave, as shown at both ends, and should be painted in some color differing from the other portions of the side panel. Wheels, 3 feet 11 inches and 4 feet 2 inches high; hubs, $3\frac{1}{2}$ inches; spokes, 1 inch; rims, $1\frac{1}{4}$ inches; tires (steel), $\frac{1}{4}$ by $\frac{7}{8}$ inch.

Workman's price for building body, including the wood-work of top, $25; carriage part, $8; wheels, $10; shafts, $3.50; spring bars (plain), $2. Manufacturer's price for buggy about $400.

New York Charges for Repairing.— *Wood-work:* New wheels, $18 (tirings not included); hub, $5; spokes, 75 cents each; rimming, $16; axle bed, $4 each; perch, $6; head block, $3; spring bars, each, $2; shaft bars, $2; new shaft, $4. *Iron-work:* Resetting tires, $8; new set of tires, including the tire bolts, $20; drafting the wheels, $1; carriage bolts, 50 cents each; resetting axles, $6; new fifth wheel, $5; new spring, 15. *Trimming:* Leathering shafts, $7; seat linings, &c., $35; whip socket and fastenings, $3; covering dash, $10. *Painting:* Repainting, $70; touching up and varnishing, $35.

PIANO-BOX ROAD BUGGY.

Illustrated on Plate XLIV.

In this design, the only points which differ from the last are the seat and side molding. The former molding sinks; this is raised and rounded, as shown on the side panel. Width on seat, 36 inches; wheels, 3 feet 11 inches and 4 feet 1 inch; hubs, $3\frac{1}{4}$ inches; spokes, $\frac{7}{8}$ inch; rims, 1 inch; tires (steel), $\frac{3}{16}$ by $\frac{7}{8}$ inch.

Workman's price for making body, $17; carriage part, $8; shafts, $3.50; wheels, $10; spring bars, plain, $2. Manufacturer's price for finished buggy, $325.

Repairing.—Same prices as for the piano-box.

COAL BOX ROAD BUGGY.

Illustrated on Plate XLIV.

A very pretty buggy, we imagine we hear a great many say, and original, too, in many respects. The sham pillars, as well as the moldings, should all of them be raised and wooden; set off, when painted, with a different shade of color from that used in painting the panel.

The prices for making the different parts, for the repairs, and for the finished carriage, are about the same as for those mentioned in describing the other, published on this plate.

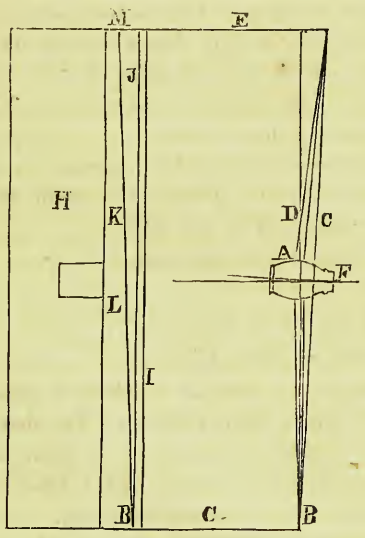
Sparks from the Anvil.

THE CORRECT LENGTH OF AXLES AND AXLE BEDS.

(*Concluded from page* 154.)

Again we return to wheels and axles. I will give my plan for getting the proper length of axles, which I have used since I first took any interest in the business, and which was my first object to obtain—the exact and proper length of axle beds. There is such a variety of axles nowadays, that I am obliged to resort to my plan, in order to get up the carriages which I build correctly. We all know that the object aimed at, by practical carriage-makers, is to have their carriages noted for easy running; and to do this, they must make each part bear its proportion of the weight. It is very essential that the tire should present a level surface with the grade of the road; and to attain this objeet, you must pay strict attention to the length of axles, without which it will be merely guess work.

My plan is this. I first find the dish of each wheel, measuring from the back end of each hub, to a straight edge across the face of the wheel. The difference in the dish of each wheel must be particularly noticed, and calculated upon, in the length of the axle, by deducting the number of inches and fractional parts of an inch from the width of the track, measured from outside to outside of the tire. I then *add one-half of the swing*, which I intend to give the wheels, to the measure, and we have the correct length of the axle between the shoulders. Perhaps it will be as well for me to explain just here, how I ascertain the correct swing to be given the wheel. Without being considered egotistical, I must claim to myself the credit of reducing this very simple problem to a practical conclusion. Heretofore the rule prevalent has been on the *guess* plan. Where a wheel dished much, the swing was five and six inches. For those not so much dished, three and four inches. As shown in the engraving, I measure from the face of the wheel to the center of two spokes at the hub, as at point A, which gives the starting point; next, measure to the center of the spoke B, which measurement deduct from the measurement at A, and the remainder carried out on line D, from point B (the center of spoke at felloe), to height of wheel at E, will give us the half of the swing intended. As I said above, add this half of the swing—*after deducting* the dish of the wheels—and we have the correct length of the axle or axle bed. In all cases, observe that your tire stands horizontal, or square, with base line C, and each wheel in range with the other also, at point F. By squaring from line G and D, we have the proper set of the axle arm, with a parallel spoke on the under side of the wheel.



As it is a difficult matter to show the variations of one-sixteenth of an inch on the scale, I can make the engraving and plan more fully understood, perhaps, by figures. Suppose we wish our carriage to track 4 feet 8 inches, outside to outside, the dish of one wheel measuring from the back end of hub to a straight edge on the face of the wheel, is $4\frac{1}{4}$ inches; the other is $4\frac{3}{8}$ inches, which together make $8\frac{7}{8}$ inches, which we deduct from 56 inches, leaving $47\frac{1}{8}$ inches. We now measure for the swing, as above, which we find to be $2\frac{1}{8}$ inches, which, added to $47\frac{1}{8}$ inches, makes the length of the axle or axle bed $49\frac{1}{4}$ inches between shoulders. In order to get the proper swing of my wheels, I have a straight edge, as shown in H, striking a $\frac{5}{8}$ mark from the edge I, as at J, I have the center of an inch spoke, as at B. The remainder of what is left at A, I place at point L; and drawing line K at point M, I have the swing. I then place the length of hub on at point N, and square from line K and L, which gives the pitch of the axle. I have been more prolix in the explanation of the diagram than I should have been, did I not wish it distinctly understood, which is my excuse for the length of this article.

