COX'S GAS-FLOW COMPUTER,

FOR LOW PRESSURES.

This Computer solves Professor Pole's well-known formula for the flow of gas in pipes:

$$\text{Discharge in cub. ft. per hour} = c\sqrt{\frac{d^5 \times (p_1 - p_2)}{l \times w}}$$

Where d = diameter of pipe in inches,
p_1 = initial pressure in inches of water,
p_2 = terminal pressure in inches of water,
l = length of pipe in yards,
w = specific gravity of the gas when air = 1.
c = a constant varying from 1000 to 1350.

To Find the Discharge from a Pipe and the Required Size of Pipe.

(1). Set the specific gravity of the gas opposite the selected constant;
(2). Bring the difference of pressure ($p_1 - p_2$) opposite the given length of pipe;
(3). Opposite any diameter of pipe will be at once found the discharge in cubic feet per hour; and
(4). Opposite any desired discharge will also be found the required diameter of the pipe.

To Find the Difference of Pressure, $p_1 - p_2$.

(1). Set the specific gravity of the gas opposite the selected constant;
(2). Bring the diameter of pipe opposite the desired discharge in cubic feet per hour;
(3). Opposite the given length of pipe find the required difference of pressure between the ends of the pipe.

The Section Scale.

If equal quantities of gas are discharged from a main at several equally distant points, as in the case of houses in a street, the volume of gas flowing per minute through each succeeding section of the main will be smaller, resulting in a DECREASE of the total friction pressure, or an INCREASE of the total discharge for the same pressure.

The Section Scale shows at once the effect of such DISTRIBUTED discharge for any number of sections.

To Use the Section Scale.

To FIND THE TOTAL DISCHARGE. Set the radial edge (=1) to the diameter of the pipe, then opposite the number of sections find the corresponding increased discharge of ALL the sections. The length to be used is the total length of pipe, not that of a section.

To FIND THE PRESSURE. Set the radial edge to the diameter, then turn the disk round with the section scale until the number of sections is opposite the required total discharge of all the sections. Now opposite the total length of pipe, find the diminished pressure of ALL the sections.

Cox's High-Pressure Fluid Discharge Computer.

This Computer solves the following formula, which is applicable to Gas, Air and other elastic fluids, flowing through long pipes with high initial pressures:—

$$\left.\begin{array}{r}\text{Discharge in cubic feet per hour}\\ \text{at atmospheric pressure}\end{array}\right\} = 33.3\sqrt{\frac{d^5 x (p_1{}^2 - p_2{}^2)}{L \times w}}$$

where d = diameter of pipe in inches,
p_1 = absolute initial pressure in pounds per square inch,
p_2 = absolute terminal pressure in pounds per square inch,
L = length of pipe in miles,
w = specific gravity of the fluid when air = 1.

To Find the Discharge from a Pipe and the Required Size of Pipe.

