to produce a pressure of 180 pounds per square inch on its base; it would require a column of steam $=\frac{180 \times 144}{0.3683}=$ 35,076.6 feet to produce a pressure on its base of 180 pounds per square inch. But we cannot ascertain the velocity of the steam issuing from the boiler according to the same method by which we ascertained the velocity of the water because the steam acts so much differently; the moment it escapes from the opening it expands in a direction almost at right angles to the direction of the jet. This expansion is due to the internal pressure of the jet being greater than that of the atmosphere, and this, together with the work the jet does in pushing the air out of the way, lessens its velocity very considerably. In the case of the water flowing from the boiler, however, the resistance from the atmospheric pressure does not make much difference with its velocity, but we know that in the case of steam it does. Therefore it is better to consider the velocity of steam when allowed to flow from a boiler through a properly shaped nozzle. The shape of the nozzle is such that the steam in escaping expands to atmospheric pressure before it leaves the mouth of the nozzle, and, therefore, there is no expansion at right angles to the direction of the jet the moment it leaves the nozzle. To determine the velocity of steam discharging through nozzles, numerous experiments have been made and from these experiments formulas have been derived by the use of which a pretty close estimate can be made of the velocity of steam at various parts of the steam nozzle through which it is flowing, and also at the moment it enters the atmosphere after leaving the mouth of the nozzle. At the entrance to the steam nozzle the velocity of the steam is nearly the same as would be found by finding the height of a column of steam of uniform density having the same weight as the steam pressure in the boiler produces on a unit of area of boiler surface. In other words, the velocity of the steam at the entrance to the discharging nozzle may be found by practically the same method employed in finding the velocity of water issuing through an opening from the boiler. But the moment the steam passes the entrance to the nozzle, it expands in the direction of its flow, and increases its velocity, and it is the velocity at the moment the steam leaves the throat of the nozzle that we wish to determine. Let us take the case of steam through a nozzle, and the height of a column of steam of the same density as that of steam of 180 pounds pressure has already been found. You will observe that it is considerably higher than a column of water under the same absolute pressure, and anything dropping from this height would have a much greater velocity when it struck the earth than it would if dropped from the top of a column of water of the required height for the same pressure, namely, 180 pounds. By experiment a formula has been found for calculating the