Paint Room.

HINTS TO CARRIAGE PAINTERS.

It not unfrequently happens, after a piece of work has had its second and third coats of varnish, and looked well at night, that the next morning the surface exhibits a dullness utterly at variance with the expectation it had previously so rationally excited. Conjectures are made upon the cause, and the conclusion generally settles it upon the inferior quality of the varnish. A little inquiry may correct this impression, for which purpose we may trace the work from the commencement. The workman, having finished cleaning off his panels, is impatient to have them colored as quickly as possible, which is done. These panels have been fixed to their places through the agency of fire and water. The grain of the wood, having suffered this disturbance of drying on one side, and imbibing water on the other, is immediately covered over with a succession of fluid paint, in which turpentine forms the component element; four coats of primary colors, thin and transparent; four coats of filling-up stuff, the composition of which are absorbents of the strongest character—litharge, ochre, and dry white lead. Water is again applied most amply in rubbing down; and when to all appearance dry, two or three preliminary coats of color; then three or four coats of the intended body color, generally prepared in turpentine, concluding with the varnishing.

With so many absorbents underneath, laid on as fast as they dry, and on a surface of wood, of which the grain had been opened and separated by the operation of bending, can it be wondered at, that the recesses should retain the volatile particles of each successive coat, and that, finally, the varnish should be drawn inward by the powers of absorption under it, and thus lose that lustre—the characteristic of good varnish. The remedy for this is

now to be found, and would seem to be this. Let the panels have sufficient time to become thoroughly dry—for the humidity to evaporate, and the grain to assume its fixed quality—before a coat of color is put on. Use the best ground lead and oil, and let each coat be well dry before the succeeding one is laid; let the filling up be well ground and well amalgamated, and when enough is put on, stand as long as possible before rubbing down—the time so required may be occupied in forwarding some other department of the work. After rubbing down, warm air, either natural or artificial, is requisite to expel the humidity, particularly around the grooves, into which the water will penetrate, notwithstanding the oil lead used in painting. Too frequently the panels are rubbed down between each coat of varnish, before they are sufficiently hard, in such case the varnish is literally rubbed off; in this, much depends on its character, as well as the atmosphere in which it is used. In every other branch of the business, any defect or imperfection can easily be traced to the right cause; but in the painting department, it is not so easy—many effects show themselves, and phenomena to baffle the most patient inquiry. But in the hands of a skillful workman, ambitious of good work, many defects may be avoided by study to improve, and research for the cause.

PAINTS OF THE ANCIENTS.

A certain class of persons, little acquainted with the details of the industrial achievements of the present day, and the history of their slow development, are much inclined to extol the accomplishments of the ancients in different arts and sciences, asserting even that they knew the uses of steam, electricity, etc.; also that many of their technological manipulations are totally unknown at the present day. Some have gone so far as to write treatises on the so-called "lost arts" of the ancients.

This strange misapprehension results from one-sided education, in which too much attention is paid to the past, and too little to the present. It is fostered, moreover, by a peculiar disposition of the mind, disposing it to veneration for what is old. Persons thus prejudiced by nature and training, take a hint or suggestion of some classic author for a statement of an existing state of things. They forget that mere suggesting or speculating is not discovering nor inventing. Much less is it the practical execution and application of an invention.

Much has been said and printed about the magnificent colors of the ancients. It has been asserted that we can not equal them. Let us see what foundation there is for this assertion, which rests on ground about as reasonable as the other rash statements of a similar nature.

Landerer, a German chemist, has lately occupied himself with investigating the colors used by ancients on statues, monuments, bas-reliefs, and vases, in the city of Athens, in Greece. He found that what had remained of the coloring matter on these objects was so hard that only with difficulty it could be scratched off by means of an iron tool. Analysis showed that the paints were partially metallic and partially earthy. The painters of the Ionic school, however, used also vegetable substances to obtain bright colors.

Red. The red colors proved to be the natural vermilion, or cinnabar. Artificial vermilion has a much brighter red color, but was only invented by Kallias, four hundred years before the birth of Christ. Probably, the natural cinnabar used before that time was obtained from the Laurian silver mines in Attica. It was mixed with red earth to brighten the color. A reddish silicate of alumina and iron was extensively used, very similar, according to the description of Landerer, to the material of the same ingredients now produced at Berlin, in Connecticut, and extensively employed in this country as a red paint. The burnt ochre was another red, made by Kidias in the year 368 before Christ, by burning the yellow ochre from Sinope and Cappadocia. Red lead, or minium was obtained by burning natural litharge (oxide of lead). This litharge is still found near the harbor of Bulkau, on the island of Zea. It was called *miltos*—a name possibly also applied to cinnabar. In the Laurian silver works, a lead oxide was obtained which could be easily converted by burning into red lead. This is the usual red paint found on antique vases.

Besides these mineral reds, the ancients employed the root of the madder, and the red of the *purpura* shell-fish, as well as the so-called "dragon's blood" from the East Indies, which we now know to be a dried vegetable juice. These colors, which by nature are not permanent, were put on the marble by means of either a fine hydraulic cement, or a wax varnish.

