Dustless Coal

The practice of treating the more friable coals to allay the dust they create is increasing. The coal is sprayed with a solution of calcium chloride or a mixture of calcium and magnesium chlorides. Both these salts are very hygroscopic and their moisture under normal atmospheric conditions keeps the surface of the coal damp, thus reducing the dust during delivery and in the cellar, and obviating the necessity of sprinkling the coal in the bin.

The coal is sometimes treated at the mine but more usually by the local distributor just before delivery. The solution is sprayed under high pressure, using from 2 to 4 gal or from 5 to 10 lb of the salt per ton of coal, depending on its friability and size.

LIQUID FUELS

Oil is used in *domestic* heating largely because it can be supplied automatically as required with practically no attention, and because there is no residue to be removed by hand. Cleanliness is also a factor, as is

TABLE 3. COAL NOMENCLATURE USED IN MID-WESTERN FIELD

NAME OF COAL	SIZE, INCHES	
	Through	Over
Lump	----	6
Furnace	6	3
Small Egg	3	2
Stove	2	1¼
Chestnut	1¼	¾
Pea	¾	¼
Slack, or No. 5	¼	----

ability to provide an ample supply of domestic water through the summer with the same burner and boiler that heats the home.

Quality and certainty of local oil supply rapidly are ceasing to be factors, owing to general acceptance of uniform oil fuel specifications, and the growing tendency for coal dealers to sell oil fuel. Few heating plants are beyond a reasonable delivery distance from a reliable source of at least three grades of oil, which simplifies the problem of selection of burner type.

Specifications for Liquid Fuels

Uniform oil specifications were prepared in 1929 by the *American Oil Burner Association*, in cooperation with the *American Petroleum Institute*, the U. S. Bureau of Standards, the *American Society for Testing Materials* and other interested organizations. Oil fuels were classified into six groups, as indicated by Table 4. When these specifications were prepared, it was generally accepted that the first three grades were adapted to domestic use, while the last three were suitable only for commercial and industrial burners. This differentiation has not proved stable, and today domestic installations are using Nos. 4 and 5 of the so-called *heavy-oil* group. Several

burners adapted to domestic use have recently been listed for automatic operation with No. 5, or even No. 6, oil. Usually oils No. 5 or 6 require preheating for proper operation, but where conditions are favorable, the former can be used without the equipment that this entails.

There has been a definite trend toward the heavier oils for domestic use during the last five or six years. For the first few years following the introduction of intermittent burners, the so-called *furnace oils* (now known as Nos. 1 and 2) were commonly used because of the ease with which they could be atomized and the general freedom from carbon, dirt and *muck*. As the result of extensive research, burners today are operating in domestic heating plants using oil that, a few years ago, would have been called unfit for such use.

Trend to Lower Grades of Oil

There are two reasons for the trend to lower grades of oil. While the lighter oils contain slightly more heat units per pound, the weight per gallon increases more rapidly than the decrease in heat units per pound and oil is bought by the gallon. As a consequence, while a No. 1 oil may contain 137,000 Btu per gallon, oil No. 5 may test 149,000 Btu per gallon, or 9 per cent more. Usually there is a differential of 3¢ to 4¢ between the No. 1 and No. 5 oils, so that the economy of buying the heavier fuels is apparent; there remains the economic utilization of the heat content of the heavier oils.

Cost and Delivery of Oil

The cost of oil fuel also is dependent upon the amount that can be delivered at one time, and the method of delivery. Common practice has split the delivery truck tank handling oils for domestic use into compartments of 400 to 500-gal capacity, and these *unit dumps* are made the basis of price. Where a truck can be connected to a storage-tank *fill* and the oil quickly discharged by pump, the price obviously can be less than where a smaller quantity must be drawn off in 5-gal cans and poured. For similar reasons an installation that can be supplied from a tank car on a siding provides for a lower unit fuel cost than where the oil must be trucked, even in the large truck tanks holding 2,000 gal or more that are used for distributing the heavier oils.

Oil Storage Tanks

Storage tanks have become standardized in size and are installed either in the basement or buried outside of the house. A code for the construction and installation of these tanks has been developed by the *National Board of Fire Underwriters* and should be strictly followed. Local regulations may modify this code. In small homes, where oil delivery is a matter of a few hours, the 275-gal inside tank has become standard. This must be installed at least 10 ft from the boiler, and should be set upon steel legs, well above the basement floor. These 275-gal tanks are built in such shape that they can be carried through an ordinary door frame. There is a growing tendency to couple two of these tanks together with a three-way valve so that oil can be drawn only from one tank at a time. This provides an oil storage equivalent to nearly five or six tons of coal at low cost for tankage and installation. Outside tanks are com-