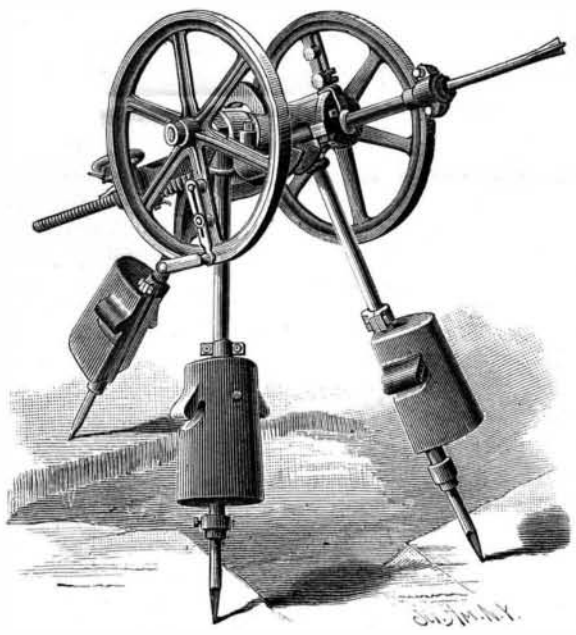
A Timber Worm.

A correspondent of the *N. W. Lumberman* says: It is not generally known, yet a fact, that extensive and valuable forests of yellow pine in the Southern States are destroyed by a worm, commonly called here at the South a "sawyer," or flat head. It is the opinion of a majority of the people in the South that the worm follows the death of the yellow pine, but close investigation has proved that although they never attack a forest or body of timber without first having a dead tree to start upon, they do not adhere to the rule after once getting a start. For instance, should a tree from any cause be felled or lodged against other timber, where the two are standing very close together, the worm will enter the adjacent timber though it be green and alive, and in this



HAND POWER ROCK DRILL

manner continue to spread till the entire forest is destroyed. Indeed, I have known instances where only a small sapling lodged against other timber caused considerable injury to the timber by souring, and thus attracting the parent worm or saw fly, and after accomplishing their work on the sapling they lose no time in removing their forces and attacking any of the timber that may be next closest; and in this way continue to spread until vast forests are denuded of their timber.

The parent fly, or rather bug, is one and a half inches long, and of an iron gray color. It has two feelers, or indicators, projecting from the head, from two to two and a half inches long, about the size of a very coarse horse hair. They are also provided with two teeth, operated by them similar to a pair of pincers, which are used in cutting through the pine bark to deposit their eggs. They attack the trunk of the tree first, and at any time during the summer season, but they seem to be more numerous and destructive during the months of June and July. The bug begins by eating numerous small holes through the bark, and very dexterously it deposits from four to six eggs in the edge of the sap, at the bottom of the hole thus made. From two to three days after the eggs are deposited in the sap, they hatch, and produce a worm one-fourth of an inch long, which immediately begins eating the sap, and steadily continues until the sap of the entire tree is consumed. A full grown worm is one and a half inches long, and is at any age a clear white color, excepting the head, which is dark red. They have no legs, but are seemingly jointed, and perfectly powerless to get about or travel, unless they are in their hole, where they utilize those joints to answer them the purpose of legs, and travel with astonishing rapidity.

As the worms become full grown, and the sap scarce, they enter the sappy portion of the timber, and cutting and forming a hole as they go of sufficient size to admit them, they thus wind about through it, and render it worthless, even before it has been damaged by decay. So prevalent and sure are they in the summer months, that the mill men of the South dare not keep a supply of logs longer than a few weeks in advance, unless they are provided with a boom or body of water of some sort to place them in, which is the only means of effectually preventing the logs from being eaten.

Vibration of Bridges.

At a recent meeting, in this city, of the American Society of Civil Engineers, a paper by James L. Randolph, member of the society, and Chief Engineer Baltimore and Ohio Railroad, upon "Vibration, or the Effect of Passing Trains on Iron Bridges, Masonry, and other Structures," was read. Mr. Randolph refers to the fact that double track bridges are moved in the direction of passing trains, and are consequently twisted, and strains are produced not provided for. Also that cattle-stops and open culverts, where built of rubble work, have the walls shaken to pieces by vibration.