Yellow. The ancients had no bright yellow at all. Our chrome, cadmium, and zinc yellows were entirely unknown to them. Their principal yellow was the yellow ochre. To make it brighter, they mixed it with pigments, as, for instance, white-lead. A yellow oxide of lead, identical with the mineral *chrysitis*, was also used, and is still found in the Laurian mines. Aristotle speaks of orpiment, in his time called sandaraca, and now known to be sulphide of arsenic. This is, however, now no more found in any remnant of old Grecian workmanship.

Green. The only greens known to the ancients appear to have been compounds of copper, partly artificial, and partly natural. Powdered malachite, a beautiful green natural carbonate of copper, was brought from the island of Cyprus, where copper (*cuprum*) is abundant. This island, being dedicated to the goddess Venus, copper was supposed to be the metal of love; and hence the absurd rule to introduce compounds of copper into philters or love potions. These ingredients would be inert in very small doses, and in larger ones would cause vomiting.

A silicious compound of copper was also found to be the green color applied to some funeral monuments.

Blue. This was, like the green, always a compound of copper; either the powdered lazulite, a blue natural carbonate of copper, or the beautiful *ceruleum*, which was the best color they had, and was artificially produced by fusing together copper, niter and sand.

Black. This is found to have been either ivory-black or a very fine charcoal. Ancient writers corroborate this conclusion, by saying that Apelles produced beautiful shaded tones by means of burnt ivory. Asphaltum was also used; it was dissolved in spirits of turpentine, and constitutes the black varnish on vases.

White. White-lead was known, but appears to have been little used; most whites are found to have been the earth of Mylos, which is a white silicious clay. According to classic authors, white-lead was extensively used by the Greek ladies as a cosmetic, for which purpose it was made up in small cakes or bars.

Gilding. Plutarch mentions that heavy gold-leaf was attached to the Corinthian bronze by means of mercury,

and subsequent pressure and friction; but the gilding investigated by Landerer was found to be attached to the marbles and vases simply by means of white of egg or of gum arabic. It is doubtful whether the Greeks were acquainted with the gum *sarcocollæ*, which was used by the Egyptians for the same purpose.

Encaustic painting was more frequently practiced. The Greeks had three styles of it. They burnt only the outlines on ivory, with hot irons, as we nowadays often see it done on wood, with shadows and all; or they brought the wax-colors on the surface with appropriate dies and pens, and melted them in by heat; or they painted with brushes, having previously liquified the paint mixed with wax or resin, with some solvent or by heat. The latter method appears to have been in use to paint ships and boats with a variety of figures.—*Manuf. and Builder.*

Trimming Room.

HINTS TO TRIMMERS.

If trimmers will have a little care in getting bodies in the trimming room, and setting them up at their benches, they would save that everlasting jar between themselves, finishers, and painters, about scratches and bruises which often occur in the trimming room, and which are generally caused by the carelessness of somebody, and that somebody will never own up, either if caused by carelessness or accident. You can't blame the painters for growling, for injuries to the paint not only delay the finishing of the carriage, but make it almost impossible to match the color unless it is black. So raise your body from the floor, either with horses or a trussel, and don't leave frames or irons hanging near enough to fall against it. In getting in and out at work, look out for your toes and heels that they don't do any damage. It is a good plan to cover the doorway with old carpet, of which there is generally plenty about a shop. In fact, too many, as they are the best of moth breeders, unless in constant use.

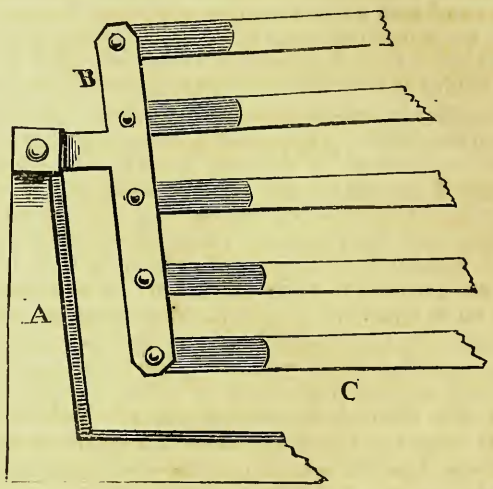
SPRING BACKS.

No heavy job is considered complete now-a-days, without a spring back. The cheapest and best way of making them is, to paste out two thicknesses of buckram, cut out to fit against the back panel, leaving it high enough to nail against the rail frame on top. Next mark off equal spaces each way, five lengthwise, and three in depth; after which tuck a little hair or moss underneath the bottom of the spring, when it is sewed fast to the buckram to prevent clicking. Then tie them together with a strong cord, knotting at every crossing and securing the ends well with a strong tack. In tieing keep the springs straight with each other, tipping the tops of the bottom row toward the bottom, and the top row toward the top of the back. Draw your burlaps over easy—nail at the top—spread some hair over the top portion—bring down your burlap and baste about the middle. This will bring your back out full at the top.

Steel Tubular Bow Sockets.—Such is the name of an article recently patented by Messrs, Topliff & Ely, of Elyria, Ohio. We expect to give fuller details of it in our next number.

NEW ARRANGEMENT OF SLAT-IRONS.

In this improved arrangement of the slat-irons, A represents the iron prop; B an iron T, to which the slat-irons are riveted, and C the slat-irons, five in number,



hinged to the T by rivets, as before stated, to take the bows. For carriages—such as landaus—this arrangement of the bows is a decided improvement over the old one, especially when applied to the front half of the head, as, in falling, the lower bows are thrown back, thus clearing the dickey-seat and allowing of a shorter coupling. This, we believe, is public property and unpatented.

Editor's Work-bench.

SUGGESTIONS FOR NOVICES.

