

HOW MUCH COAL WILL YOU THROW AWAY THIS WINTER? EXPERTS ASK, THEN TELL HOW TO REDUCE WASTE

How many B. T. U.'s will your heating plant waste this winter?

That, according to the Holland Institute of Thermology, of Holland, Mich., is the key-question every homeowner should study in trying to reduce his fuel bills.

B. T. U. means British Thermal Unit. It is the scientist's yardstick for measuring heat. One B. T. U. is the amount of heat required to raise one pound of water one degree in temperature or, as applied to warm air heating plants, the amount that will raise the temperature of 55 cubic feet of air one degree. So the heating engineer figures the value of fuel, the heat losses prevented by insulation and the efficiency of a heating plant in B. T. U.'s.

In seeking an efficient and economical way to keep your home comfortable through the winter, there are

and deliver them upstairs. In power plants operated by experts, it sometimes is possible to utilize as much as 70 or 80 per cent of the heat-value of the fuel. At the other extreme are countless home-heating plants which utilize only 25 or 30 per cent.

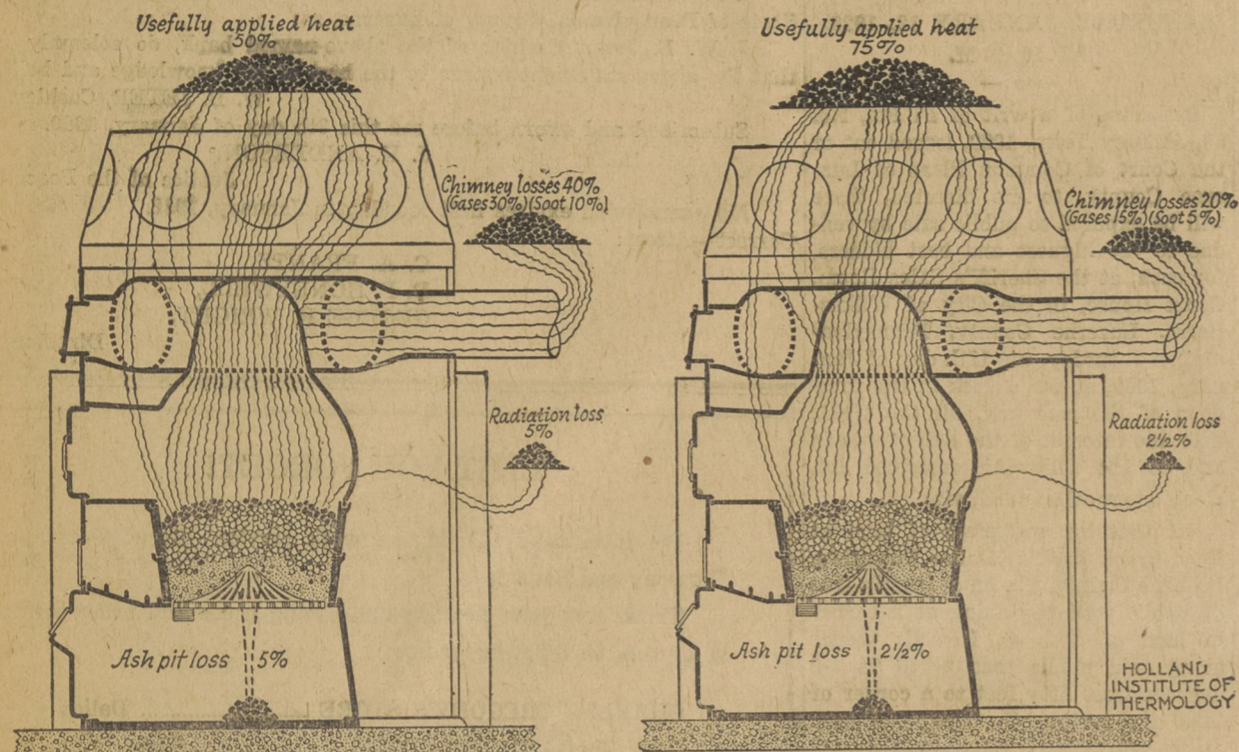
50-75 Per Cent Efficiency Possible.

