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Tricks in Burning Soft Coal

GOOD AS ANTHRACITE FOR YOUR FURNACE WHEN YOU KNOW HOW TO HANDLE IT.

(By GEORGE LEE DOWD, JR.)

When, last fall, a strike shut down the anthracite coal mines, people who had been accustomed to burn hard coal were thrown into a state of panic. Many probably believed that they were likely to be frozen to death before the end of the winter, because the impression prevailed that luminous or soft coal, the most available substitute for anthracite, is an unsatisfactory fuel for domestic purposes.

As a matter of fact, properly used, soft coal is really just as good a fuel as anthracite, and is considerably cheaper. Its only drawbacks are that it is a bit smoky and dirty and requires that more attention be given to the furnace. About 80 per cent of the domestic coal consumers in the United States never see a piece of hard coal from one year's end to another. With soft coal, they keep their houses comfortably warm and use this fuel successfully for cooking. Many of those who always have burned soft coal, however, probably waste a lot of money each winter just because they fail to handle this fuel properly.

While anthracite or hard coal contains only about 10 per cent of volatile matter that can be driven off in the form of gas, soft coal is 30 per cent volatile and in addition contains much tarry, sticky material. When you burn soft coal, then, you must keep in mind the gaseous nature of the material and take steps to insure the combustion of the exhaust the fire so thoroughly that the gas goes.

The first point to remember is that a soft coal fire should not be banked with a large mass of coal shoveled into the furnace at random. Whenever you add soft coal to the fire, a

great quantity of gas is produced almost at once. Consequently, if you red hot coal is completely buried, the temperature of the top layer will not be high enough to ignite the gas and there is a good chance for an explosion. In banking with soft coal, therefore, you must be careful to pile on the fresh coal in such a way that at least one spot of red hot coal is left exposed to furnish a flame that will ignite the gas as soon as it is produced.

The second point to remember is that the tarry nature of soft coal causes it to form into lumps and cakes that impede the flow of air through the fire. This means that soft coal requires a good draft. Hence, you will have to keep the draft door open much more than for hard coal. The chimney damper should be open at all times, and it will be necessary to keep closed the door at the back or top of the furnace which, when open, allows air to flow directly into the chimney.

With hard coal a gentle shaking of the grate twice a day usually is enough to dump all the ashes. With coke the shaking can be even more gentle. Soft coal, though, requires a great deal more attention in this respect. In addition to shaking the grate twice a day, it is necessary to slice the fire two or three times every 24 hours. By "slicing" is meant inserting a long poker in the opening just above the grate—sometimes called the "clinker door"—and pulling it up so that the end of the poker will lift up and break the sticky lumps and cakes. If slicing is not done properly and often enough, the draft will be cut off completely and the fire will go out.

In order to supply enough air to burn completely the large amount of gas given off by soft coal, the fire door should be left ajar and the chimney damper should be open. This insures that air will be drawn in through the fire door and prevent the escape of gas into the cellar.

The most efficient way to test the flow of gas or air through the fire door is to light a match and hold it near the crack in the door. If the flame is drawn into the furnace you may be sure that no gas is escaping. Be careful, of course, not to make the match test unless flames appear above the fresh coal. Otherwise the match may ignite the unburned gas and cause an explosion.

Many people do not realize that soft coal can be burned with entire satisfaction in the ordinary kitchen range, provided that the stove is equipped with a grate with reasonably small openings. However, if your stove and chimney are not arranged to supply a good draft, soft coal cannot be used.

The rules for burning soft coal in the kitchen range are much the same as for furnaces. Put on small quantities of coal at a time, keep the chimney damper open at all times, do not remove the stove lids, and slow the fire down by lessening the draft. Break up the lumps and cakes with a poker at frequent intervals. That you shovel fuel on the fire and remove ashes regularly does not necessarily mean that you are getting all the heat out of the fuel even if the house is warm enough.

For real efficiency, three things are absolutely necessary in burning any kind of fuel, whether hard coal, soft coal, coke, or even wood. You must have air enough; you must have heat enough; and the air must be mixed properly with the fuel you are trying to burn. By mixed, I mean that the air must be mixed with the gases and in contact with the hot coals.

