Steel cars holding ¾ to 1½ tons of rock and with the wheels running loose on the axles are generally used, but if much wet gritty stuff is being carried out, that, dripping down, quickly cuts the axle-bearings. This rapid and very harmful deterioration can be checked by putting on self-oiling wheels that are now made in a simple manner to protect such bearings. As the bottom of the car-box is the first place to wear out from the constant fall of rock and this is an awkward place to patch or renew, the blacksmith should fit in the new car a false bottom of 1 inch pine and 3-16 inch boiler-plate bolted to the floor of the car, which will protect the car itself and can be quickly replaced when worn out. Such details greatly lengthen the life and also reduce the cost of the rolling-stock besides decidedly improving the efficiency. In a double-track tunnel it is very convenient to use near the face a temporary switch and single-track of light iron that can be lifted up and carried ahead, by which an empty coming in on its track can be run on this single-track in the centre, much more easily shovelled into and worked about, and when filled, be pushed upon the other track to wait until the whole train is ready. On the outside a simple device will save a man's time or the unnecessary stopping of the train when under full way and the otherwise great liability of the cars leaving the track at this point, and this is an automatic or simple spring-switch where the two tracks merge into the one to the dump, that allows the car coming out to pass on to the dump-track, but returning the switch is always and only open to the ingoing truck. As to the motive-power when the tunnel gets long or over 1,000 feet, the trammers should give way to a horse or mule that will soon become accustomed to working in the darkness with perhaps only a lighted candle at the curves. In a completed tunnel not over 1,600 feet in length and a grade of not less than 1 per cent., haulage is made very easy by putting at the inner end where it connects with the deposit a 10 or 12 horse-power motor that will quickly pull in a train of empties that runs out full, dragging the steel cable and is checked at the entry by the motorman at the motor at the inner end.

The majority of tunnels are, perforce, driven by hand-drilling, and good progress is thus made. Comparative tables as to the cost of driving by hand or machine are not available, but in the west with even the very high price for labor it is well understood that the advantage gained in the use of air-drills is in time, but not in cost, therefore I