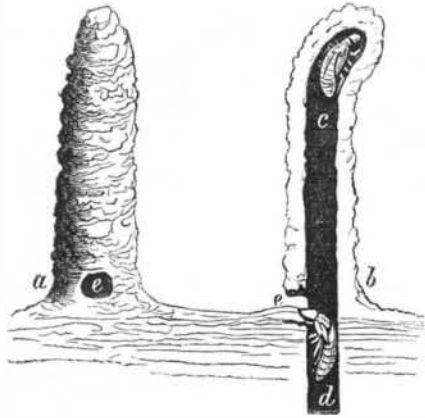


such circumstances, the pupas would continue their galleries from four to six inches above ground (*a*, full view, *b*, sectional view), leaving an orifice, *e*, of egress even with the surface. In the upper end of these chambers the pupas, *c*, would be found awaiting their approaching time of change. They would then back down to below the level of the earth, as at *d*, and issuing forth from the orifice, would attach themselves to the first object at hand, and undergo their transformations in the same manner."



Mr. Rathvon kindly furnished us with one of these elevated chambers, from which the above drawings were taken. It measured about four inches in length, with a diameter on the inside of five-eighths of an inch, and on the outside of about one and a quarter inches. It was slightly bent at the top and sufficiently hard to carry through the mail without breaking. It bore a great resemblance to the tube of the mason bee, but the inside was less smooth and covered with the imprints of the spines with which the fore legs of the builder are armed. In a field that was being plowed, about the time of their ascent, we found that single, straight, or bent chambers were the most common, though there were sometimes several branching near the surface from a main chamber below, each of the branches containing pupa. The same observations have been made by other parties.

When ready to transform they invariably attach themselves to some object, and, after the fly has evolved, the pupa skin is left still adhering. The operation of emerging from the pupa most generally takes place between the hours of 6 and 9 P. M.; and ten minutes after the pupa skin bursts on the back, the cicada will have entirely freed itself from it. Immediately after leaving the pupa skin, the body is soft and white, with the exception of a black patch on the prothorax. The wings are developed in less than an hour, but the natural colors of the body are not acquired till several hours have elapsed. These recently developed cicadas are somewhat dull for a day or so after transforming, but soon become more active, both in flight and song, as their muscles harden. For those who are not informed of the fact, we will state that the males alone are capable of "singing," and that they are true ventriloquists, their rattling noise being produced by a system of muscles in the lower part of the body, which work on drums under the wings.

Upon leaving the ground to transform, the pupas are attacked by different quadrupeds, by birds, by cannibal insects, such as ground-beetles, dragon-flies, soldier-bugs, etc.; while hogs and poultry of all kinds greedily feast upon them. In the perfect fly state they are attacked by at least one insect parasite; for dipterous maggots may occasionally be found in their bodies. In this state they are also often attacked by a peculiar fungus. One of our correspondents, Dr. W. D. Hartman, of Westchester, Pa., speaking of the occurrence of this fungus in 1851, says: "The posterior part of the abdomen, in a large number of male locusts, was filled by a greenish fungus. * * * The abdomen of the infected males was unusually inflated, dry, and brittle, and totally dead while the insect was yet flying about. Upon breaking off the hind part of the abdomen, the dust-like spores would fly as from a small puff-ball."

The injury to fruit trees, which the female causes by her punctures, is often quite serious. This is especially the case in a young orchard or in a nursery. When the wind is high the cicadas may, with its aid, be driven to some extent, but without the aid of the wind they cannot be driven at all; as when you start them they are just as likely to fly behind as before you. Indeed, when they are once in the fly state, and as numerous as we have seen them the past season, we are obliged to confess, after experiments involving about \$200, that there is no available way of preventing their ruinous work. While in their feeble and helpless condition, however, as they leave the ground, they can be destroyed with but little trouble.

In the year 1863, and at intervals of seventeen years thereafter, they will probably appear in the valley of the Connecticut river. According to Dr. Asa Fitch, they appeared there in 1818 and 1835; although, strange to say, there seems to be no record of their having appeared there in 1852. Hence, this may be considered as a somewhat problematical brood.

In the year 1870, and at intervals of seventeen years thereafter, they will, in all probability, appear in what is known as the "Kreitz Creek Valley" in York county, Pa. This brood appears to be quite local.

In the year 1871, and at intervals of seventeen years thereafter, they will in all probability appear around the head of Lake Michigan, extending as far east as the middle of the State of Michigan, and west an unknown distance into Iowa. Also in Walworth county and other portions of southern Wisconsin, and southward into Illinois.

