

for exportation, the fruit is pressed flat between two cylinders covered with India-rubber, and then packed into cases by a special machine, called a "packer." Many dealers still perform this operation in the primitive manner of foot-pressure. Bordeaux is the principal centre of their industry, which is yearly increasing.

Besides the large amount of prunes exported to European countries by rail, there are, says Consul Roosevelt, about one hundred vessels annually leaving the port of Bordeaux loaded with this produce. In the beginning of the prune-industry, many devices were employed for their proper conservation. The first ovens were very primitive, and the work of preparing the fruit for market laborious. At present there are many different kinds of ovens in use, possessing more or less distinct features, but almost the same in general principles. The most generally used are the Bournel and

We also give a view taken from a photo of the Asheville, N.C., Electric Railway.

Asheville is a flourishing mountain town, noted throughout this country as a health-resort; and it is characteristic of such a town and its enterprise that it now has an electric railway, first-class in all particulars, which gives the people perfect and comfortable means of transit to the depots and hotels, and replaces the old springless hacks and primitive omnibuses.

The picture shown is from a photo taken shortly after the opening of the road, and represents three of the Sprague electric cars turning a corner into the main street of Asheville, N.C.; and it is an interesting feature to notice that it is difficult to discern the overhead system at all, on account of the smallness of the wires.

Besides an equipment of passenger street-cars, this electric rail-



ELECTRIC RAILWAY AT STEUBENVILLE, O., CAR PASSING UNDER RAILROAD-BRIDGE.

the Marletean ovens. The only ovens in use are of French manufacture.

#### SOME NEW ELECTRIC RAILWAYS.

THE accompanying engraving is from a photograph representing one of the Sprague electric cars in operation at Steubenville, O., passing under a railroad-bridge on the route of the road. The picture gives a very good idea of the wide range of movement of the trolley-arm, which can reach from 12 to 14 feet above the car, to less than 1 foot, when the location of overhead wire demands such a wide change. The kind of trolley-pole used upon this road is light and unobtrusive, consisting of a light, hollow iron rod carried on top of the car, and supported from the car by a stout steel spring, which allows it to move in every direction necessary.

The equipment of this road includes the regular Sprague system of overhead wiring, with main and working conductor running parallel, connected at intervals of every 100 to 200 feet. The road has been a success from the start, and has been visited by many street-railway managers from Ohio, Indiana, Kentucky, and western Pennsylvania.

way also possesses several freight-cars, also operated by electric motors of the Sprague type; and, as this road connects the depot of the North Carolina Railroad with the city of Asheville, these freight-cars have proved a convenience and a source of income.

#### THE SUBMARINE BOAT "GYMNOTE."

WE have already given some details of the "Gymnote;" but the following, taken from *Industries*, gives some additional information as to her construction. After the first trials of the "Gymnote," it was found that various details required modification, but on the whole the trials were satisfactory; and, now that the improvements which the first trials indicated to be necessary have been made, the French Government have accepted the "Gymnote" as the standard type of submarine vessel for offensive purposes. The hull is spindle-shaped, 6 feet in diameter by 56 feet long, provided with horizontal and vertical rudders, and with a cylindrical conning-tower of somewhat novel design. The conning-tower consists of a fixed tube, within which slides a second tube, carrying at its upper end a mirror inclined at an angle of forty-five de-

grees. When the inner tube is pushed right out, and the boat is floating near the surface, only the top of the telescope tube need be above the water; and the captain, standing within the boat, by glancing upward, can see in the mirror what is going on in front of him, or, for the matter of that, all around him, if the inner tube be revolved. By means of this ingenious application of a telescopic conning-tower with a mirror, the size of that part of the vessel which must project above the water-level to permit of an observation being taken, has been much reduced, as compared with the old plan of making the conning-tower large enough for the captain's head and shoulders to enter. In the stem of the vessel is fixed the torpedo-launching tube, and in the stern the electric motor by which the propeller is driven. There are various water-ballast tanks by which the vessel is trimmed, and access to the in-

distance that the boat could travel with one charge would be about 120 knots.

While the "Gymnote" is a boat mainly intended for the discharge of torpedoes against the enemy's ships, a second and much smaller submarine boat is now being built, the mission of which will be to render the enemy's submarine mines harmless by cutting their cables. This boat is also spindle-shaped, but only 15 feet long by 5 feet 3 inches in diameter, and will have a crew of two men only, whereas the crew of the "Gymnote" is from six to eight men. As the cubic capacity of this boat is comparatively small, compressed oxygen is to be carried as part of the equipment. The boat is to be provided with powerful scissors, working from inside, by means of which it is intended to cut the electric cables of the submarine mines. The screw is mounted on a swivel-shaft to fa-



VIEW OF ELECTRIC ROAD AT ASHEVILLE, N.C.

terior is afforded by a man-hole a little forward of the conning-tower. The power for working this vessel is derived from a battery of 564 Commelin & Demazures alkaline accumulators, weighing, in working order, close upon 10 tons. A compound switch is provided by means of which the battery can be differently grouped; the combinations being 12 cells parallel and 47 in series for very slow speed, 6 in parallel and 94 in series for slow speed, 4 parallel and 141 in series for ordinary travelling speed, and 2 parallel and 282 in series for fast speed. The weight of the battery per horse-power is 83 pounds. The electric motor works the propeller direct without the intervention of any speed-reducing gear, and has been specially designed for this purpose by Capt. Krebs. It is a sixteen-pole disk machine, weighing 2 tons, and developing 52 horse-power at a speed of only 280 revolutions a minute. The armature is 40 inches in diameter, and the winding is such as to require only four brushes. The resistance of the machine is .16 of an ohm. At full speed, the motor is sufficiently powerful to propel the boat at a speed of 9 to 10 knots per hour; the capacity of the battery being said to correspond, under this condition, to about four and a half hours of work, which would take the boat over a total distance of 40 to 45 knots. At a speed of 6 knots an hour, the total

cilitate the manœuvring, and is worked by an electric motor driven by a battery of Schanscheiff primary cells. The boat is lighted by five small glow-lamps; and a small arc-lamp with a projector is also provided, the beams of light from which can be thrown forward through glass lenses fixed in the hull, so as to illuminate the water for a certain distance ahead, and thus make the work possible for which this boat is especially intended.

If this country is going to rely to a great extent on torpedoes as a coast defence, the recent improvements in submarine boats cannot but be of great interest to Americans. Congress recently appropriated a considerable sum for the construction of such a vessel, and, although nothing definite is known about the plans that will be adopted, yet it is understood that electricity will not be the motive power.

#### NATURAL GAS IN OHIO IN 1888.

A LATE number of the *American Manufacturer* has a careful review of the natural-gas situation in Ohio, by Professor Edward Orton, the State geologist, who says in effect that no important discoveries have been made in Ohio during the year 1888, though a