

TABLE 50. EQUALIZING TABLE FOR SIZING RISERS AND MAINS

SIZE OF PIPE	EQUIVALENT CARRYING CAPACITY	SIZE OF PIPE	EQUIVALENT CARRYING CAPACITY
$\frac{1}{2}$ "	2	3"	175
$\frac{3}{4}$ "	5	$3\frac{1}{2}$ "	260
1"	10	4"	380
$1\frac{1}{4}$ "	20	5"	650
$1\frac{1}{2}$ "	30	6"	1050
2"	60	7"	1600
$2\frac{1}{2}$ "	110	8"	2250

CHAPTER V

GREENHOUSE HEATING SYSTEMS*

GENERALLY speaking greenhouses are heated either by hot water or steam systems, both being used in all forms: gravity hot water; accelerated circulation of hot water, i.e., where there is some circulation due to gravity and an accelerator or impeller is used to accelerate that circulation; forced circulation of hot water; gravity low pressure steam; gravity low pressure steam with return by means of automatic steam pump and return by means of an electrically driven automatic pump; vacuum return systems; high pressure steam systems with high pressure in mains and reduced pressures in the coils in the houses and even in some odd cases by high pressure steam throughout. There are countless modifications of all of these systems.

Hot water heating is older, simpler and the more common method in small houses and small ranges of greenhouses.

Although the same tables, formulae and other data that are used to estimate the heating requirements of systems in the usual types of buildings are also applicable to greenhouse heating and although the same pumps, traps, regulators, valves and other devices and fittings are used in greenhouses as in other systems, there are many differences that must be kept in mind so that due allowances may be made in the specification of a plant.

For instance—the highest temperatures in greenhouses are required at night, whereas with residence systems the maximum temperatures are required in the day time.

Greenhouse fires are banked during the day almost always throughout the firing season, even in midwinter when the sun is shining, and fuel consumption is heaviest at night; this in marked contrast to practically all other types of heating systems where the fires are banked at night.

Greenhouse radiation is almost exclusively made up of piping. The temperature demands are almost always below 70 deg. and horizontal piping carries a higher co-efficient of emission than the radiating surfaces used in other systems; special care must, therefore, be given to the selection of the boiler; the demands on it will be higher than with any other form of radiation in quiet air; its surplus must be greater than with boilers for any other sort of quiet air heating.

The usual boiler ratings, inflated as they many times are for residence heating purposes, must be discounted still more for greenhouse work, especially so where there is no night fireman, as with the smaller plants, and where fires are left for long periods without attention.

*Greenhouse heating section prepared by F. J. Elder, Irvington, N. Y.