

Machine vs. Hand-Made Wheels.

A correspondent of the *Carriage Journal* thus writes about wheels. His remarks are valuable to all who own a carriage or a wagon:—

"The question is often asked, which are the best, machine or hand-made wheels? and some persons have published statements as to the durability of those made by hand, claiming for them superior merit over those made by machinery. Now, I am strongly tempted to believe that those who have thus placed themselves on record, have done it through ignorance of the subject they were treating of, or through their own egotism. Machine-made wheels, that is, those made solely by machinery, are a myth, although machinery is used to a considerable extent in their production. The hubs are turned, bored, and mortised by machinery; spokes are turned and rough-toned; fellos are dressed and bored. I do not believe that any of the advocates of the so-called hand-made wheels would be willing to return to the old custom of boring or mortising their hubs, hewing out and rounding the spokes, or, for choice, tenon the ends of the spokes with a hollow auger, or bore the fellos by hand. The only argument that can be made against machine-mortised hubs, is that the mortises are not entirely true at the time when they are placed in the hands of the wheeler. This is, however, no fault of the machine, but is the direct result of the shrinkage of the hub, which, not being fully seasoned at the time of mortising, shrinks irregularly, and as a result the mortises are made to assume a position different from what they had when first mortised. The same would occur to hand-mortised hubs under like circumstances. The true policy would be to mortise just before using, but as this cannot be done where manufacturers purchase hubs of the turners, the next best course to pursue is to true up the mortises when about driving the spokes. The tenons are always fitted to the mortises, whether hand or machine mortised, so that there can be no difference in this respect, and as the number of spokes driven by machinery is too small to merit notice, the process of driving is the same, with the exception of the fact that the chances of the mortises being true are two to one in favor of the machine-mortised hub when the spokes are driven immediately after the mortising. I have driven a set of spokes into machine-mortised hubs when scarcely one out of ten of the spokes, before setting the shoulder, varied one-eighth of an inch from the true gauge, showing conclusively that the tenons and mortises were true. In contrast to this, I have seen advocates of hand-mortised hubs place one foot against the end of the hub, grasp the spoke with the left hand, draw the top of the spoke over an inch or two, and strike the 'home' blow, in order to bring the spoke out to its proper position, or place a lever before or behind the spoke and call upon a fellow-workman to 'send the spoke home.' Now I do not believe a spoke can be treated in this manner without injury to the tenon or mortise, and the wheel be weak and thereby. The true principle of wheel-making is to fit every part accurately, and to use the best timber. If this is done it matters not whether the wheel be hand or machine made. I have noticed that in all cases where the advocate of so-called hand-made wheels cited instances of great durability, the wheels had been used on country roads only. Now the fair test is on city pavements, and I would like to see some of the superior wheels made in a country shop, when the hubs were bored and mortised by hand, and all other work, from the rough to the finished article, done in a like manner, placed upon city streets, for I am satisfied that a test of this kind would silence this class of croakers against progress in manufacturing."

Tubular Harrows.

A new kind of harrow has recently been introduced, and is much in vogue in California at the present time, viz: the tubular harrow. In every respect it resembles and is worked just like the common harrow, but with this difference—what represents our wooden or iron frame is there made entirely of iron tubes. It is claimed for the change that it is stronger than wood, lighter than the ordinary iron harrow, and withstands the ravages of climate better than either. Should the novelty prove what is claimed for it, we should not be at all surprised to see some of our enterprising Canadian manufacturers going into the making of it, for it is undeniable that owing to negligence or carelessness on the part of a majority of our farmers, our implements suffer as much from Canadian climate as from Canadian soil.

Horticulture.

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THE ORCHARD.

The Codling Moth.

At a late meeting of the South Haven, Mich., Pomological Society, reported by Secretary Bidwell for the *Sentinel* of that place, a discussion took place on the codling moth.

Mr. Bailey said the miller was about half an inch long, of a gray ash color, with a brown and bronze colored spot on each wing, the male having short black hairs on the upper part of its back wings. The worm when full grown is about three-fourths of an inch in length, of a pinkish color, with a brown head. He found the miller flying about his house at dusk lately. They flew up and down in a zigzag motion and not sideways. Had frequently noticed that they flew towards the light and could easily be caught by clapping the hands together down and upwards. He thought they came from his apple barrels in his cellar, where they had hatched this winter. Had hatched many out in jars recently. Mr. Chatfield, his neighbor, had found them hatched under cloth bands in his orchard this spring. Mr. Bailey said that the silken cocoons could be still found under the rough bark of the apple tree and in the crevices near the base of the tree. He thought if we all united in destroying them they could be kept under control, and after we had done all we could, we might call in the birds to assist us.

Mr. Harburt said that when the apples were young the eggs were laid in the calyx; the eggs were about one-eighth of an inch in length and nearly white. When the apples were larger they would frequently be stung on the side. By stinging he meant where the worm entered the apple. The eggs must be laid all summer, as the worms could be found at all times under the bands in different stages of development.

Mr. Wigglesworth would recommend the use of tar barrels to catch the millers in.

Advantages of Studying Botany.

