NOTES FOR TABLE 8.

[a] The inside-outside temperature difference is 70—(—10) or 80 F except where otherwise noted.

[b] Volume of infiltration, cfh = (no. air changes) x (floor or ceiling area) x (ceiling height).

[c] From Equation 5a.

[d] The ceiling heat losses are calculated by estimating the attic temperature and then calculating the loss through the ceiling using the proper temperature difference. This unheated attic is not ventilated during winter months. The attic temperature is estimated from Equation 1 to be 30.2 F when the outside temperature is —10 F and room temperature is 70 F. The temperature difference is then 70—30.2 or 39.8 deg. For the insulated residence, attic temperature become 4.6 F and temperature difference 70—4.6 = 65.4 deg.

[e] Temperature in garage assumed to be 35 F.

[f] Coefficient for wall adjoining garage calculated on basis of metal lath and plaster on both sides of studs (U = 0.39).

[g] One half of value from Table 4, Chapter 11, for storm windows or weatherstripping.

[h] Exposed on two sides, weatherstripped windows offset by fire-place. Use 1½.

[i] Window on one side weatherstripped but double-doors are hard to close tightly. Hence, conservative value of 1½.

[j] Assuming kitchen vent, door to vestibule usually open, allow full table value of 1½.

[k] One-half value in Table 4, Chapter 11, increased to 1½ by nearby outside door in vestibule.

[l] Full value in Table 4, Chapter 11, to allow for frequent opening of outside door.

[m] Two sides exposed, large doors but large volume. Use value 1½ as given in Table 4, Chapter 11.

[n] Two small unweatherstripped windows in protected location, but fireplace, indicate 1 change.

[p] Heat losses from these rooms into garage are heat gains for garage.

[q] Neglect heat loss to basement, as losses from boiler, piping, etc., will probably keep basement near, if not above, 70 F.

[r] Upstairs hall ceiling figures with downstairs. Heat should be provided downstairs for both.

[s] Linear feet of exposed edge.

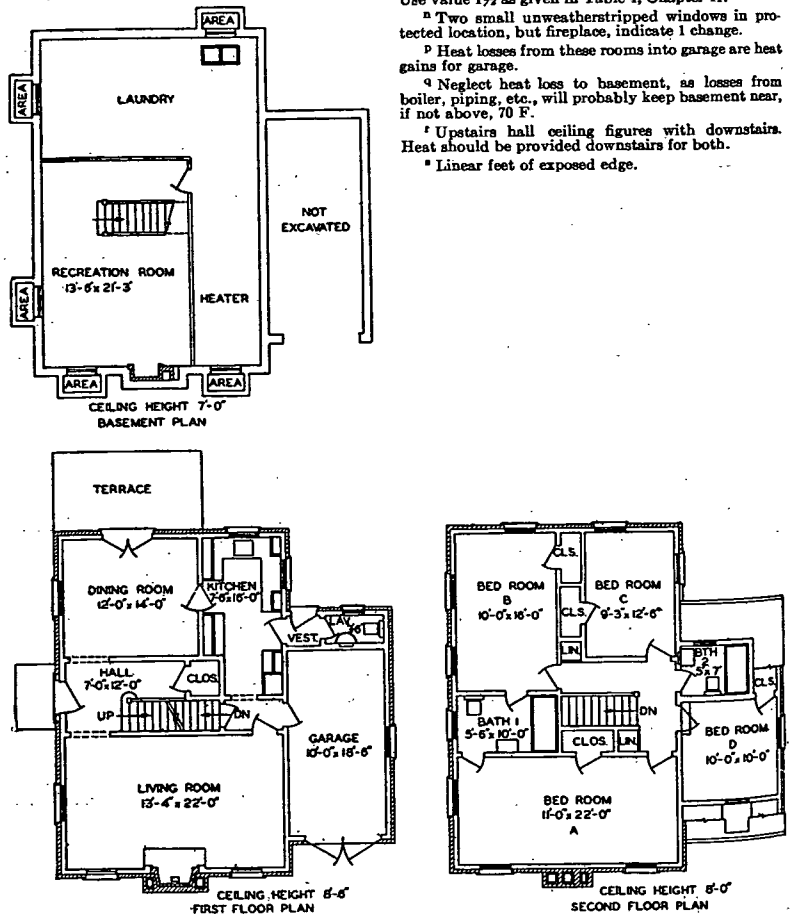

FIG. 2. FLOOR PLANS OF RESIDENCE

TABLE 9. SUMMARY OF HEAT LOSSES OF UNINSULATED RESIDENCE (*Btu Per Hour*)