Coach-making, as we have elsewhere shown, is attended with numerous perplexities. Many of these, however, may be avoided, by an early attention to system, and a determination to employ none but the most careful workmen, and the first quality material. We know that the temptations arising from competitions in trade, and the desire in some minds to get rich *by selling cheap*, are strong inducements to act otherwise, but a lifetime of observation has convinced us that "the cheap Johns" of business have, in nearly every instance, failed of success. It is plain that some individuals will be induced to trade, once at least, where the reputation for low charges reign, but it is equally evident that they seldom call the second time, for strange as it may appear, the class of individuals who *run* for cheap prices, aptly expect to get first-class goods, and failing in this, *drive* away from tricksters—such *cheap* business men usually are—with woe-begone countenances and with anathemas on their lips, and rarely ever, if a customer is worth having, will they call a second time. It is a well settled axiom, that "whatever is worth doing at all, is worth doing well," especially is this true when applied to pleasure carriages, upon the perfection of which life and limb are dependent.

With the foregoing as introductory, we suggest to the novice in business life, that he sets out determined to succeed, and in order to do this he must be punctual in redeeming his promises, honest in all his dealings, and polite to all with whom he comes in contact. If these resolutions are fully carried out, he will undoubtedly merit, and likewise be successful in securing, a competence.

GOOD TASTE.

Carriages constructed for the purpose of pleasure, are considered works of art; in the construction of which is laid open a wide field for the development of *taste*, in form and proportion as well as color. In form, the carriage, be it whatever it may, the draftsman should keep this one important object before him at all times, viz.: To display taste and correct design in the lines which constitute the form of the carriage; to guard against unsightly shapes and curves, broken or abrupt sweeps, &c.; to have one line follow another *in harmony with the leading line of the body.*

How often do we see in shops where practical and experienced draftsmen are not employed, when the assumed draftsman is engaged in placing a draft upon the board—all hands, the boss included, rush to the rescue, one suggesting that this line be placed a little higher, another that it be lower, another that this curve be made with less sweep; others that it should have more; and perhaps not one of the party has a particle of *taste*, none of them, paying any attention whatever *to the leading line of the body.* Hence we see so many montrosities in the shape of carriages thrust before our eyes.

The size and weight of the carriage should be proportioned to the power which is intended to move it, as well as the persons which it is designed to carry. The proportion of the parts having been once accurately settled, the same rule of proportion must be observed, whether on an increased or diminished scale.

Having settled the preliminaries of form and proportion, the next consideration is that of color, and a draftsman of practical experience, always takes this matter into consideration, regardless of the opinions of painters, and very seldom does he fail in showing that he has perceptive faculties superior to theirs, for the reason that his experience has given him the advantage of a high cultivation. Taste in the matter of color can do much toward amending the defects (if any) in the draft, or at least divert the attention of ordinary observers from dwelling upon them. Certain colors produce their effects, by contrast, as green and red, purple and yellow, orange and blue. Others again produce their effect by harmony, as green and drab, or brown and amber. Others again by gradation, as the different shades of green, blue, drab, and brown, which consist of almost an endless variety. Colors are generally divided into two classes, the *warm* and the *cold.* Red and yellow and their various gradations are warm colors; green and blue and their various gradations being cold colors. The intermingling of the opposite colors form neutrals. It therefore becomes the duty of the painter to consult the form and proper proportion of the vehicle, or the color and style in which it is to be executed. If there is any particular line or sweep laid down by the draftsman, which he wishes to appear the most prominent, the painter should be careful and carry it out in the painting, as much depends upon the taste and judgment of that individual in following the rules as laid down by the draftsman, in making the outlines of the carriage appear (when completed) in harmony with the original design of the body. What a fallacy it would be in him to paint a concave panel any other color than black, for the reason that any other color will (when finished) show a flat surface, or where a particular belt or line is laid out by moldings upon the side elevation, to paint it the same color as the upper or lower panel.

Nationality has much to do with the taste of individuals, so far as colors are concerned. The Teuton has his—red, yellow, and black. The son of the Emerald Isle chooses green; the American, the red, white and blue, and by stepping into many paint-shops, it would be unnecessary to inquire from what nation the foreman hailed, because we can form an opinion from the work which has passed through his hands. Many a good draft has been spoiled for want of *taste* in the painter, as I have instanced in the above cases.

The same remarks are equally applicable to the trimmer. Nothing is a greater violation of the law of good taste and correct proportion, than to take a plain body, in which no attempt whatever has been made at elaboration or fancy in its construction, and apply to the same an outfit of trimming which has been executed in the most extravagant style of ornamentation. It shows upon the face of it a lack of *good taste* as well as judgment on the part of the superintendent. A plain and unpretending carriage, when thus arrayed with gaudy trimming, which evidently cost more than all the other materials about it, has an effect upon the mind of a close observer, highly prejudicial to his opinion of the one, who has gotten up the affair "regardless of expense," and it at once becomes apparent that sound judgment and good taste were lacking in the foreman.

Now, there are many coach-makers who display no more taste or judgment in what constitutes correct proportion than does the drayman at their door, and consequently when the carriage is run out before the eyes of the world, they must hear many hard things said of their mechanism, by those who are more experienced, and have taste. It therefore becomes necessary that such should employ a competent workman, in whom is combined the

requisite qualifications to superintend the business, in order to bring it to a successful issue. *Taste* is a peculiar gift with which certain individuals are endowed at birth, and which cannot be acquired either by study or any amount of application. This is founded in reason, inasmuch as the faculties of some persons are at birth, more perfect than others; the difference exists in the perceptive faculties, on which the qualities of taste must alone depend. Nearly all persons have the germs of taste to a greater or less extent. If it were not so, the expression "a person of good taste" would not be used so commonly as a mark of approbation, showing a distinction between such and those who are deficient in the qualification.

PROPERTY OF A GENTLEMAN GOING TO EUROPE.