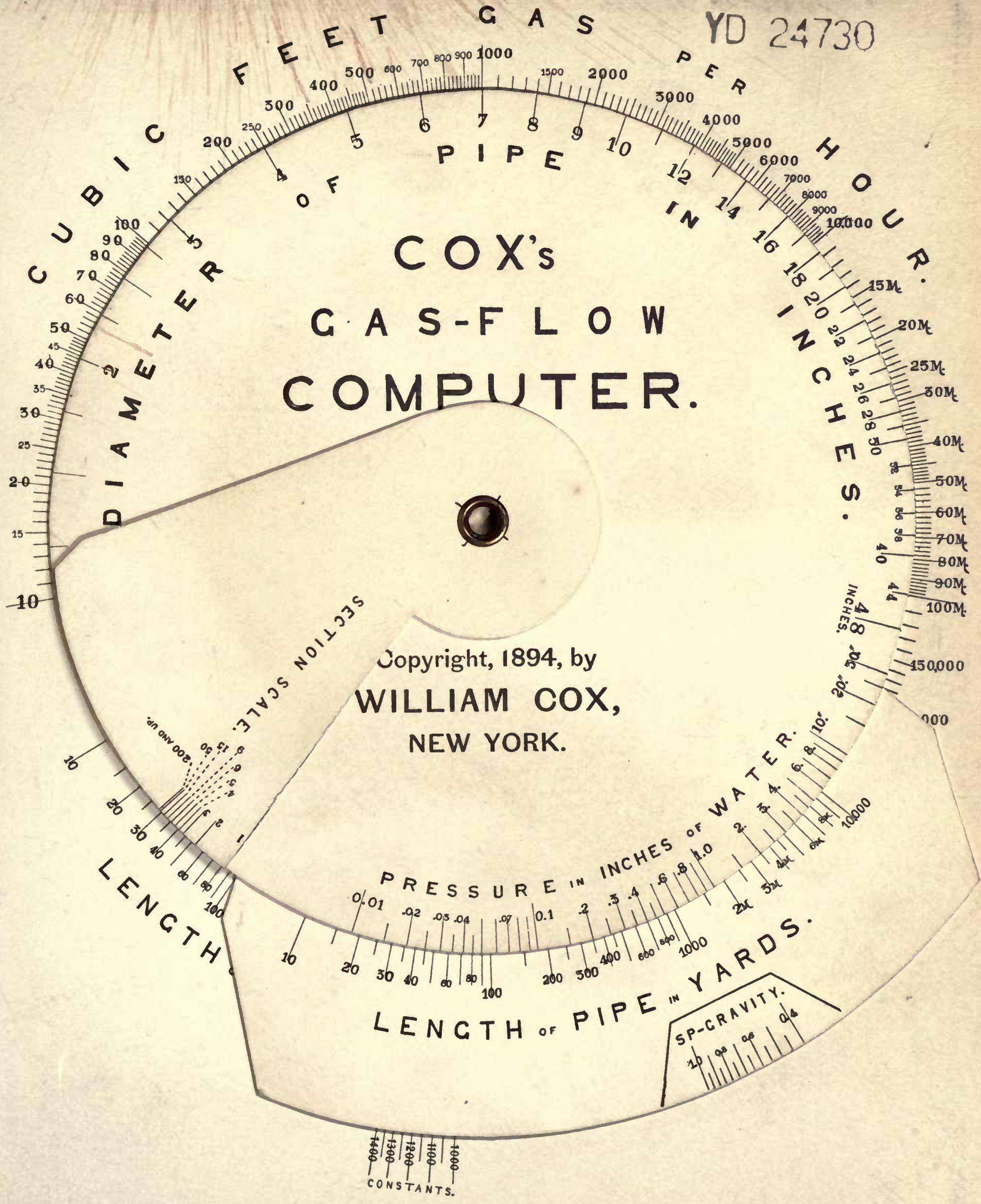
(1). Set the specific gravity of the fluid opposite the length of pipe;
(2). Bring the DIFFERENCE of the initial and terminal gauge pressures opposite the SUM of the initial and terminal gauge pressures;
(3). Opposite any diameter of pipe will now be found the discharge in cubic feet per hour at atmospheric pressure; and
(4). Opposite any desired discharge will also be found the required diameter of pipe.

To Find Suitable Initial and Terminal Pressures.

(1). Set the specific gravity of the fluid opposite the length of pipe;
(2). Bring the diameter of the pipe opposite the desired discharge in cubic feet per hour;
(3). All coinciding lines of the scales of **sum** and **difference** of initial and terminal gauge pressures will now give the desired result. After selecting any such coinciding lines, find the initial pressure from $\frac{\text{sum} + \text{difference}}{2}$ and the terminal pressure from $\frac{\text{sum} - \text{difference}}{2}$ thus, suppose "sum" = 80, and "difference" = 20, then initial pressure = 50, and terminal pressure = 30 pounds. A little practice will soon render the solution of this problem easy. From the nature of the formula it is not possible to put it into simpler shape, whilst for arithmetical solution it is very much more tedious.

Price of the Computers, in Cloth Case, 6½×8 Inches, $5.00 Each, Net.

Address,
WILLIAM COX,
~~ROOM 925~~, ~~2~~5 BROAD STREET, NEW YORK CITY.


CUBIC FEET GAS PER HOUR.
DIAMETER OF PIPE IN INCHES.
COX's
GAS-FLOW
COMPUTER.
Copyright, 1894, by
WILLIAM COX,
NEW YORK.
SECTION SCALE.
200 AND UP.
PRESSURE IN INCHES OF WATER.
LENGTH OF PIPE IN YARDS.
LENGTH
SP-GRAVITY.
CONSTANTS.