

A. K. Aron

MECHANICAL PLANT FOR THESIS

Student to spend one full week on this subject

Study first the general subject of heating and ventilation in text books:

- ✓ Harding & Willard, vols. I and II
- ✓ Sturtevant, "Heating and Ventilation"
- ✓ Carpenter, "Heating and Ventilating Buildings"
- ✓ The Am. Soc. of Heat. & Vent. Engrs. Guide
- Hool & Johnson, "Handbook of Building Construction, vol. II.
- ✓ Hubbard, "Power, Heating, and Ventilation", parts I and III.
- American Radiator Co., "The Ideal Fitter"
- Portfolio of "General Discussion of Ventilation" (three folders).

Consult other portfolios for examples of the kind of building you are doing, or for buildings similar enough in uses to give information as to the methods followed in practice.

Record the results of your study on the regular co-ordinate computation paper, noting advantages and disadvantages of different systems of heating and ventilating.

Illustrate with freehand diagrams where necessary.

Give reference to book or periodical from which you take recommendation, formulas, constants, etc.

For all buildings except residences --

Assume heating by direct steam radiation in general, but with indirect radiation where radiators would be objectionable in appearance;

Assume ventilation by plenum fan with exhaust fan in general only for toilets, smoking rooms, etc., from which it is desirable that odors should not escape into rest of building. For residences, assume indirect heating.

Air washer for sake of acquaintance with it, even though location assumed might have clean air.

Horizontal return tubular boilers except for residences and except for small buildings requiring less than 30 h.p., coal-burning, so as to provide for coal supply and ash removal. For residences assume cast-iron sectional boilers taken from "The Ideal Fitter".

Compute total heat loss (no sub-division into separate rooms) by method of wall, window, and ceiling transmission and infiltration, but do not compute sizes of radiators.

Compute air supply needed for ventilation separately for each room which needs it, but assume in general that rooms with few occupants will not have ventilation.

Compute and show on basement plan the sizes of the tempering coils, air washer, reheating coils (assume 5 lb. gage pressure and 1200' velocity, H. & W., p. 370), fan (add

$1/3$ to your required capacity to make up for resistance losses. Hubbard, P.H. & V., Part III, p. 542), and principal horizontal ducts and on plans above basement the principal vertical ducts.

Compute or take from tables the sizes of boilers (assuming 10 lb. of coal burned per sq. ft. of grate per hour), smoke breeching, and smoke flue to roof, the latter of steel with brick walls 4 in. clear of the steel for insulation.

Compute and show principal vent duct sizes and arrange main exhaust above roof with louvered openings on four sides so that winds will not interfere with discharge or with louvered dormers on opposite sides of the roof like Robinson Hall.

Submit tracing paper plan of basement layout and of any large room to show scheme adopted.