TABLE 32. EFFECT OF PAINTING

The result of painting is largely dependent upon the last coat, and is more marked on radiators having a large proportion of radiating surface, as pipe coils or wall radiators, than on radiators having a comparatively small radiating surface in proportion to convecting surface.

PERCENTAGE OF EFFECTIVENESS

Based on Values in Tables as 100 per cent

Cast Iron, bare	100%
Painted with flat black	100%
Painted with aluminum bronze	80%
Painted with gold bronze	81%
Painted with white enamel	101%
Painted with maroon japan	100%
Painted with white zinc paint	101%
Painted with no-lustre green enamel	96%

EFFECT OF ENCLOSING THE RADIATOR

The practice of enclosing radiators has become so general that there is an insistent demand for definite data on the heating effect when so enclosed.

It has been observed that enclosed radiation may give greater heating effect with less condensation than exposed radiators. This result is brought about by a decrease in the radiant effect and an increase in convection effect due to the enclosure.

To accomplish best results, care must be exercised to follow certain rules in designing the enclosure, the most important of which are:

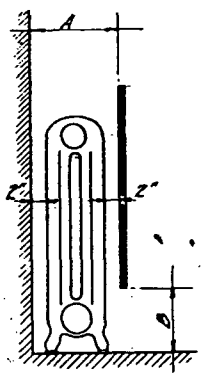
1. Enclosures should be insulated with 1 in. magnesia or asbestos block, lined with bright tin or non-corrosive sheet metal, placed next to the radiator.
2. The surface of the radiator should be painted flat black, maroon japan, white enamel or white zinc. If the radiator is entirely concealed it may be unpainted.
3. The free area of the grill or opening at the outlet should be not less than the free area through the sections of the radiator.
4. The free area of the grill or opening at the inlet should be not less than 80 per cent of the free area at the outlet.
5. If the outlet is in the face of the enclosure so that the air flow is horizontal, the free area of the outlet should be at least 150 per cent of the free area about the radiator, and the clear height between the top of the radiator and the underside of the top of the enclosure should be not less than the depth of the enclosure.
6. Best results are obtained with a tight fitting enclosure, provided the free area about the radiator at point of greatest restriction is not excessive. As a general rule the efficiency of the radiator is inversely proportional to the depth of the enclosure.

Case 1 is 10 per cent more effective than a direct radiator when properly constructed.
Case 2 is 5 per cent more effective than a direct radiator when properly constructed.
Case 3 is equally as effective as a direct radiator when properly constructed.
Case 4, with *E* equal to one-half *A*,—percentage of reduction is 10 per cent.
Case 4, with *E* equal to *A*,—percentage of reduction is 20 per cent.
Case 4, with *E* equal to 1½*A*,—percentage of reduction is 35 per cent.
Case 5, with *E* equal to *A*,—percentage of reduction is 30 per cent.
Case 6, percentage of reduction is 5 per cent.

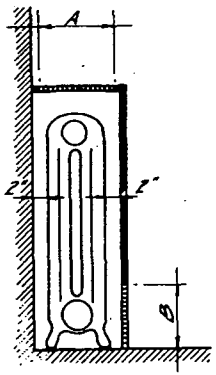
This data applies to the use of cast iron column radiation, with enclosures built-in as part of the architectural treatment of the room and does not apply to other types of enclosed radiators.

EFFECT OF POSITION

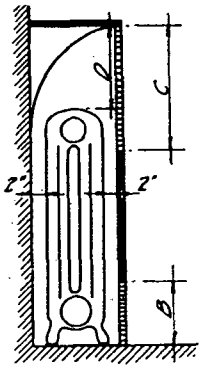
The effect of position on heat transmitted by a radiator is a subject that has been investigated to a very limited extent. Experiments that are now available show the heat loss from a radiator is about the same whether it is placed on the floor, at the ceiling or in the middle of the



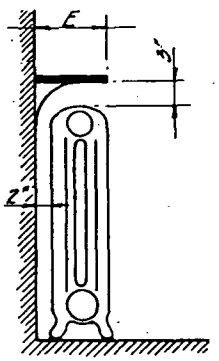
Case 1
FIG. 10



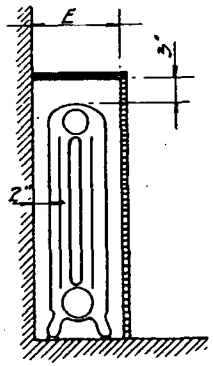
Case 2
FIG. 11



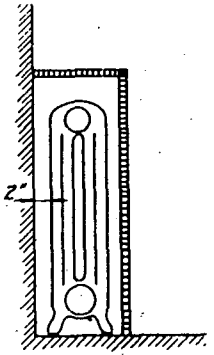
Case 3
FIG. 12



Case 4
FIG. 13



Case 5
FIG. 14



Case 6
FIG. 15

DIFFERENT ARRANGEMENTS OF RADIATORS IN ENCLOSURES

room, air temperatures being the same. It seems to make very little difference whether it is placed near the wall or near the middle of the room, as far as condensation is concerned. There is, however, a considerable difference in the heat of the room and the maintaining of a warm floor. This is particularly the case in rooms in which there is very little circulation of air, due to mechanical means. Many factories that were effectively heated with ceiling radiation when belt drives were used have found it necessary to relocate the radiation at the floor, when direct