With these facts in mind you are

in a position to make an intelligent examination of your own method of caring for your furnace, remembering, of course, that each kind of fuel requires a different treatment and that the size and type of your furnace, together with the chimney arrangements, will affect results very materially.

Of all the solid fuels, hard coal or anthracite is the easiest to handle. It is composed largely of pure carbon in a hard dense form, with only a small percentage of material that can be roasted out of it in the form of gases when it is exposed to heat. Because of this, the average user gets fair efficiency out of hard coal, especially during cold spells when the furnace is being pushed to supply as much heat as possible. With hard coal the falling off in efficiency occurs mainly when the weather is so mild that it is not necessary to force the fire. To cut down the draft and so reduce the heat of the fire during mild weather, most home owners set the fire door ajar. This permits cold air to flow over the fire in excessive amounts and to cool the furnace without economy of coal.

There is likewise a steady loss when a hard coal fire is banked. This is due to the wasted gases that are roasted out of the coal and sent up the chimney without being burned.

When you smell coal gas in your house you are wasting fuel. Most home owners are satisfied if they can adjust their furnaces so that this noxious odor is not detected, but the fact that you cannot smell coal gas in the cellar or upstairs does not mean that it is not produced in the furnace.

The carbon in the coal unites with the oxygen of the air during the burning process in two different ways. If there is an ample supply of air, the result of the burning is carbon dioxide. When there is not enough air, the oxygen unites with the carbon to form carbon monoxide, a deadly poison. And you can be sure that if you smell coal gas in your house, this injurious gas is present.

Fortunately, coal contains sulphur and the sulphur fumes give you warning of the danger, for carbon monoxide in the pure form is entirely odorless. Coal gas always is produced to some extent whether you use hard coal, soft coal, or coke. It gets out of the furnace and into your cellar when the chimney damper is closed too tightly. This is true even when the fire door and the fire door damper are closed, because the gas will leak out around the cracks in the fire door of the furnace.

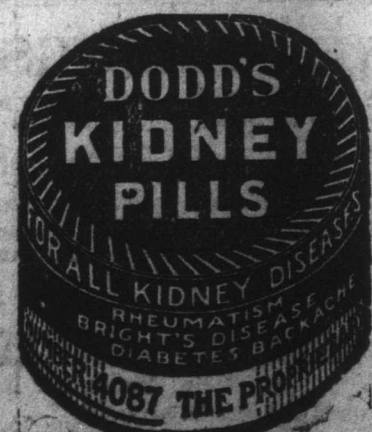
To make sure that no coal gas comes out of the furnace, always keep the chimney damper open enough to permit a slight current of air to flow into the furnace through the cracks around the fire door and the chimney damper. Coke as a fuel for domestic furnaces resembles hard coal in many ways and the home owner who knows how to handle hard coal will have no difficulty in burning coke.

Coke is what is left of soft coal after the volatile matter has been roasted out to make gas. The residue is nearly pure carbon in a light, porous form. It burns about twice as freely as anthracite. When burning coke, you can keep the draft door shut practically all the time. The fire door damper should be shut, too, since the gas-free nature of coke means that no air need be added above the fire to obtain satisfactory combustion. Coke weighs only about half as much for same volume as hard or soft coal, so you must not be sparing of this fuel when you bank the fire at night. Otherwise you may find the fire completely turned out by morning. Put on all the coke you can.

So the home owner in a section where anthracite is the regular fuel need have no reason to become panic-stricken over the prospect of a shortage in his favorite form of coal. If there happens to be a strike in the hard-coal mining industry, he can turn to soft coal or coke, keep his home warm, and at the same time cut his bill nearly in two!

There is just about as much heat in a ton of soft coal as there is in a ton of anthracite and with a little intelligent study of the simple rules for burning soft coal efficiently, you will find that soft coal makes a very satisfactory fuel. Really, the only disadvantage of soft coal is that it requires more attention and it produces a relatively large amount of smoke. That is the only reason that soft coal is not popular where hard coal can be procured.—Popular Science Monthly.

Sandy spinach should be allowed to float in water for two hours, then lifted out of the water into another receptacle and washed. This method allows the sand to settle in the bottom of the first water.



James Baird

THE RUSH OF

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