While it is true that a portion of the heat-loss is unavoidable, it should be the aim of every householder to reduce the loss to a minimum. This is possible with several modern heaters, of which the vapor-air or the super-circulating types of warm air circulating systems may be considered as examples. Proper firing of such a plant should increase the percentage of heat-value utilized to 50 or even 75 per cent, if the homeowner will study the technique of firing and caring for his heating plant.

In the ordinary house-heater there are three big sources of heat-loss:

upstairs may radiate a wasteful amount of heat. This can be detected fairly easily and corrected by insulating the pipes properly. The same thing is more likely to be the case with the smoke-pipe connecting the heating plant with the chimney. Then there are the losses that occur from excessive radiation by the heater itself. Most often these are due to a poor installation, and the only way to avoid them is to select a heating plant produced by a reliable concern and to have it installed according to an approved engineering code.

Heat losses up the chimney are by far the greatest factors in fuel waste. From 10 to 20 pounds of air are necessary to burn one pound of coal. This air must be supplied by a draft, and the draft is regulated by the chimney and the dampers in the heater. If the chimney does not supply enough air, the fire burns poorly, com-



The Ordinary Home-Heating Plant Efficiency, 50 Per Cent.

The Well-Operated Heating Plant Efficiency, 75 Per Cent.

If your home-heater is operated a little better than the average found in the great majority of American homes, 40 per cent of the heat in the fuel you burn is lost up the chimney, 5 per cent through excessive radiation into the basement and 5 per cent by coal dropping into the ash-pit. If you follow the methods of firing recommended by heating engineers, you can cut these losses so that 75 per cent of the B. T. U.'s in the fuel will be usefully applied.

three things to consider. First, there is the amount of heat contained in the fuel. One pound of Illinois soft coal contains about 11,300 B. T. U.'s; of Indiana soft coal, 11,500; of Kentucky, 11,800; of Pocahontas, about 14,000; and of anthracite coals, 13,000 B. T. U.'s.

Buy B. T. U.'s, Not Black Rock. Industrial companies that consume great quantities of coal buy it on this basis. This is not entirely practical for the average homeowner, but you can reduce your total fuel bills considerably by studying fuels and remembering that you pay your money, not for a certain weight of black lumps, but for a number of heat units.

How many of these B. T. U.'s your heating plant extracts from the fuel and transmits to the rooms that need warmth is the second vital question affecting heating economy. The third one is, What becomes of the heat after the heating plant delivers it to the upstairs rooms? Heat is continually "leaking" through apparently solid walls. Great quantities of it are lost through cracks around windows and doors. Insulation retards the loss of heat through walls and roofs. These aspects of the home-heating problem come under the head of construction; but the Holland Institute of Thermology is more concerned with the heating plant itself.

No heater of any kind or class will extract all the B. T. U.'s from fuel

the ash-pit, radiation of heat into the basement, and the chimney.

As much as 10 per cent of the total B. T. U.'s in a ton of coal may be lost by allowing unburned or partially burned bits of coal to drop through the grate into the ash-pit. This is most likely to happen when coal of too small size is used, when the grate is shaken too often and not carefully enough, and when the fire is poked and prodded more than necessary. If care is exercised in selecting coal and firing the heater, the heat-loss at this point can be kept down to 5 per cent or even less, so that sifting the ashes will be unnecessary.

Avoiding a possible loss of 5 per cent or more of the total value of the fuel at this point is a reason why the homeowner should study grates. A center-pivoted grate of the cone-shaped type is an efficient preventative of excessive losses here.

Too much radiation from the central heating plant into the firing-room is another fuel waste. The basement must, of course, be warm; when it is, it helps keep the first-story floors comfortable. But, whereas inefficient central heating plants lose as much as 20 or 30 per cent of the B. T. U.'s in fuel from this source, it should be possible to keep the figure down to 10 per cent, or even less with modern warm air circulating equipment.

The piping that carries the warm air, water, or steam from the heater

bustion is not complete and some of the heat-containing combustible material goes up the flue in the form of soot and dense smoke.

Less Frequent Firing Is Cheapest. On the other hand, if the chimney is high enough and big enough in area to supply more draft, and if the dampers are opened too much, the heat from combustion may be carried up the flue before it has had a chance to warm the heating surfaces inside the plant. Less frequent firing of the better grades of coal, firing before the fire becomes too low, and proper attention to regulation of ash-door and fire-door dampers will help to keep down losses due to improper air supply.