Such is the reason given by many speculators in "old traps," through newspaper advertisements, in our day. In England this class of shysters inform the public that they are about to make a trip to the Continent, and therefore *must* sell at a sacrifice, or far below the original cost. How they advertise in other countries we are not informed, but the presumption is they adopt some similar excuse in order to gull the public, and turn their old traps into coin, when they become unfashionable.

This sort of pretense—for it is nothing more—has been going on in Europe for over one hundred years, and in this country for the past half century, without being "played out," strong presumptive evidence that, in the opinion of some, the fools—some of them at least—are yet alive. It is laughable to hear them say "the carriage is by one of our best city makers, and nearly new," *but must be sold.* We have attended some of these sales merely out of curiosity, and have had our opinion of them fully tested, without shaking our belief in their humbug nature. Why don't these persons advertise their sales and let their wares stand on worth alone? Simply because they think the public "love to be humbugged"—and they do!

Some of the "City mart" auctioneers resort to such "tricks in trade" as ought to "make a horse laugh." Their carriages are all "city built" by the best makers; always "elegant" and "superior," never otherwise—at least such is the inference from their representations. As to the horses sold at Tattersall's, they never offer any other than *first-class.* They are either "high-bred, stylish and handsome," or else "extra fine and well-bred," or "very stylish, prompt drivers, free from all vices and tricks," and "warranted sound and kind, which a child may drive safely." The wonder is how these auctioneers are so fortunate as to monopolize all the good articles, without mixture, while so many defective ones are offered elsewhere. Are they so honest that they cannot conscientiously offer the unsound animal?

COACH-MAKERS' BUILDINGS.

We have previously announced that the Messrs. Wood Brothers were erecting new accommodations for their business, on Broadway, which they expect to occupy on or about the first of May next. The edifice will cover five lots, with a front of fifty-one feet (Nos. 740 and 742) on Broadway, and another of eighty-one feet (Nos. 45, 47, and 49) on Lafayette Place, being two hundred and seventy-nine feet deep from street to street. The building, when completed, will be five stories high, exclusive of a basement and sub-cellar, supplied with an ornamental iron front on Broadway, and a Mansard roof. The cost of the building, of which Edward H. Randall is the architect, will be about $175,000. We understand that, with the exception of No. 47 on Lafayette Place, which belongs to the firm, the other four lots are held on a lease for twenty-one years. The first floor, basement, and sub-cellar will be occupied as a carriage repository &c., by the firm, and the lofts let for other business purposes. When completed, this will undoubtedly be the finest repository in New York, and creditable to the enterprise and spirit of the firm.

In addition to the above, Messrs. J. B. Brewster & Co., whose manufactory, for some years, has been located on Twenty-fifth street, are erecting a new edifice, with a view to the enlargement of their increasing business. One portion, with a front of forty feet on the street, is designed as a repository for new work, and another adjoining, occupying the space between the new and old one, with a front of twenty feet, will be used exclusively for the storage of second handed work. The buildings will each be one hundred feet deep, the western one four stories high above ground. This building will have an iron front and Mansard roof to it.

Mr. W. C. Dunn, whose manufactory on the Third avenue at Eighty-seventh street, was last year unfortunately destroyed by fire, has since erected a building on the site of the ruins, seventy-six feet front and one hundred and twenty-five feet deep, four stories high with the addition of a basement for the smith work. Mr. Dunn will again commence business about the first of May, with many of his old hands, with whom he is a favorite, they having been with him ever since he and his brother, now deceased, started business, some twenty years ago. When the fire occurred, noticed at the time in our pages, some of the men had unfinished jobs in hand and chests of tools all destroyed. We learn that the boss has since not only paid the workmen for the work done on jobs destroyed, but likewise generously presented the wood workmen with new sets of tools, a matter of such rare occurrence that it is worthy of note, and highly commendable.

CLOSE OF VOLUME ELEVEN.

With the next number, volume eleven will close, when we shall as usual furnish a copious index to the subjects therein contained, and a handsome title-page. It gives us pleasure to say to our friends, that notwithstanding competition, and the effects of dull times with the craft generally, our success the past year has been quite satisfactory to us, in a pecuniary point of view. We trust to still receive the patronage of every right thinking member of the craft for the next volume, of which we shall speak more in detail next month. Meanwhile, we hope our friends will canvass for the increased circulation of our work the coming year, especially those who are opposed to agrarianism in its worst form, as it has appeared in this country from a certain source, and which, if encouraged, will sap the very foundations of business enterprise.

LITERARY NOTICES.

Among the new publications in our exchange box, we find *The Technologist*, a work especially devoted to engineering, manufacturing and building, No. I, Vol. 1, for February. The distinguishing feature of this Journal is the fact that all articles and illustrations are original; the publishers pledging themselves that no puffs of worthless inventions shall be inserted in its pages under any circumstances whatever, which if carried out, will be commendable.

The number before us consists of forty-four large pages, printed on very superior paper, and in the best style of typographic art. Altogether, it is the finest looking journal of practical science now before the public. The articles, too, are of unusual excellence, and contain matter calculated to instruct and interest all classes. The titles of a few of the subjects discussed are,—Technological Education, Tempering Steel, Trial of Steam Engines, Improvement in Distillation, Sunless and Airless Dwellings, the Measurement of Electrical Resistance, Vision and the Stereoscope, the Walks of New York Central Park, East River Bridge Caissons, the Microscope, Lessons on Drawing, Relation of Technology to Insurance, etc., etc. The yearly subscription is Two Dollars, and the price of single numbers Twenty Cents, a sum that seems ridicuously small when compared with the size and character of the Journal. It must require an enormous circulation to make the enterprise pay at these figures, and it is pleasant to see that the Publishers have sufficient faith in our American workingmen to lead them to undertake it.