ROOM OR SPACE	WALLS	CEILING AND ROOF	FLOOR	GLASS AND DOOR	INFILTRATION	TOTALS
Bedroom A	5520	7410	...	1440	2180	16,550
Bedroom B	3620	5000	...	1440	1470	11,530
Bedroom C	2650	3800	...	970	1260	8,680
Bedroom D	2740	3240	960	720	950	8,610
Bathroom 1	690	1620	...	500	630	3,440
Bathroom 2	1640	1060	320	320	400	3,740
Living Room	7480	...	...	1800	5400	14,680
Dining Room	3850	...	...	3100	3080	10,030
Kitchen	2920	...	...	950	2300	6,170
Lavette	3060	...	...	1100	550	4,710
Entrance Hall	900	2560	...	640	1600	5,700
Garage	—960[a]	—1280[b]	1060	3710	1910	4,440
Recreation	840	...	570	720	2890	5,020
Design Totals	34,950	23,410	2,910	17,410	24,620	103,300
Operating Totals[c]	34,950	23,410	2,910	17,410	12,310	90,990
Percentages[d]	38.4	25.8	3.2	19.1	13.5	100.0

[a] Wall heat loss of 2180 Btuh minus wall heat gains of 1280, 700 and 1160 Btuh. [b] Heat gains of 960 and 320 Btuh. [c] Based on ½ computed infiltration. [d] Based on operating totals.

are to have storm sash. The building is constructed as follows (heat transmission coefficients *U* are parentheses):

Walls: Brick veneer, building paper, wood sheathing, studding, metal lath and plaster (0.29). Walls of dormer over garage, same except wood siding in place of brick veneer (0.26).

Attic Walls: Brick veneer, building paper, wood sheathing on studding (0.42).

Basement Walls: 10 in. concrete (0.10).

Roof: Asphalt shingles on wood sheathing on rafters (0.44).

Ceiling (Second floor): Metal lath and plaster (0.74).

Windows: Double-hung wood windows averaging 70 percent glass (0.45; from Chapter 9, Table 18, Section D, the U value for wood windows with storm sash is 0.53 x application factor; by interpolation this factor is 0.85). Steel casement sash in garage and basement (1.13; from Chapter 9, Table 18, U is 1.13 for all glass and the application factor is 1.00). French doors in dining room 50 percent glass, no storm doors (0.85; from Chapter 9, Table 18, U is 1.13 for all glass; by interpolation the application factor is 0.75).

Floor (Bedroom D): Maple finish flooring on yellow pine sub-flooring; metal lath and plaster ceiling below (0.26).

Floor (Basement and Garage): 4 in. stone concrete on 3 in. cinder concrete (0.10).

Solution: The calculations for this problem are given in Table 8, and a summary

TABLE 10. SUMMARY OF HEAT LOSSES OF INSULATED RESIDENCE (*Btu Per Hour*)

ROOM OR SPACE	WALLS	CEILING AND ROOF	FLOOR	GLASS AND DOOR	INFILTRATION	TOTALS
Bedroom A	2480	2460	...	1440	2180	8,560
Bedroom B	1620	1660	...	1440	1470	6,190
Bedroom C	1190	1260	...	970	1260	4,680
Bedroom D	1230	1080	690	720	950	4,670
Bathroom 1	310	540	...	500	630	1,980
Bathroom 2	760	250	220	320	400	1,950
Living Room	3370	...	...	1800	5400	10,570
Dining Room	1730	...	...	3100	3080	7,910
Kitchen	1320	...	...	950	2300	4,570
Lavette	1390	...	...	1100	550	3,040
Entrance Hall	410	850	...	640	1600	3,500
Garage	—470[a]	—910[b]	1060	3710	1910	5,300
Recreation	840	...	570	720	2890	5,020
Design Totals	16,180	7,190	2,540	17,410	24,620	67,940
Operating Totals[c]	16,180	7,190	2,540	17,410	12,310	55,630
Percentages[d]	29.1	12.9	4.6	31.3	22.1	100.0

[a] Wall heat loss of 980 Btuh minus wall heat gains of 590, 320 and 540 Btuh. [b] Heat gains 690 and 220 Btuh. [c] Based on ½ computed infiltration. [d] Based on operating totals.