

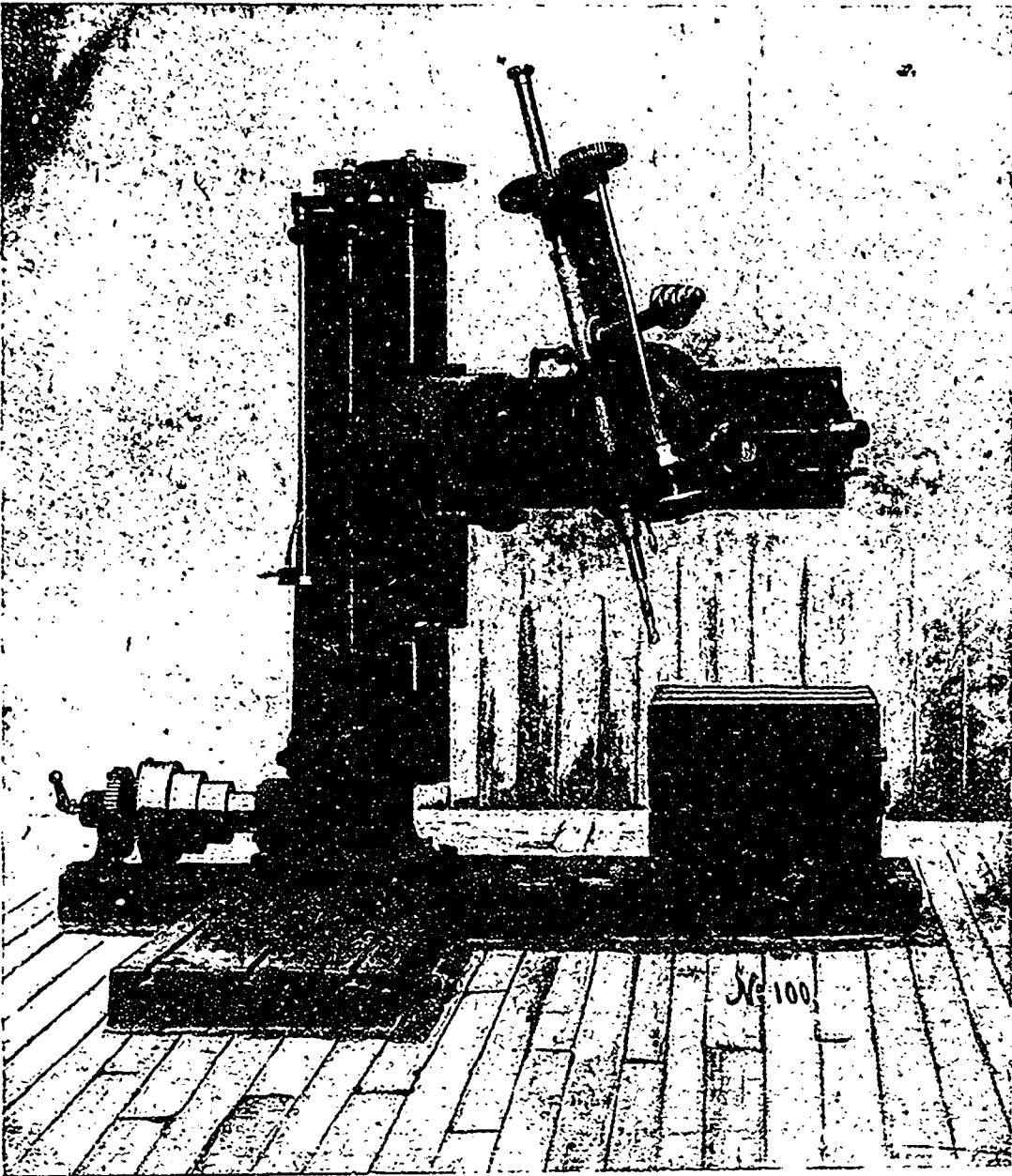
case where a cross section is taken through the bilge the sides and the bottom of the hull meet at an obtuse angle, and the outward inclination of the sides preferably increases from the ends of the hull. The steering qualities of vessels built after this plan are designed to be greatly improved, especially in high winds, which throw the hull over upon its side, as the bilge sections then serve as a side keel to hold the vessel to its course. The *Scientific American* says this improved vessel has received the indorsement of many practical captains and seamen.

UNIVERSAL RADIAL DRILLING MACHINE.

The first specimen of a Radial Drilling Machine made by John Bertram & Sons, Dundas, Ont., was exhibited at the Centennial Exhibition, Philadelphia, and

drill head are both operated by worm gear, and graduated for an adjustment to any angle. The spindle is 2 15-16 in. diameter, and has a vertical feed of 14 in. This machine possesses features both for solidity and handiness which have earned for it the popularity it maintains in the workshop. The drill illustrated is a 72-inch machine, and the weight is 10,300 lbs.

The electric furnace, strange to say, has been the means of supplying an illuminating gas designed to compete with the incandescent light. Thomas L. Wilson, in carrying on some experiments in the reduction of refractory oxides, found that large quantities of calcium carbide could be produced in a comparatively inexpensive way, and it is from this substance that acetylene, the brilliant illuminating power of which is well known,



though to a certain extent embodying the principal features of the latest production, the experience of 18 years has worked a radical change in the details of this machine. The bed is L-shaped, having the two wings slotted for the reception of work; on either of these is placed a movable box slotted on three sides. On the centre column is a sleeve extending its whole depth, having an upright slide on front. On this slide is a movable block carrying the radial arm, which is raised or lowered by a screw and reversing gear. The radial arm and

can readily be obtained. The brilliancy and steadiness of the light produced from acetylene are acknowledged on all hands, and it is claimed that a burner taking 1 to 1½ cubic feet per hour affords a light equal to about 50 candle-power. Of course, the arguments in favor of the electric light still hold good, however cheap and brilliant may be the acetylene light, but there can be no doubt that the latter may have a large field of usefulness before it, especially in houses or localities not easily within reach of the present modes of electric lighting.