The Technologist is issued by the Industrial Publication Company, whose office is at 176 Broadway, New York. Every mechanic ought to send for at least one number of this Journal.

EDITORIAL CHIPS AND SHAVINGS.

Bonner's Road-Wagon.—We had the pleasure a day or two since to inspect a very light road wagon, weighing only 100 lbs., just completed by J. B. Brewster & Co., of 25th street, for Robert Bonner, of the *New York Ledger*, in which he intends to drive his celebrated horse Dexter. This buggy is believed to be the lightest ever built for the road. The axles and tires are made of Bessemer steel, and it is strengthened in the wood-work by the patent supporting bars, lately invented by Mr. Brewster. This buggy is painted black, and the carriage is striped with a three-eighths line, through the middle of which is a narrow one in bronze. The trimmings are blue-black, of a novel character, set off with patent leather. The price of the buggy is $335, and is a beautiful article.

Co-operative System.—Sometime ago we noticed the arrangement made by the Messrs. Brewster & Co. for carrying out a new system of co-operation, which at the time created much excitement in the public mind. We have not since heard much on this subject, but have now received a communication from an *outsider*, who would probably like to be *counted* into just such an *institution*. We give an extract from it:—

"Friend Stratton: Is the good time coming that we read about in the Good Book? I have reference to the co-operative system started by one of our leading coach-making firms in this city. They commenced on the first of January. As I understand it, every employee is to receive his share of the profits in ratio to the amount of money he earns, and I believe the system is working well. The men seem well satisfied so far, and are working like beavers. Is this to be the end of strife and contention between the employer and the employed? I hope so, as it will settle the vexed question of societies and strikes, for where every man is an interested party, he feels that every blow he strikes, every saving he makes in stock, and every improvement he makes or participates in, that he is no longer a plodding tool for others only—he is a man. Although inaugurated at a time of general depression in business, yet I believe the known ability and energy of the men engaged in this experiment are sufficient to push it to a successful issue, encouraging others to go and do likewise."

SAW DUST.

Horse-Power Useless.—Mirabeau N. Lynn, New Albany, Indiana, has invented what he calls a "Steam Plough Wagon and Farm Power," which he says "is adapted to any service now performed by horses." Its weight is 1,600 pounds; power, four-horse; cost, $500 to $600. The mechanical combinations are described as being a cross shaft upon a frame, supported by two main wheels, and one heavy guide wheel; upon the shaft, driven by two upright cylinders attached at ends, are placed four irregular eccentrics following four eccentric rods attached to eight toggle joints (or horses' legs), whose motion is so regulated that a continuous and powerful forward movement is made, independent of aid from driving wheels.

Editorial Tactics.—An editor out west, who has an eye to business, and in order to increase the circulation of his paper, announced in a late number, that every new cash subscriber might kiss his better half, who was young and handsome. The next day there was an alarming rush of people in his office, among them many old subscribers, who wanted to take an extra number. Such was the confusion, that in the event of a mob, he took in his sign and closed up his office. He has ordered a steam-power press since, and his wife was plastering her cheeks at last accounts.

New Horseshoe.—The Ames Company, at Chicopee, are filling a contract for a peculiar adjustable horseshoe—the invention of a Baltimorean—which is made to be taken off at night or when the horse is not being used, and put on as readily when wanted as a pair of boots. The corks of the shoe are also adjustable, and new ones can be fitted when one set is worn out.

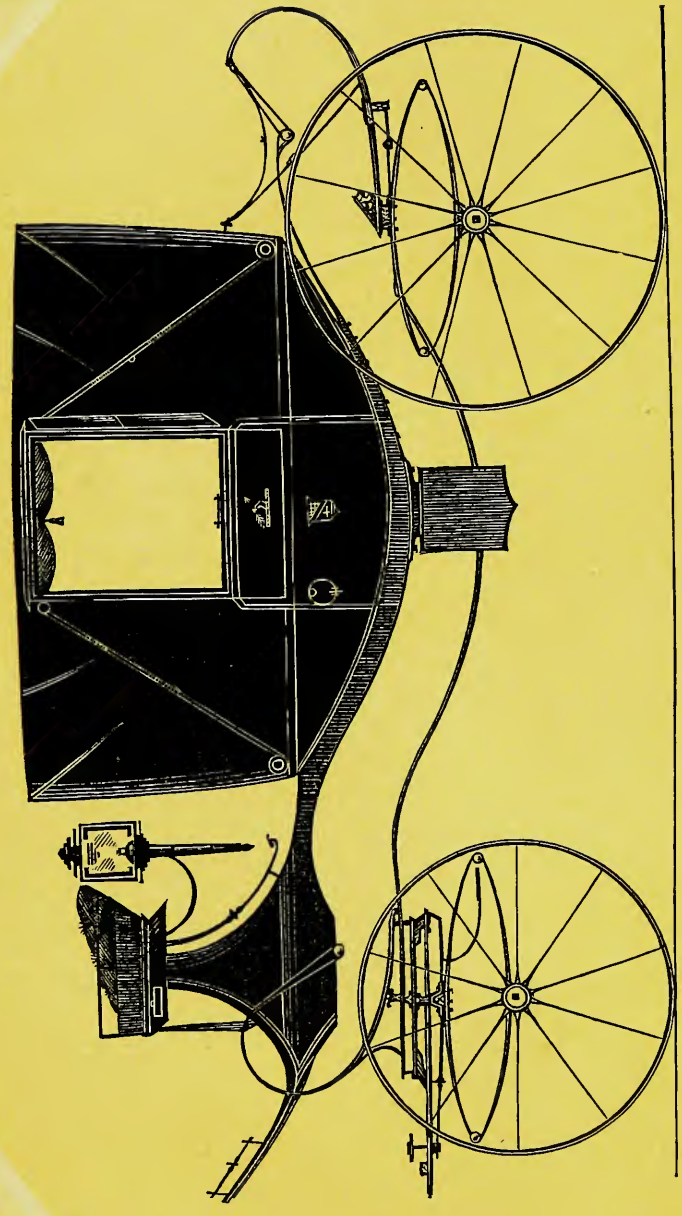
Serious Blunder.—A telegraph operator, who had sent a message to a Norwalk family, to meet an expected visitor, at the depot with the "horse," blunderingly substituted the word "hearse," and on the arrival of the train the visitor found that desired vehicle awaiting to transport him to his destination.