The most important advantage realized from knowledge of botany is the pleasure and happiness it gives. It makes us acquainted with the vegetation which surrounds us, the trees, the shrubs and herbaceous plants, and also the grasses which contribute so largely to the wealth and support of mankind in the temperate zone. Having an intimate acquaintance with these, our daily walks or rides in the country are made doubly pleasant and agreeable. The entire country belonging in a measure to the botanist, 'tis his to enjoy and admire; and he often derives more pleasure from it than its owners, because he does not have it to care for or pay taxes on it.

We have known invalids to become perfectly healthy by studying botany and collecting plants. Their walks and rides were pleasant and exciting, and their attention being always drawn to new and pleasing objects, their exercise was not fatiguing. They were looking for something new, and rarely failed to find it, and sometimes it was a rare and beautiful flower.

To the agriculturist and horticulturist a knowledge of botany will give more pleasure than any other science. It is with plants he deals, and the better he understands them the better he can manage them, and the more happiness he can derive from their cultivation. Such a person will be apt to make his home pleasant and its surroundings attractive with rare and beautiful flowers and fine fruits. Such a person has more of the elements of happiness at his command than a Stewart, Vanderbilt or Astor, with their millions; for these last have made the acquisition of money their chief end and aim. Their minds have not been enlarged by scientific studies, and they are strangers to the pleasures which studies afford. The many cares which they have, and which cannot be avoided in the management of such vast estates, render their lives tedious and laborious, much more so than he who has a competency in the country, a good library in a pleasant home, and a scientific knowledge of his surroundings. He sees

"Wisdom in trees, books in the running brooks,
Sermons in stones, and good in everything."

—*Rural Alabamian*.

Uses of the Cherry Tree.

At the Michigan Pomological meeting, Mr. H. S. Chubb paid a tribute to the cherry tree, which, in every position, contributes in some way to the comfort and service of man. "Even the gum which exudes from its wounds is precious for medicinal purposes and makes an excellent mucilage;" its fruit is handsome; is undoubtedly the best that is canned or preserved; for drying, it has "no equal in the whole realm of commerce," its curative properties are universally conceded, and its rich color is the acknowledged standard of beauty on the lips of the most charming of women. Nor is this all. Its timber ranks high; "the household furniture next best to black walnut and mahogany is made of Michigan cherry, and thence transported to all parts of the world; the best printer's furniture is manufactured from Michigan cherry, and distributed from thence wherever civilization has carried the printing press. Cherry, grown wild in the woods of Michigan, is sought for by the manufacturers of school furniture, as the best wood they can find for their purpose. It is easily worked; receives a good polish; has a delightful lively color, and, in contrast with maple and walnut, gives a pleasing variety to decorative cabinet and carpentry work, which of late years have introduced a new charm to dwelling, office, store, railroad car, steamboat, and private carriage. The wood is hard without being coarse or knotty, and its grain, though not prominent, is fine and beautiful." Thankful ought we to be, and proud, that we live in a land and enjoy a climate where this fruit and timber can be grown.

Cutting and Packing Grafts.

Farmers who own small orchards very often wish to procure grafts of better sorts for trees which need regrafting, but not infrequently forget all about securing them till the buds are too much swollen in spring for the successful performance of the work. It is better to cut and secure them now at once, if not already done, and to pack them away neatly and snugly, where they may remain till spring fully opens. They are sometimes thrown aside in a careless manner, and are either withered, or the names of the sorts are lost, or they become promiscuously mixed together. They are tied together neatly and compactly by means of bass or soft cord. The size of these bunches should not be very large, that they may be packed properly for retaining the moisture. Small strips of pine wood, nearly as long as the grafts, are then written with the name, and it is better to write on both sides, so that one name may show readily from the outside, and the other preserve it inside, in case the outer one becomes obliterated. The name will be most durable if written with a pencil on a thin coat of white paint, but they will commonly be sufficiently so if the wood is moistened just before writing with the pencil, and the name will be made darker and plainer if a nearly imperceptible fine grt of the soil is rubbed on when the stick is moistened. If the name is written on dry wood, it will disappear at the first accidental washing. In order to keep the grafts plump and in good condition, they may be packed in boxes in cool cellars, imbedded in damp moss or damp sawdust. Sawdust should not be in large masses, or it will heat, and the boxes holding it should not hold more than a bushel for this reason. Sand or pulverized earth, kept slightly moist, will answer well, but they render the bark more or less gritty, and liable to dull the grafting knife. Care should be observed to have the packing not so wet as to render the grafts water soaked; it is better to have them too dry than too wet, as they easily recover from slight shrivelling, but never from the black decay of water soaking. A temporary mark may be placed on single grafts or small packages by shaving a small surface and writing with a pencil. —*Country Gentleman*.

The Perforating Power of Roots.

It is indeed wonderful how easily the roots of plants and trees bore through hard, impacted soils in search of nourishment. They use for this purpose a sort ofawl, of immense power, situated at the end of the root, and capable, with the aid of the other root machinery, of thrusting aside heavy weights and getting through almost any obstructions. Yet theawl consists only of a mass of microscopic absorbent cells formed by protoplasm or vegetable mucus—the fluid in which vital action is first set up. The roots of the elm and the maple will bore through the hardest soil of walks or streets, enter drains, twine about water pipes, and penetrate through the seams of stone and brick structures. The roots of some plants have been known to pass through 18 inches of solid brick-work