

TYPICAL SCHOOL BUILDING OF LARGE SIZE

Steel framing, brick walls with 2" T.C. furring on inside; wooden floors in rooms; T.C. partitions; furred roof; width, 60 ft.; height, 85 ft.; five stories and cellar; cost of building (approx.), \$1,000,000.00; cost of heating and ventilating equipment (approx.), \$90,000.00.

Heating System—All parts heated except cellar. Hot blast used for auditorium. Direct radiation (steam) for all other parts. (Vacuum system.)

Radiation—15,000 sq. ft. direct.

Boilers—Four, each 1,303 sq. ft. of heating surface. Internally fired, return tubular pattern.

Temperature Ranges—Maximum, 68°F. Minimum, 62°F.

Temperature Control—Automatic in all occupied rooms.

Parts Ventilated—All occupied parts. Plenum and exhaust.

Ventilating Equipment—Supply, 4 blowers: 2 in classrooms and corridors, each 48,500 cu. ft. per minute. Auditorium, 22,800 cu. ft. per minute. Playroom and Gymnasium, 35,650 cu. ft. per minute.

Exhaust, 7 units: Classrooms, 2, each 39,000 cu. ft. per minute. Auditorium, 19,030 cu. ft. per minute. Playroom, 27,200 cu. ft. per minute. Toilets, 2, one of 3,200 and one of 2,200 cu. ft. per minute. Kitchen, 550 cu. ft. per minute. (Shower baths and pools, often add units.) All electric motor driven, mostly belted. Supply units in cellar, exhaust units in roof houses or cellar. Classrooms, etc., about 5 minute changes. Toilets and lavatories, 4 minute changes.

Vacuum Pumps—Each with a capacity in sq. ft. of 65,000. (Duplicate units furnished.)

Hot Water System—Suction tank and storage, each 500 gal. Heater, 800 gal. per hour. Where shower baths occur added units are used.

Dumbwaiters—Hand type dumbwaiter for handling books, etc.



HORTICULTURAL GROUP, LONGWOOD, INC., ESTATE OF PIERRE S. DU PONT

LONGWOOD NEAR MENDENHALL, PA.

Growing Houses (Typical green house construction)—Total area, 22,000 sq. ft.; volume, 196,000 cu. ft.; wall surface, 4,800 sq. ft.; glass surface, 36,600 sq. ft.; direct radiation, 7,900 sq. ft. (pipe coils); average temperature, 60°F.

Main Building (including orangerie, exhibition hall, peach houses, display houses and organ loft)—Total area, 44,000 sq. ft.; volume, 1,130,000 cu. ft.; wall surface, 20,000 sq. ft.; glass surface, 64,000 sq. ft.; direct radiation, 8,500 sq. ft. (concealed); gravity ind. radiation, 12,000 sq. ft. (in tunnel); primary ind. radiation, 3,400 sq. ft. (in fresh air intakes); average temperature, 65°F.

Reception Suite (underground in terrace, one wall only exposed, tunnel to main building)—Size, 65x54, one story; area, 3,500 sq. ft.; volume, 56,000 cu. ft.; wall surface, 6,600 sq. ft. (75% against earth); glass surface, 450 sq. ft.; heating surface, 450 sq. ft. (tempering and heater coils); temperature, 70°F.

Service Building (basement-storage (not heated) first floor, office and work rooms, second floor, living quarters)—Size, 70x60 plus wings; area, 5,200 sq. ft.; volume, 90,000 cu. ft.; wall surface, 6,600 sq. ft.; glass surface, 2,000 sq. ft.; radiation, 1,550 sq. ft.; temperature, 70°F.

Note—Boiler plant located under terrace in front of Service Building.

Cost of Building (approx.)—\$1,850,000.00.

Cost of Heating and Ventilating Equipment (approx.)—\$160,000.00.

Heating System—All parts heated with vacuum system, direct radiation in Growing Houses and Service Bldg., gravity indirect and part direct in Rose House and Main Bldg.; Reception Suite hot blast separate duct system.

Parts Not Heated—Store rooms in basement of Service Building.

Radiation—18,000 sq. ft. direct, 12,000 sq. ft. gravity indirect, 3,000 gravity tempering (equivalent direct radiation 40,000 sq. ft.).

Boilers—Four 110 H.P. water tube, set in single battery, 8'6" floor to header, designed for fuel oil.

Temperature Ranges—Maximum, 75°F. Minimum, 40°F.

Temperature Control—Hand in Growing Houses and bed rooms of Service Building, automatic for Rose House, Main Building, reception suite and working space of Service Building.

Parts Ventilated—Reception Suite hot blast divided duct system, automatic temperature control on by-pass dampers.

Ventilating Equipment—Reception Suite one blower 3,600 cu. ft., motor belt drive; about 2½ air changes. Two exhaust fans, propeller type, direct connected motors, each fan 1,600 cu. ft. per minute.

Parts Not Ventilated—Growing Houses and Main Building not mechanically ventilated, but have sash ventilation, fresh air intake in connection with gravity indirect systems.

Humidity—In Main Building; Orangerie, Exhibition Hall and Organ Loft are equipped with pan humidifiers with steam coils at each indirect heater in tunnels; 39 units, 23,000 cu. ft. per minute, 65°F. at 70% relative humidity, room type humidistats operating diaphragm valves in steam main to pan humidifiers.

Stoker Equipment—Fuel oil furnaces, oil storage consists of 300,000 gal. concrete reservoir underground with gravity supply line 400 ft. to service tank at Boiler House, oil equipment includes pumps, heaters, automatic temperature control for oil in storage.

Vacuum Pumps—Two 8"x10"x12" steam, 900 sq. ft. each.

Hot Water System—Domestic hot water Service Building, copper tube storage tank heater 200 gal. per hour. Tempered water 1,100 gal., tank cap. 5,000 gal. water per hour 35°F. to 65°F. with temperature control.

Elevators—Elevator special design with track for industrial car used in Green Houses.

Escalators, Dumbwaiters, Etc.—In Orangerie and Exhibition Hall, Main Building, ventilating sash equipment with 22 remote control motor driven sash operating mechanisms.