They will also appear in the same years in the southeast by

eastern part of Lancaster county, Pa., in what is called the "Pequea Valley," having appeared there in vast numbers in 1854.—*American Entomologist.*

VELOCIPEDE SUMMARY.

The *English Mechanic and Mirror of Science*, gives an engraving and a description of a velocipede used in the last century by M. Richard, a physician of Rochelle, France, which is a singular affair. It is a four-wheeled vehicle, the two hinder ones being the drivers. It has a canopy to protect the rider from sun and rain, and a box for a footman behind the canopy. The footman was a footman indeed, as well as in name, and his office was no sinecure. While the doctor reclined at his ease and steered the vehicle by means of two cords attached to the opposite ends of a lever on the forward wheels like that used on the modern machine, the footman propelled the vehicle by means of treadles acting by pawls upon ratchet wheels attached to the hinder axle.

A correspondent of the same journal suggests the use of sails as an assistance in propelling velocipedes. It is well known that sails have been used with considerable success in propelling land vehicles and ice boats, and it is not improbable that an application of a small sail to the bicycle could be made that would materially aid in its propulsion. When a lad, we used to amuse ourself by using a hemlock bough as a sail when skating, and have found that we could thus make very considerable progress without using the legs as motors. A sail, having an area of from nine to sixteen square feet, would, with the wind well aft, give a propelling force sufficient to drive a velocipede on a smooth and level road, and would prove a great assistance in ascending a grade. A wind blowing at the rate of twenty-five miles an hour, which is only a brisk wind, would give a tractive force of nearly fifty pounds upon a sail four feet square.

The same journal also gives an account of some water velocipedes, which we think are inferior to some invented in this country. We have an engraving of a water velocipede in preparation, which will in due time be laid before our readers.

With the approach of the season for tours in rural districts by artists and sportsmen, considerable attention is being paid to accessories for velocipedes. Those which seem to have occupied the thoughts of foreign inventors most, are valises, lanterns, oil bottles, velocipede covers, supporters, and reckoners. These articles form quite a staple in the foreign patent business, but as yet very few applications in this field have been made in the United States. During the summer months there will be a demand for all articles of this kind, and inventors will do well to anticipate it.

The Prince Imperial of France has ordered twelve velocipedes, for the use of himself and friends. He is said to be passionately fond of the sport. In other parts of Europe, England in particular, the use of velocipedes is rapidly increasing.

We have been shown an ingenious model, calculated to adapt the velocipede to snow travel, the particulars of which we are not at liberty to publish. The same principle, if it proves successful, may be applied to velocipedes designed to be used on large and level tracts of loose sand.

There seems to be a fertility in invention in this field altogether surprising, and which is alone sufficient to guarantee the non-ephemeral character of the favor in which it is now held.



We herewith give a cut of a velocipede made in 1823, at Norfolk, Conn., and a communication in regard to it.

"In a small New England village, about the year 1823, a cute Yankee boy 'might have been seen' (as G. P. R. James used to say), in fact, was seen tearing round on a VELOCIPEDE of his own construction, to the astonishment of the villagers and his own great delectation. The 'machine' was of rather a rude construction, as shown in the above cut, the wheels being of boards nailed together crisscross, and the frame of such 'stuff' as a farmer's woodpile could furnish; but it would 'go like fun.' In principle, and even in form, it was identical with the present bicycle, the crank being omitted, and on which some one, more witty than wise, claims a patent. There were the two wheels, tandem; the forward one 'axled in the jaws of a depending bar, pivoted in the frame and turned by a horizontal lever bar;' and it is presumed to have been constructed after a 'description' in some 'printed publication,' boys in those days not being thought adequate to the invention of anything! It was propelled by the toes (not the flat foot) lightly touching the ground; and, though not as 'fast' as the crank-y concerns of the present hour, did very well for a little village and a country boy.

"That village was Norfolk, Litchfield county, Conn.; and the boy (an old boy now), your correspondent and admiring reader."

I. I. PEASE.

Stockbridge, Mass.

Another correspondent from Indianapolis, writing under

date of Feb. 16, states that our weekly velocipede summary excites much attention and interest in that city, and gives us some items of interest. He says that perhaps no city has caught the fever more readily than Indianapolis. "As soon as velocipedes could be built they were eagerly bought up by our young men, who soon became more or less skilled in riding; and in order to test the adaptability of the machines to travel on common roads, a party has been formed to make a trip to Richmond, in this State, as soon as the roads are in good order, so that the cry among velocipedists now is 'On to Richmond.'"