CURRENT PRICES FOR CARRIAGE MATERIALS.

CORRECTED MONTHLY FOR THE NEW YORK COACH-MAKER'S MAGAZINE.

New York, March 20, 1870.

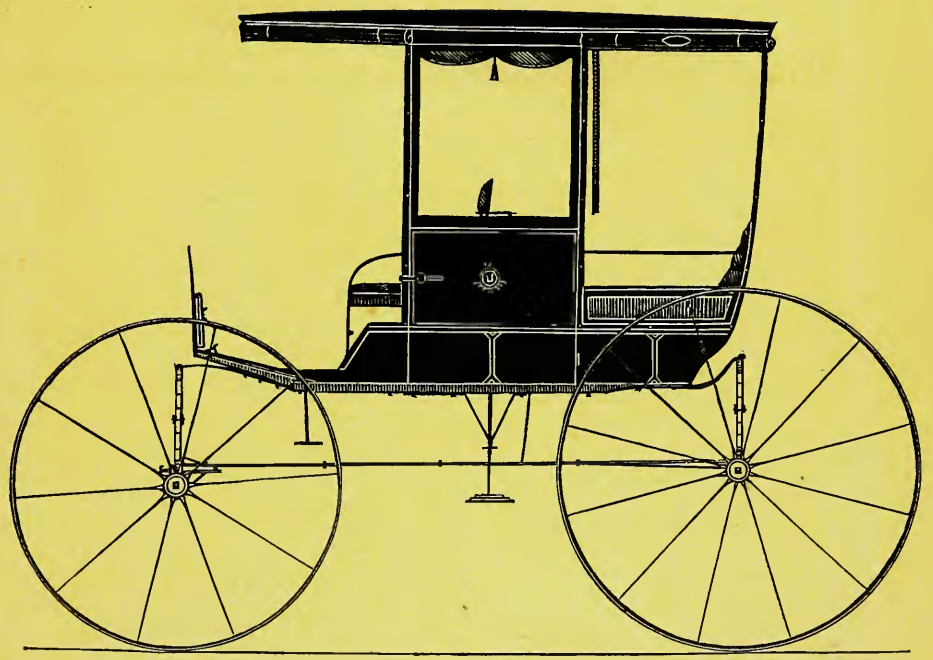
Apron hooks and rings, per gross, $1 *a* $1.50
Axle-clips, according to length, per dozen, 50c. to 80c.
Axles, common (long stock), per lb. 7 c.
Axles, plain taper, 1 in. and under, $5.00; 1⅛, $6.00; 1¼, $7.00; 1⅜, $9.00; 1½, $10.00.
Do. Swelled taper, 1 in. and under, $6.50; 1⅛, $7.00; 1¼, $8.00; 1⅜, $10.00; 1½, $13.00.
Do. Half pat., 1 in. $9; 1⅛, $10; 1¼, $12; 1⅜, $15.00; 1½, $18.00.
Do. do. Homogeneous steel, ⅞ in., $10.00; ¾, $10; ⅞, $11.00; 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. 45 off.
Do. T, per 100, $3 *a* $3.50.
Bows, per set, light, $1.00; heavy, $2.00.
Buckles, per grs. ½ in., $1; ⅝, $1.12; ¾, $1.25; ⅞, $1 75; 1, $2.00.
Buckram, per yard, 16 *a* 20c.
Burlap, per yard, 10 *a* 12c.
Buttons, japanned, per paper, 20c.; per large gross, $2.25.
Carriage-parts, buggy, carved, $4.50 *a* $6.
Carpets, Bruss., $1.75 *a* $2; velvet, $2.50 *a* $3.50; oil-cloth, 40 *a* 70c.
Castings, malleable iron, per lb. 15c.
Chapman rubber, $1.25, 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, $12 *a* $16.
Dashes, buggy, $1.75.
Door-handles, stiff, $1 *a* $3; coach drop, per pair, $3 *a* $4.
Drugget, felt, $1.25.
Enameled cloth, muslin, 5-4, 32c.; 6-4, 50c.
Enameled Drills, 45 in., 45c.; 5-4, 40c.
Do. Ducks, 50 in., 65c.; 5-4, 60c.; 6-4, 80c.
☞ No quotations for other enameled goods.
Felloe plates, wrought, per lb., all sizes, 15 to 18c.
Felloes (Rims), $1.50 *a* $3.
Fifth-wheels, wrought, $1.25 *a* $1.50.
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, 23c.; railing do. 20c.; soft dash, No. 1, 14c.; do., No. 2, 10c.; hard dash, 15c.; split do., 15c.; No. 1, top, 23c.; enameled top, No. 1, 23c., do., No. 2, 20c.; enameled trimming, 20c.; harness, per lb., 50c.; flap, per foot, 25c.
Moss, per bale, 8c. *a* 15c.
Mouldings, plated, per foot, ¼ in. 12c.; ⅜, 13c. *a* 16c.; ½, lead, door, per piece, 30c.
Nails, lining, silver, per paper, 7c.; ivory, per gross, 50c.
Name-plates, $5 for 25, $8 for 50.
Oils, boiled, per gal., $1.20.
Paints. White lead, extra, $12.00, pure, $13.00 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, 40 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, 13c.; bright, 15c.; English (tempered), 18c.; Swedes (tempered), 26c.; 1¼ in., 1c. per lb. extra.
If under 34 in., 2c. per lb. additional.
☞ Two springs for a buggy weigh about 23 lbs. If both 4 plate, 34 to 40 lbs.
Spokes (Best Elizabethport), buggy, ⅞, 1 and 1⅛ 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, 12c.; 1-4 x 1, 12c.; 3-16 x 1 1-8, 13c.; 3-16 x 1, 13c.; 3-16 x 7-8, 14c.; 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.
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., 50c.
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, $5.50.
Yoke-tips, ext. plated, $1.50 pair.



