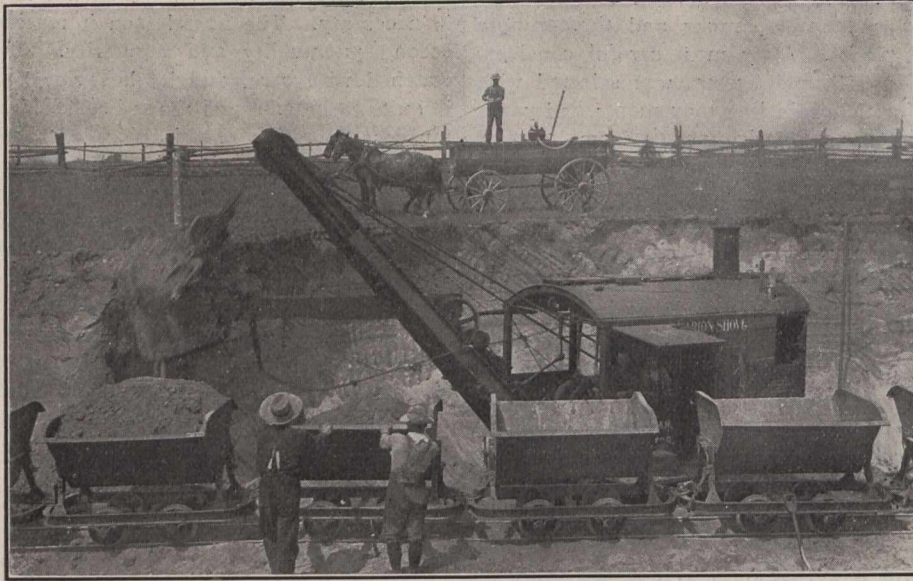


Where the cut was very large and the haul long, steam shovels were put in, and the accompanying illustration shows a Marion Shovel, Model No. 30, at work in a said cut. This is a 25-ton shovel with a  $\frac{3}{4}$ -yard dipper, working in conjunc-

The Marion "Improved Model 'A'" shown in this illustration has a  $1\frac{3}{4}$ -yard dipper, and loads from 100 to 125 three-yard cars per day, the material being sand and gravel. The maximum haul is 1,400 feet and the cars, which are of

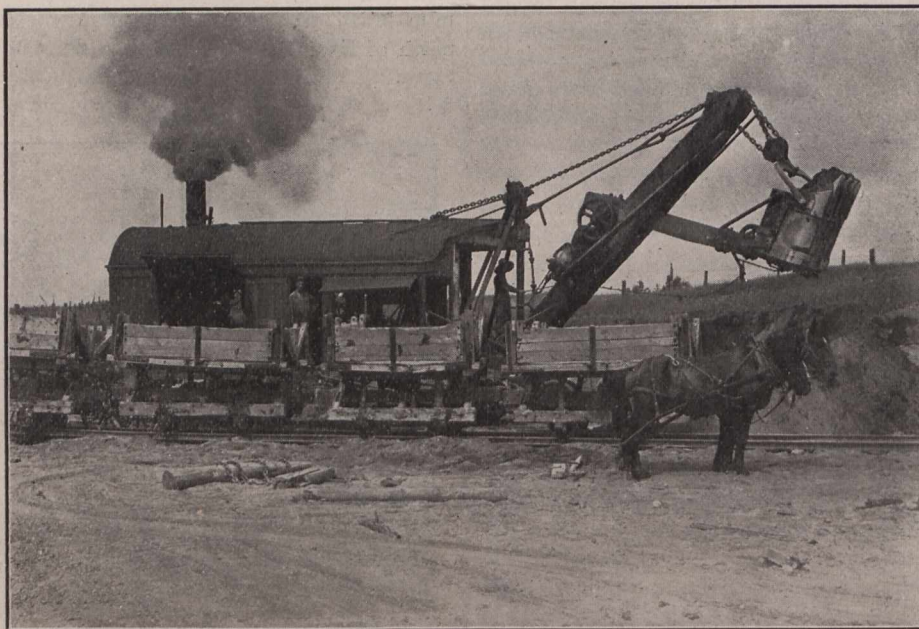


**Fig. 2.**  
**Steam Shovel in Cut.**

tion with  $1\frac{1}{2}$ -yard Koppell steel hopper cars. These cars are being operated on 20-pound steel, and the average output per 10-hour day is 30 to 35 trains of ten cars each, the maximum haul being 2,500 feet. These cars dump easily, clean well, and with good usage continue long in service; but when damaged are not so easily repaired in the construction

the side-dump wooden variety are spotted at the shovel with a team, which hauls them to the mouth of the cut, where they are attached to a steel cable, operated from a stationary hoist, shewn in photo No. 4.

These cars run on 60-pound track, 36-in. gauge, and the force consists of engineer, cranesman, fireman, two lab-



**Fig. 3.**  
**Marion Steam Shovel Filling Cars.**

camp as wooden ones. The fill (60,000 cubic yards) on which they are working, is being built up in lifts of ten feet.

The force engaged on this work is: On the shovel—engineer, fireman, two laborers, man and horse spotting, and man and team drawing water; on the dump—foreman, man and team, four men levelling or when lifting track, seven.

ers, together with two teams and teamsters. One engineer handles the stationary engine, one brakesman the cable, and the dump requires five men and a foreman.

For the first time in railroad construction corrugated metal pipe (shewn in photo 1) was put in for the smaller culverts, while concrete arches or flat tops were used in the