The remedy he has supplied for these culverts and stops has been to build them of large stone as nearly the same size as possible. The tall, thin bridge piers and abutments on which iron bridges rest have their stones so much disarranged by vibration as to make it necessary to secure them with timber and iron straps. Iron bridges resting on stone pedestals vibrate in this manner, and receive a return blow from the vibration of the pedestal, particularly if the pedestal is a light structure; but as the iron and the stone do not vibrate in the same period, there must be times when the result is a movement in the direction of the force. The effect of this vibration has been particularly noticeable at the Harper's Ferry bridge, where there was a movement of four inches in four years. After the insertion of planks between the stone and iron, this movement ceased. Where the masonry of piers has a platform of timber between its foundation and solid rock no displacement of stone has been noticed. Mr. Randolph contends that a monolith would be the best support for structures subject to vibration caused by strains, but that a monolith of the specific gravity of granite would give a damaging return blow. Timber would answer the purpose, but is perishable. The material which, in his opinion, is most serviceable is an artificial stone which is about two-thirds the weight of granite, is compact, durable, and with very little elasticity.

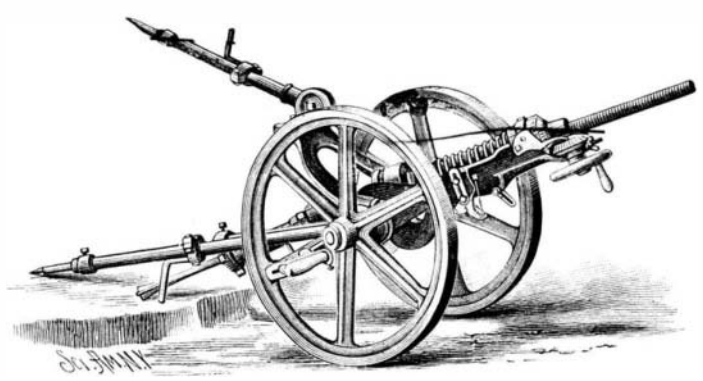
The English Skylark in America.

Two years ago eighty-four English skylarks were imported and loosed in Bergen County, New Jersey. This was in the spring, and it was ascertained afterward that about fifty of them paired and remained not far from where they first beat the free air of America with their wings. The lark is not a migratory bird, and it was feared that our northern winters would prove too severe for them, but during the next summer they were heard in Bergen and Passaic Counties. This, the third summer of their liberty, shows yet stronger proofs of their naturalization and ability to breed here. They have been heard in more places.

The New York *Sun* says that "one thing said to be much in favor of the increase of the lark in this country is its hardiness. It can endure cold and heat. It takes a long range of distribution, from the south of Europe as far north as Norway and Lapland, and American ornithologists lay claim to it as an American bird, from its being occasionally found in Greenland and in the Bermudas. Vigilance, it is thought, may be required to protect them from enemies, and to discover what are their worst enemies. From the fact that skylarks increase most rapidly in highly cultivated grounds, it is inferred that man is not his worst enemy, although large numbers are destroyed by man. As it sleeps and nests on the earth, it is thought probable that its worst enemies are small animals, such as minks, weasels, and skunks."

NEW HAND POWER ROCK DRILL.

This machine is designed to be run by two men, and it is so simple in its construction that any one, by a few minutes' observation, may fully understand how to operate it. The drill is self-contained, and can be moved as may be wanted from the tripod to a column, in a few minutes. It swings from a central bearing into any desired position. By revolving the balance wheels, the double cams come under a tappet on the drill bar, raising it five inches, twice every revolution of the wheels, at the same time compressing the spring to a pressure of about 400 lb., the pressure being variable at pleasure. The drill is rotated to round the hole as it moves back and forth, by ingenious and simple mechanism. The forward motion of the drill is regulated by an automatic feed-screw as the rock is cut away, the advance of the bar being more or less rapid, as, by the variation in the nature of the rock, the cutting is fast or slow. When the drill bar has been fed forward the entire length of the feed-screw, it may be easily run back and a longer drill attached. The feed-screw feeds 18 inches before changing drill points. The rotation of the drill can be varied, so as to cut 12ths or 16ths, according to the nature of the rock, and the regular rotation of the drill insures the delivery of each blow, so that each wing of the drill point strikes the rock just far enough in advance of the cut of the preceding blow to chip away the rock lying between.



