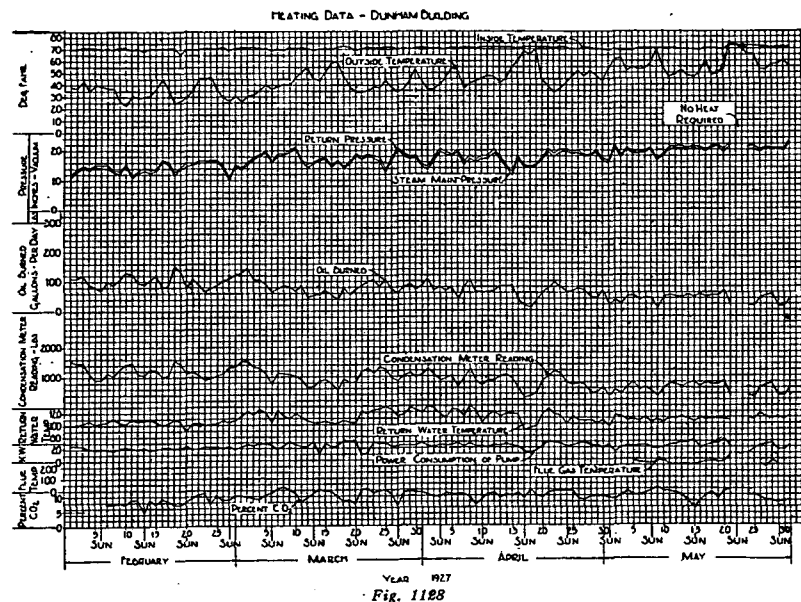




Heating Data from a Nine-Story Office Building in Chicago

Averages per Day of Heating Season, October, 1926 to May, 1927, inclusive

Room Temperature.....	71.2° Fahr.
Outside Temperature.....	40.3° Fahr.
Return Pressure.....	16.85 in. Vacuum
Boiler Pressure.....	15.17 in. Vacuum
Boiler Water Temperature (Steam Table) corresponding to Boiler Pressure..	178.69° Fahr.
Return Water Temperature.....	104° Fahr.
Fuel Oil Consumption (18-20 Baume).....	101.5 Gal.
Oil Burner in Operation.....	11.6 hours
Power Consumed by Differential Vacuum Pump.....	13.98 K. W.

This system is a Dunham Differential Vacuum Heating System with semi-automatic control and "D" Series Differential Vacuum Pump.

There is approximately 7704 sq. ft. of radiation, supplied with heat from two fire box boilers, each having a catalog rating of 6000 sq. ft.

The boilers are equipped with an industrial type oil burner supplying heat from the front end of the boiler. Each boiler is valved in such a way that either one can be cut out from the heating system.

The steam main located on the basement ceiling, is divided into two branches. The radiation is divided approximately equally between them. The end of each branch is dripped through a Dunham Float and Thermostatic Trap into the

vacuum return line (also located on the basement ceiling).

The steam and return risers extending up nine floors are concealed in the walls. The radiators are of the Corto type with Dunham No. 105 Inlet Valve at the top of each radiator. Each valve is equipped with a Regulating Plate.

The chart of performance shown at the top of this page, is not a special test, but is merely the record of each day's operation taken from the regular daily records kept by the operating engineer.

Two marked results (gained over the ordinary vacuum return line system formerly operated) have consistently obtained (1) Appreciable fuel economy (2) Comfort thru the absence of overheating in mild weather.

TYPICAL HEATING SPECIFICATIONS

"DH" Series System for Residences

- General Conditions.**
Same as "D" Series. (page 582.)
- Construction and Material.**
Same as "D" Series.
- Boiler.**
The steam boiler shall be a with guaranteed rating for sq. ft. of radiation installed upon suitable foundation, and equipped with all necessary connections and trimmings, including a safety valve set to blow at 10 lb. pressure, a Dunham Compound Gauge 15 lb. x 30 in. vacuum and a 10 in. Dunham Damper Regulator. (Omit Regulator on gas fired and automatic oil fired installations.)
- Smoke Pipe.**
Connect boiler to chimney with suitable iron smoke pipe same size as boiler smoke outlet. Smoke pipe must be provided with approved Dunham Check Damper and hand stop damper between check damper and boiler. (On gas and automatic oil fired installations omit Dunham Check Damper).
- Boilerstat.**
Furnish a Dunham Boilerstat, Type 360. Contractor shall drill and tap an opening in the boiler for this instrument, locating same with its bulb 2 in. below boiler water line. This Mercury Switch shall be installed and wired to pump in accordance with instructions furnished.
- Pipe and Fitting.**
Same as "D" Series.
- All steam tappings in boiler shall be connected full size of tapping into a steam header which shall be dripped to the return header through a bleeder. All spring pieces to steam and return mains shall be taken off the top of mains at 45 deg.
- The end of each steam main shall be dripped as indicated on the plans by means of a wet drip line to boiler, properly vented through Dunham Trap No. 1 in accord with details furnished by manufacturer.
- Grade steam mains $\frac{1}{2}$ in. in 10 ft. Grade return mains and drip mains 1 in. in 10 ft. All steam supply branches such as spring pieces, offsets in steam risers and runouts to radiators shall in each case be installed one size larger than the vertical pipes to which they connect and shall be given as much grade as possible. $\frac{1}{2}$ in. per foot is preferable.
- Return mains shall be connected to the Dunham Differential Vacuum Pump as shown in detail furnished by manufacturer.
- Risers are to be run concealed or in the open as directed by the architect. All concealed piping must be tested at 15 lb. water pressure before being concealed.
- All union connections, flanges, packing nuts on gate and globe valves and on gauge glass of boiler must be drawn up tight so as to prevent air leaking into system when under a high vacuum. This work should be performed after system is completed and while it is working with a vacuum in both steam and return lines.
- The System when finished shall be tested for tightness. When system is filled with steam, drop the fire when 20 in. of vacuum is secured and stop pump. After an hour there shall be at least 10 in. of vacuum remaining on the gauge.
- Floor Plates, Sleeves.**
Furnish proper floor and ceiling plates, and protecting sleeves on all pipes passing through floors or finished partitions.
- Differential Vacuum Pump and Air Eliminator.**
Furnish and install a "DH" Dunham Differential Vacuum Pump having a rated capacity of 2000 sq. ft. of direct radiation. The pump shall be installed and connected in accordance with manufacturer's instructions and details.
Furnish and install in accordance with manufacturer's instructions a Dun-