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Spontaneous Combustion.

Mr. C. C. Hine, editor of the *Monitor*, relates the following: "The Institute of Technology, at Boston, long ago decided upon the danger of steam pipes passing through and in contact with wood. It was shown that the wood, by being constantly heated, assumes the condition, to a greater or less degree, of fine charcoal, a condition highly favorable to spontaneous combustion. Steam was generated in an ordinary boiler, and was conveyed therefrom in pipes which passed through a furnace, and thence into retorts for the purpose of distilling petroleum. Here the pipes formed extensive coils, and then passed out, terminating at a valve outside the building. To prevent the steam when blown off from disintegrating the mortar in an opposite wall, some boards were set up to receive the force of the discharge, and as often as the superheated steam was blown, the boards were set on fire."

THE GREAT TANGENT GALVANOMETER OF THE CORNELL UNIVERSITY.

The cut represents a standard galvanometer constructed at the Cornell University from designs of W. A. Anthony, Ph.B., Professor of Physics, to meet the want of a standard instrument for the measurement of heavy currents, and for the direct calibration of the commercial instruments in use for measuring the currents employed in electric lighting, etc.

For the measurement of heavy currents there are four circles, two 2 meters in diameter and two 1.6 meters diameter, mounted according to Helmholtz's plan at distances apart equal to their radii. The conductors forming these circles are copper rods, three-fourths inch in diameter. The needle is suspended by a silk fiber in a mass of copper, which serves as a very effectual damper, and makes it possible to take readings very rapidly. By a peculiar arrangement of mirrors

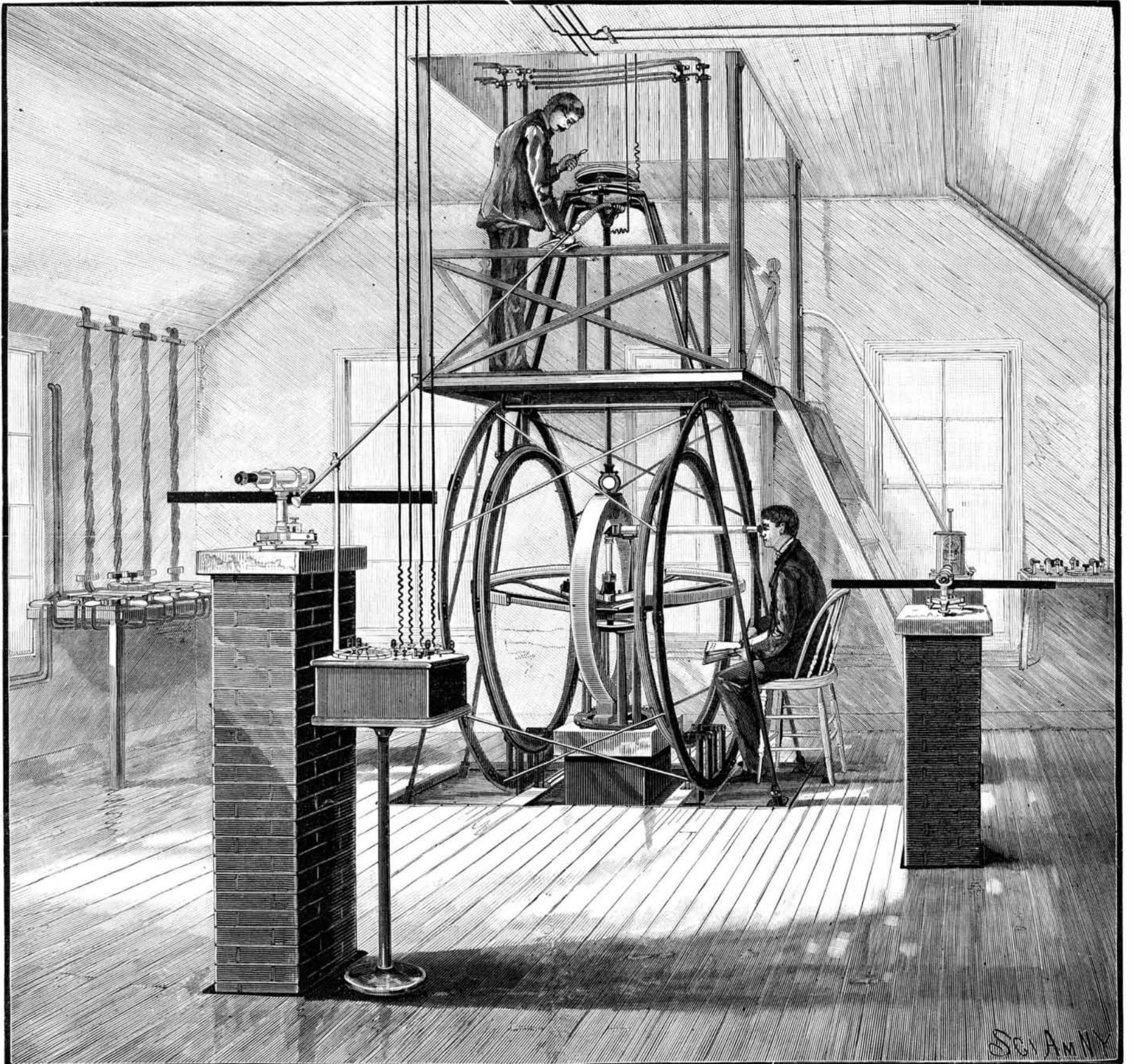
and telescope the deflections are read directly in angular measure on a circle 50 inches in diameter to within three-tenths of a minute of arc. The copper conductors are mounted on a brass framework accurately turned and adjusted, and the dimensions are all known within one five-thousandth.

For the measurement of small currents there are two circles, about 1.5 meters diameter, each having two conductors, and comprising altogether 72 turns of No. 12 copper wire.

The indications of such an instrument, of course, depend upon the value of the horizontal intensity of the earth's magnetism, and without some means of determining this quantity in the place where the instrument stands, and at the time when a measurement is being made, no great accuracy is attainable.

For making this determination a coil, 1 meter in di-

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