LANDAU.—½ IN. SCALE.

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

Explained on page 168.



ROCKAWAY, WITH TURN-OVER SEAT.—½ IN. SCALE.

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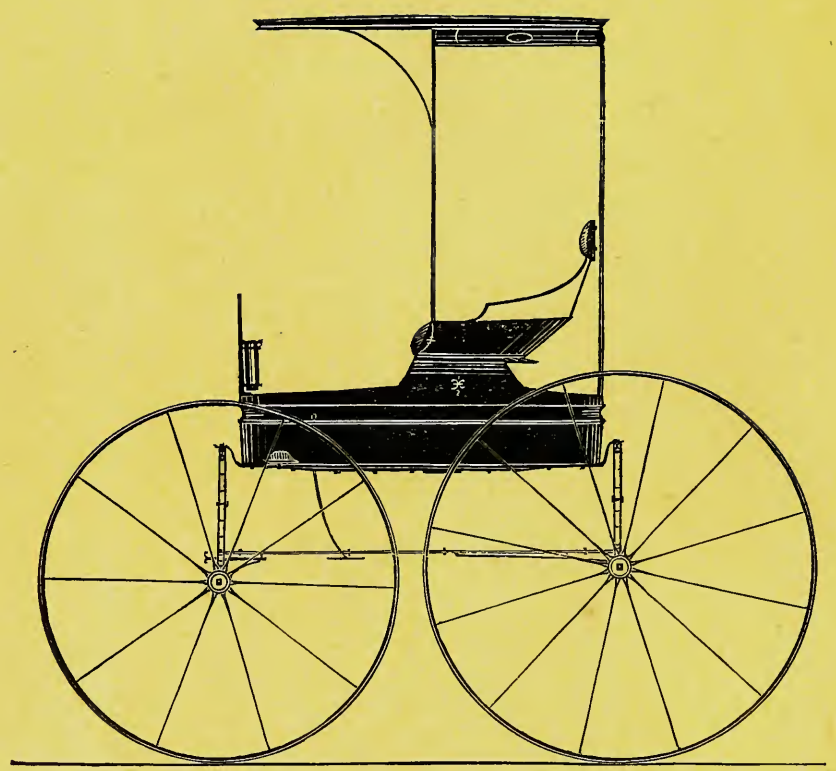
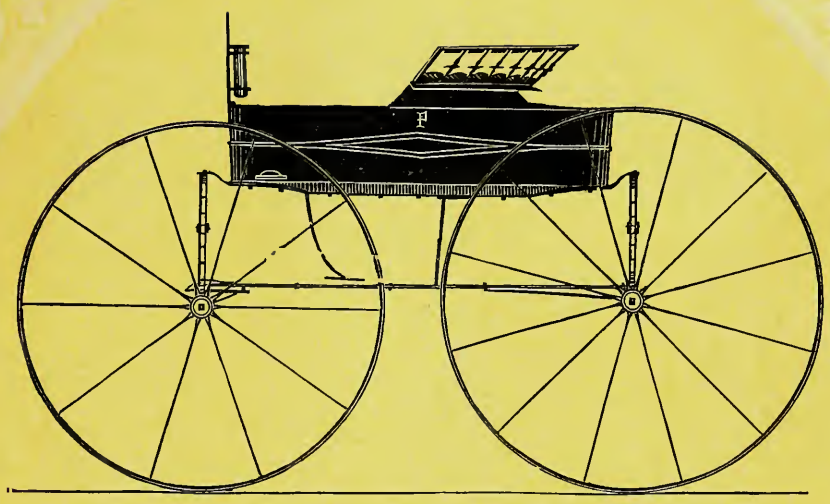
Explained on page 169.



STANDING-TOP PIANO-BOX BUGGY. —½ IN. SCALE.

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

Explained on page 169.



PIANO-BOX ROAD BUGGY.—½ IN. SCALE.

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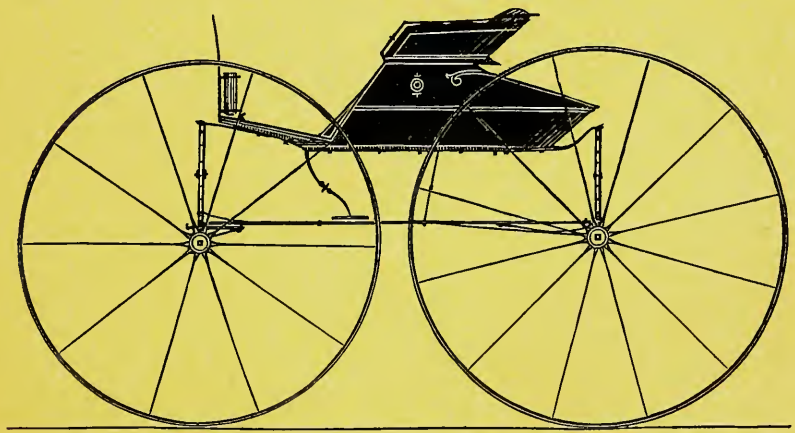
Explained on page 169.



COAL-BOX ROAD BUGGY.—½ IN. SCALE.

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

Explained on page 169.