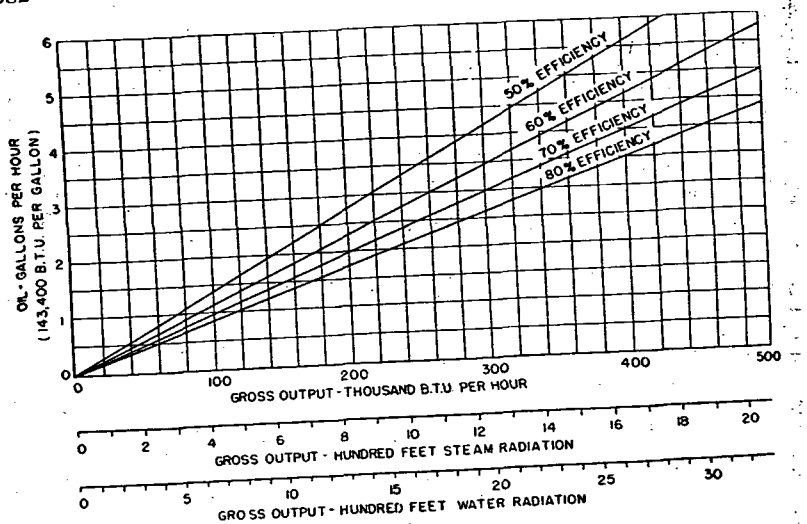

FIG. 22. OIL FUEL BURNING RATE CHART[a]

[a] This chart is based upon No. 2 oil having a heat content of 143,400 Btu per gallon. If other grades of oil are used multiply the value obtained from this chart by the following factors: No. 1 oil (139,000 Btu per gallon) 1.032; No. 4 oil (144,500 Btu per gallon) 0.992; No. 5 oil (146,000 Btu per gallon) 0.982; and No. 6 oil (150,000 Btu per gallon) 0.956.

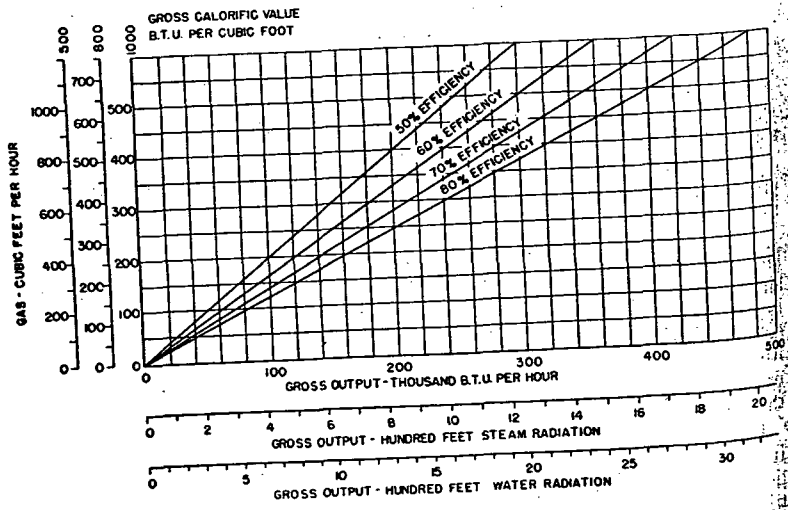

FIG. 23. GAS FUEL BURNING RATE CHART

FUEL BURNING RATES

The burning rate for automatic fuel burning devices is determined by the gross heat output required of the boiler, or furnace, to carry the net heating load, plus allowances for system losses and pick-up. General values for these allowances have been given in preceding text. Detailed information for piping and pick-up allowances for steam and hot water systems, is given in Chapter 16, and for warm air systems, in Chapters 19 and 20.

When the gross output, operating efficiency, and heat value of the fuel are known, the required rate of burning can be determined by means of Figs. 21, 22 and 23 for the several fuels.

As the rate of fuel burning is directly proportional to the load for a given efficiency, these charts can be extended by moving the decimal points the same number of digits in both vertical and horizontal scales.

The correct fuel burning rate can be determined directly from the several charts for oil or gas burning installations, as these customarily operate on a strictly intermittent basis. These fuel burning devices usually introduce the fuel at a single fixed rate during the *on* periods, and this rate should be sufficient to carry the gross load. In the case of coal stokers, which are usually capable of variable rates of firing, it is desirable to operate at as low a rate as weather conditions will permit, but the maximum firing rate of the stoker should be sufficient to carry the gross load. This rate may be determined by the same method as used for oil or gas.

REFERENCES

[1] Domestic Burners for Pennsylvania Anthracite (Underfeed Type), (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS48-40).

[2] *Stoker Manufacturers Association Manual:* Industry Standards, Recommended Practices, Technical Information. Published by *Stoker Manufacturers Association*, 307 N. Michigan Ave., Chicago 1, Ill.

[3] Code for Determination of Rated Capacities of Anthracite Underfeed Stokers, adopted June 1, 1944, and a Code for Determination of Rated Capacities of Bituminous Underfeed Stokers, adopted May 3, 1944. See *Stoker Manufacturers Association Manual*.

[4] Automatic Mechanical Draft Oil Burners Designed for Domestic Installations (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS75-42). Flue Connected Oil Burning Space Heaters Equipped with Vaporizing Pot Type Burners (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS101-43). Warm-Air Furnaces Equipped with Vaporizing Pot-Type Oil Burners (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS104-46). Oil-Burning Floor Furnaces Equipped with Vaporizing Pot-Type Burners (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS113-44).

[5] Gas Floor Furnaces, Gravity Circulating Type (*U. S. Department of Commerce, National Bureau of Standards*, Commercial Standard No. CS99-42).

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The Relation of the Size of Bituminous Coals to Their Performance on Small Underfeed Stokers—Burning Tests on Four Typical Coals, by R. A. Sherman, E. R. Kaiser and H. R. Limbacher, Technical Report No. 1, *Bituminous Coal Research, Inc.* (July, 1937) Part II.

Oil Fuels and Burners, by James A. Moyer (McGraw-Hill).