"Last evening, at the rink, a race for a silver cup was announced to take place between some professional riders and those of our young men who chose to enter the lists. After strong efforts, on the part of the professionals, to agree upon a distance of three times round the floor, it was decided to make it eleven times round, which is equal to a mile, and each one to run separately against time. Without specifying the performance of each of the ten riders, I will speak of the victor—a young gent of this city, who exhibited the most perfect control of his machine, riding with equal elegance and precision either with or without using his hands. He made the mile in three minutes and six seconds, which, as far as I have seen, is the best time yet made on occasions of this kind. The size of the wheels is thirty-six inches front and thirty inches back. The excitement of the great crowd of spectators was intense, as with perfect coolness and unerring regularity he made his rounds, apparently sans effort, in an average of less than seventeen seconds."

This correspondent also makes some good suggestions in regard to the construction of velocipedes which we omit, as they have been for the most part anticipated in our columns.

The *Velocipedist*, speaking of the expense entailed in the use of velocipedes, says:

"The two-wheeled velocipede is the animal which costs but little to purchase, and still less to keep. It does not, like one Zedechias mentioned by an old historian, eat cart loads of hay, with carts, horses, and drivers as a relish, just to amuse Louis le Debonnaire, or any other sovereign. It does not, like Jeshu run, wax fat and kick. It is easy to handle. It never 'rares up.' It won't bite. It needs no check rein or halter, or any unnatural restraint. It is light and little; let alone, it will lean lovingly against the nearest support. It never flies off at a tangent unless badly managed, and under no circumstances will it shy at anything. It is not ludicrous, like the young mule, nor does it, like the Morgan colt, cut up in a ridiculously corybantic manner, nor does it in other ways disgrace the memory of its inventor. In its movements it is all grace. Its one gait is so uniform and easy and beautiful to look at, and simple to analyze, that it would be a shame to speak of a trot in the same breath. When its driver driveth furiously, even as did Jehu, the son of Nimshi, then there may be danger to him who obstructs the way, and will not make room for the flying steed. But otherwise not. When we have nationalized the stranger, do not let us forget his origin, but where many smooth roads meet, erect to his memory, and in honor of the inventor, a brave monument like that which surmounts the grave of him who first gave us pickles, and taught the world how to cure and barrel the bony herring. Let it not be said that the maker of the first bicycle went unrewarded by the descendants of that posterity who forgot Ctesibius, the first organ builder, or him who introduced the gridiron, or yet those other anonymous benefactors to whom we owe the benefits and blessings derived from the use of door knobs and buttons."

An exciting race took place very recently in the Horticultural Velocipede Academy, in Boston. It was both a fast and slow race.

The slow race was introduced first, there being about six entries, for a purse of \$500, to be awarded to the rider making the circuit of the hall three times in the longest time, each contestant, in case of making a "foul," to have the second trial. The race lasted about an hour and a half, the following time being made: Mr. Geo. Marsh (the winner), 4.02; Mr. Hamblin, of East Boston, 3.54; Mr. Goddard, 3.34; Mr. Clark, 3.23; Mr. Sandford, 3.18; Mr. Gardner, 3.13.

The second or fast race was a match for a purse of \$100, distance one mile or twenty-four times around the hall, between Mr. Clark, of Chelsea, and Mr. Hamblin, of East Boston, both riders to start at the same time from opposite sides of the hall. After some falls, and amidst vociferous cheering, Mr. Hamblin was declared the winner in 4.52.

A word of advice to the proprietors and conductors of velocipede halls. The congregation of "roughs" and rude boys at some of these places, is a serious drawback to the amusement of those who pay for their amusement. The interests of all concerned, and the prosperity of these popular resorts, will be consulted by the exclusion of such characters, by proper regulations.

INTERNATIONAL EXHIBITION OF HOUSEHOLD ARTICLES.—It is announced that information has been received at the Department of State, that the Society for the Encouragement of Manufactures and Mechanical Industry in the Netherlands, proposes to arrange an International Exhibition of articles for daily household use, at Utrecht, in the months of August and September, 1869. The principal object of this exhibition is to bring to the knowledge of the workman such articles of industry of different countries, at a low price, as may combine usefulness with durability, so that he may be enabled by judicious economy to improve his condition.

A RECORD of seventy-five boiler explosions in England shows that twelve were in mines and eleven in iron and engineering works.