TABLE 10. HEAT GAIN FROM VARIOUS SOURCES[a]

SOURCE	PER CENT NAME-PLATE RATING	PERCENTAGE OR BTU PER HOUR		
		Sensible	Latent	Total
Electric Heating Equipment				
1. Electric Oven-Baking	70	80%	20%	100%
2. Baker's Oven		80%	20%	100%
3. Coffee Urn—per Gallon Capacity	.....	1025	1025	2050
4. Glass Coffee Maker—per Section	20	90%	10%	100%
5. Warming Receptacle	30	80%	20%	100%
6. Plate Warmer	50	100%	0%	100%
7. Hot Plates	80	.....	.....	.....
8. Steam Table—Water Bath Type	100	65%	35%	100%
9. Frying Griddles	75	90%	10%	100%
10. Fry Kettle	70	.....	.....	.....
11. Waffle Baker	40	75%	25%	100%
12. Sandwich Grille	60	90%	10%	100%
13. Toaster—Intermittent or Timed Control	50	90%	10%	100%
14. Toaster—Continuous	100	90%	10%	100%
15. Hair Dryer in Beauty Parlor—600 w	.....	2050	.....	2050
16. Permanent Wave Machine in Beauty Parlor—24-25 w Units	.....	2050	.....	2050
Gas Burning Equipment[b]				
17. Gas Heated Oven—Baking—*no vent connection*	70	72%	28%	100%
gravity vent connection	35	100%	0%	100%
18. Open Top Burner—per Hole	50	45%	55%	100%
19. Hot or Closed Top—per Burner—*no vent connection*	100	45%	55%	100%
gravity vent connection	70	50%	50%	100%
20. Coffee Urn—Large 18 in. Diam.—Single Drum	.....	5000	5000	10,000
21. Coffee Urn—Small 12 in. Diam.—Single Drum	.....	3000	3000	6000
22. Coffee Urn—per Gallon of Rated Capacity	.....	500	500	1000
23. Plate Warmer—*no vent connection*	60	90%	10%	100%
gravity vent connection	10	100%	0%	100%
24. Steam Table—Water Bath Type—*no vent connection*	60	55%	45%	100%
gravity vent connection	42	50%	50%	100%
25. Frying Griddles—*no vent connection*	75	81%	19%	100%
gravity vent connection	52	90%	10%	100%
26. Fry Kettle—*no vent connection*	70	72%	28%	100%
gravity vent connection	49	80%	20%	100%
27. Egg Boiler—per Egg Compartment	.....	2500	2500	5000
28. Cigar Lighter—Continuous Flame Type	.....	2250	250	2500
29. Curling Iron Heater	.....	2250	250	2500
30. Pilot Light	.....	180	20	200
Steam Heated Equipment[c]				
31. Steam Heated Surface Not Polished—per Square Foot of Surface	.....	330	0	330
32. Steam Heated Surface Polished—per Square Foot of Surface	.....	130	0	130
33. Insulated Surface—per Square Foot	.....	80	0	80
34. Bare Pipes, Not Polished—per Square Foot of Surface	.....	400	0	400
35. Bare Pipes, Polished—per Square Foot of Surface	.....	220	0	220
36. Insulated Pipes—per Square Foot	.....	110	0	110
37. Coffee Urn—Large, 18 in. Diam.—Single Drum	.....	2000	2000	4000
38. Coffee Urn—Small, 12 in. Diam.—Single Drum	.....	1200	1200	2400
39. Egg Boiler—per Egg Compartment	.....	2500	2500	5000
40. Steam Table—per Square Foot of Top Surface	.....	300	800	1100
Miscellaneous				
41. Heat Liberated By Food per Person, as in a Restaurant	.....	30	30	60
42. Heat Liberated from Hot Water used direct and on towels per hour—Barber Shops	.....	100	200	300

[a]Heat gain from electric or gas residential ranges or cooking stoves depends on size of the family, socio-economic status of the individual, time of day for principal meal, and whether the equipment is manually or automatically controlled. Total heat gain will probably not exceed 40 per cent name-plate rating. Per cent sensible and latent heat will depend upon use of equipment; dry heat; baking or boiling.

[b]Name-plate ratings of gas burning equipment can be obtained from a Directory of Approved Gas Appliances and Listed Accessories, January 1, 1942, obtainable from *American Gas Association* Laboratories, Cleveland, Ohio.

[c]Steam Requirements of Process Equipment, Report of the Commercial Relations Committee, *National District Heating Association* (*Heating, Piping and Air Conditioning*, November, 1942, p. 675).

nature of contributing load components. An illustrative example will explain the method.

Example 1. Determine cooling load requirements for a clothing store illustrated in Fig. 4 and located in Pittsburgh, Pa., Latitude 40 deg. This is a one-story building located on a corner and it faces south and west. Assume building on east and north sides conditioned.

Wall construction, 8 in. hollow tile, 4 in. brick veneer, plaster on walls, $U = 0.33$ (Table 4, Chapter 4, No. 38 B).

Roof construction, 2 in. concrete, ½ in. rigid insulation, metal lath and plaster ceiling, $U = 0.26$ (Table 11, Chapter 4, No. 2 J).

Floor, maple flooring on yellow pine, no ceiling below, $U = 0.34$ (Table 8, Chapter 4, No. 1 D).

Partition, wood lath and plaster on both sides of studding, $U = 0.34$ (Table 6, Chapter 4, No. 77 B).

Show windows, provided with awnings and thin panel partition at rear.

Front doors, 2 ft 6 in. x 7 ft (glass paneled).

Side door, 3 ft x 7 ft (glass paneled), $U = 1.13$ (Table 13 A, Chapter 4).

Occupancy, 10 clerks, 40 patrons.

Lights, 4200 w.

Outside design conditions, dry-bulb 95 F; wet-bulb 75 F.

Inside design conditions, dry-bulb 80 F; wet-bulb 67 F.

Basement temperature, 85 F.

Store room temperature, 88 F.

Solution. It is obvious from the shape and exposure of this store and the large glass area on the west side that the maximum cooling load will occur during the afternoon when the sun is shining on the west wall. From Fig. 1, the peak load may be expected at 4:00 p.m.

The combined normal transmission and solar radiation transmission through the roof at 4:00 p. m. is obtained from Fig. 2. While none of the roofs in Fig. 2 is exactly like this one, roof *C* is similar. A heat flow of 11 Btu per square foot per hour was assumed,

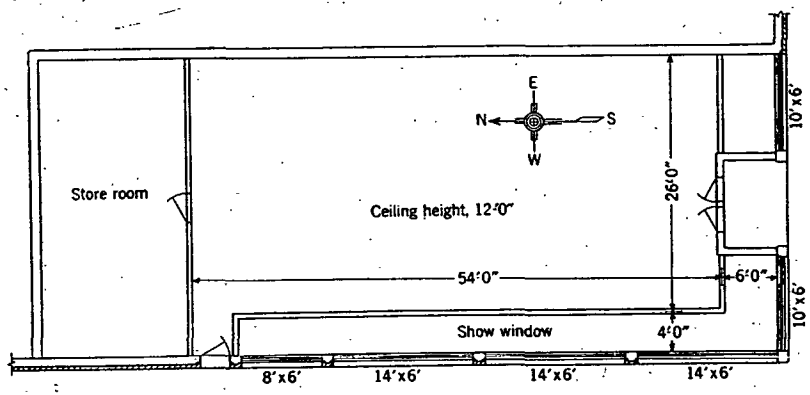

FIG. 4. PLAN DIAGRAM OF CLOTHING STORE