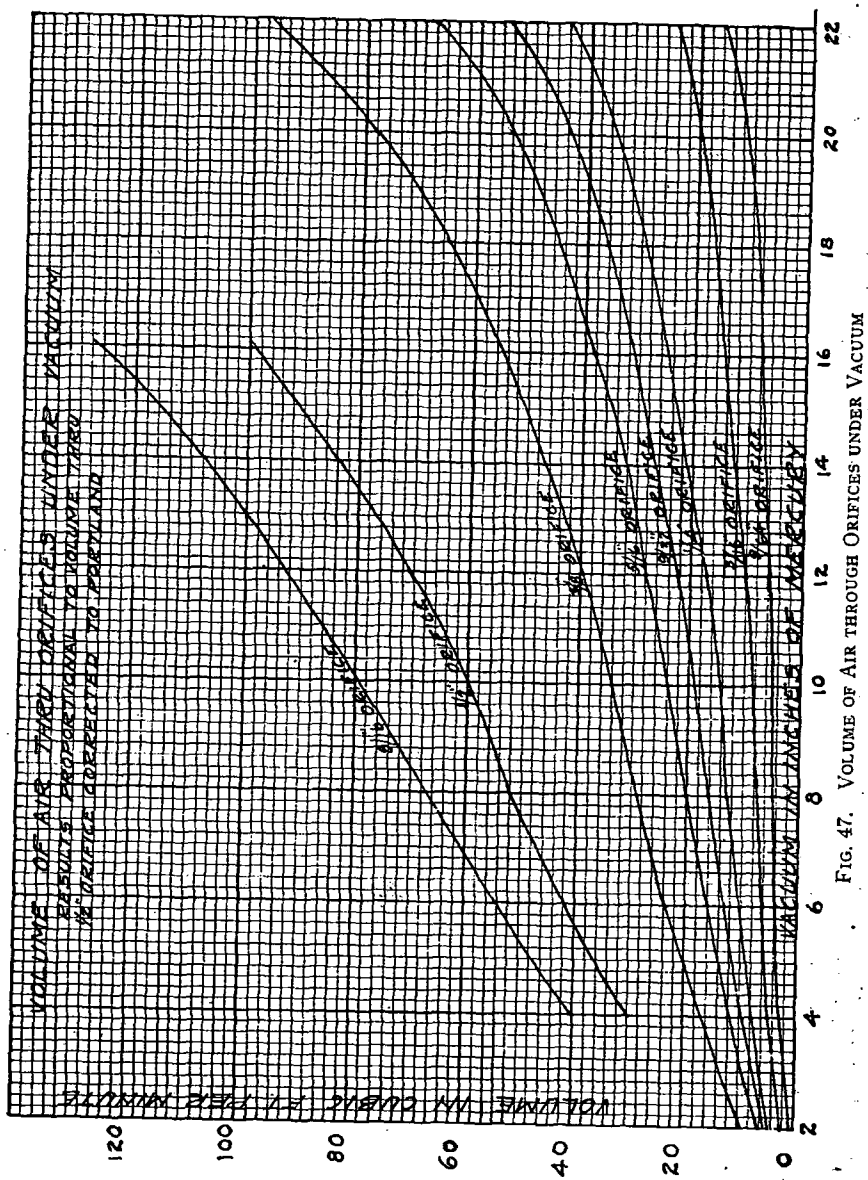

FIG. 47. VOLUME OF AIR THROUGH ORIFICES UNDER VACUUM

heaters are to be based upon their equivalent in direct radiation the air capacities for this class of radiation may be the same as for direct radiation.

TABLE 75. AIR CAPACITIES

SQ. FT. DIRECT EQUIVALENT RADIATION SURFACE	DIAMETER ORIFICE VAC. 10"	AIR CAPACITY CU. FT. PER MIN.
8,000	$\frac{9}{64}$"	5
16,000	$\frac{3}{16}$"	9
26,000	$\frac{1}{4}$"	15
40,000	$\frac{9}{32}$"	19
65,000	$\frac{3}{8}$"	34
100,000	$\frac{1}{2}$"	60
150,000	$\frac{9}{16}$"	80
250,000	Three $\frac{1}{2}$"	180

The air capacity of the pump should be measured at a point in the main vacuum return line just ahead of the vacuum strainer when the pump is operating under the vacuum specified at the pump suction and when handling the quantity of condensate specified at a temperature not exceeding 180 deg. fahr.

Air test may be made with water at lower temperatures. This determination should be made by means of a standard test orifice located in an inlet connection to the pump suction and consisting of a plate $\frac{1}{8}$ of an inch thick with a reamed hole having sharp edges and of a diameter corresponding to the capacity of the pump.

The accompanying Fig. 47 may be used to give the quantity of air handled, corresponding to several sizes of orifices and different degrees of vacuum met with in practice.

The water capacity of the pump when operating against 8 in. of mercury vacuum should be not less than three-tenths (0.3) of a pound of water per hour per square foot of equivalent cast iron direct radiation based upon condensation at a temperature of not over 180 deg. fahr. when the pump is delivering water against a specified gage pressure at the water discharge of the pump. For pumps handling both air and water the above water capacity must be delivered, when the pump is maintaining a vacuum of 8 in. of mercury and handling air through a standard orifice corresponding to the air capacity of the pump as herein specified.

Commercial pumps are built for 10, 20, 30 and 40 lb. gage pressure at the water discharge of the pump.

TABLE 76. SIZES, SPEEDS, HORSE POWERS AND CAPACITIES MOTOR DRIVEN CONDENSATION RETURN PUMPS

Rating in Sq. Ft.	0 to 2000		2000–4000		4000–8000		8000–16000	
Discharge Pressure, Lb.	10	20	10	20	10	20	10	20
Gallons per Min.	3	3	6	6	10	10	20	20
H. P. Motor	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{4}$
R. P. M. 60 Cycle and D. C.	1700	1700	1700	1700	1700	1700	1700	1700
R. P. M. 25 Cycle	1440	1440	1440	1440	1440	1440	1440	1440
Shipping Weight	330	350	350	370	420	440	535	565