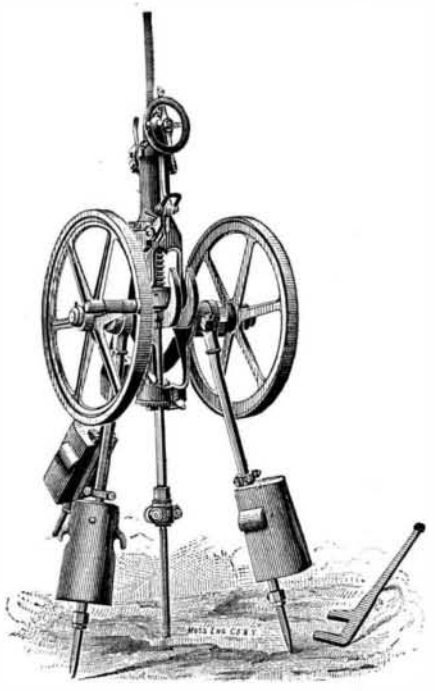
HAND POWER ROCK DRILL.

As the chip yields, the drill point is allowed to react, saving the wings and edge of the drill point; and the cut from one blow is forced out of the hole when the drill descends for the next, thereby cutting the rock clean at each blow. By this arrangement the drill point may be advanced very much farther in the rock, without sharpening, than in hand drilling.

For quarrying, or any surface work, the drill is mounted on a tripod, having all the adjustibility required to adapt it to uneven surfaces, and it may be swung to any required angle.

For cutting marble, slate, or granite, it is often desirable to avoid blasting, and the consequent breaking of the rock. For this purpose this machine is invaluable, as holes from one to two inches in diameter can be drilled in a row two inches apart, then the connection between them broken out by simply taking off the rotating ratchet, and attaching a flat bar of steel in place of the drill point.

With these drills holes can be drilled from three-fourths of an inch to six inches in diameter, and to any depth. We are informed that in granite, one and one-fourth inch holes can be drilled at the rate of from one and a half to two and a half inches per minute.



HAND POWER ROCK DRILL.

The Biddeford *Journal*, of June 22, says: Twelve men, including Mayor Staples and Street Commissioner Strout, stood for an hour in the drizzling rain at Bragdon's granite quarry, Wednesday forenoon, watching the Champion Rock Drill bore its way through a ledge of solid granite. The drill is constructed of malleable iron and steel, stands about five feet high on three supporting iron legs, and is propelled by hand power. The principle is the same as that of a steam drill, cam and spiral spring, is simply constructed, and easily understood. There are three sets of springs, the lightest storing about 275 pounds of power, and the heaviest 475 pounds. By compressing these springs, however, 100 pounds additional power is obtained.

The exhibition was in every way a success, the drill doing all that was claimed for it.

The New England Rock Drill Company, Auburn, Me., are the manufacturers of this drill.

Wire Railway.

The following description has been given of a wire railway in connection with the coal mining industry established near the Hersteigg, the products of which it brings to the main line belonging to the Southern Railway of Austria. In its alternating rise and fall during its distance of 3,000 yards there is a useful excess of incline of about 142 yards, which, it is said, suffices to keep the line in self-acting working, after it has been started by means of the twelve horse power engine provided for that purpose. When there is no return load to be sent to the mine, the speed of the train can be regulated by a brake. Under these circumstances the cost of working the line is estimated at about 5½ cents per ton of coal. In its general arrangement the railway forms a straight line, and consists of two drawing ropes and the train. The line which is used for conveying the coal to the station is 1·10 inches thick, and is composed of nineteen steel wires, each 0·18 inch in diameter. The line on which the coal vessels are returned to the mine is only 0·66 inch thick, the nineteen steel wires of which it is composed being only 0·13 inch thick.

Both ropes consist of wires about 765 yards long, coupled to each other, and for the ropes a breaking strength of 73 tons per square inch section is guaranteed. At the ends of the ropes weights of five tons and three tons are applied in the usual way for obtaining the proper tension. The distance between the seventeen supports varies from 60 to 400 yards. The train rope is 0·6 inch thick, and consists of twelve soft steel wires of 0·07 inch in diameter, and runs at a speed of about 1⅝ yards per second. The vessels which convey the coal follow each at a distance of about 83 yards. Thus thirty-six are always on the way to and the same number coming from the station. Each vessel contains about ten bushels or about a quarter of a ton of brown coal, the total quantity carried per hour being about 17½ tons. The cost of the line was about £5,000.—*Engineer.*

THE fig is said to be a sure crop in most of the Southern States. The cost of cultivation is trifling.