So by selecting the right kind and size of coal, by choosing an efficient and modern heating plant and having it installed according to an approved engineering code, the average householder can reduce by a big percentage the number of B. T. U.'s wasted by the consumption of fuel in his heating plant.

The Holland Institute of Thermology points out that this means a direct saving. If the net efficiency of the heating plant can be increased from 40 per cent to 60 per cent—which is not beyond the bounds of practical possibility under the conditions that have been described—the homeowner will have to buy only two tons of coal where he now buys three.

15 or 20 minutes while the gases are being "cooked" out and burned off the fresh coal and the fumes are being carried away. Then make the usual regulations to control the fire.

Coal gas poisoning occurs most frequently, according to the Holland Institute's engineers, where large quantities of coal are added to the fire and the heater is "closed up for the night."

This is why it is so necessary for the householder to understand the technical details of his central heating plant. The furnace—or heart of the heating system—of standard make consists of only seven solid iron castings. All of these are fitted together with double cup joints sealed with asbestos cement. In this construction the danger of deadly gases filtering into the air chamber and being circulated through the home is reduced to absolute minimum. Whether or not this is the case with other heating equipment which he is considering placing in his home is a question which demands the investigation of every householder.

Humidity Cuts Cost of Home Comfort 17 Per Cent

As an example of the economy of humidity, the Holland Institute of Thermology cites the fact that, to heat a house to 75 degrees instead of 70 degrees, with an average outside temperature of 40 degrees, means a 17 per cent increase in fuel consumption during the heating season. Physicians and engineers agree that if the air is properly humidified, as can be done with a modern vapor-air circulating system, a temperature of 70 degrees will be comfortable for any healthy person.

Five Firing Rules Reduce Fuel Bill

In going into the annual campaign against winter blizzards and "cold snaps," choose as to whether you will follow an economy strategy or an easy strategy, the Holland Institute of Thermology of Holland, Mich., advises the homeowner.

Firing the central heating plant on an average of twice daily in severe weather is much more economical than putting in smaller charges of coal at shorter intervals.

With a modern warm-air circulating heating plant, it is possible to keep a fairly thick firebed in the heater. The firepot in this type of home-heater is deep enough to carry a big volume of slow burning fuel. This prevents dropping of coal into the ash-pit and keeps the fire in the best condition to transmit heat into the air that carries it up to the rooms that need warmth.

It is sound economy to allow some ashes to accumulate in the lower part of the fuel bed during mild weather. Poking and stirring the fire from above tends to produce clinkers and to cause greater heat losses both up the chimney and into the ash-pit.

A final rule for economical firing of a modern warm-air circulating heating plant—or any other, for that matter—is to keep ashes away from under the grate. Heaps of ashes in the ash-pit may prevent the inflow of enough air to sustain combustion, or may deflect the air through part of the firebed only, or may cause a burnt-out grate.

Care in Firing Cuts Out Danger of Gas

Danger from coal gas, which every winter takes its toll of lives in American homes, can be eliminated entirely by following a few simple rules, according to the heating experts of the Holland Institute of Thermology of Holland, Mich.

"All coal generates deadly carbon monoxide gas when heated," the institute states. "The problem is to get the gas up the chimney, rather than to have it percolating through the house."

"Many persons imagine they can detect the odor of 'coal gas,' and take no precautions until they begin to smell it. But carbon monoxide gas is entirely odorless, and is therefore all the more deadly. The only safe way to deal with it is to prevent it from escaping, except through the chimney. The following rules will help to accomplish this:

"1—When adding fuel to the fire, make sure there is a good draft by opening the draft and smoke pipe dampers and closing the checkdraft on the smoke pipe.

"2—Before putting in coal, close the ash-pit door and its draft shutter. This throws the main draft to the fuel feed door above, where it can sweep across the top of the fire and quickly consume all the fuel gases.

"3—Distribute the coal evenly on the fire.

"4—After it is distributed, close the feed door, open the lower draft, and let the heating plant stand thus for

Carverton

Miss Edna and Mary Hefft have returned to New Jersey after spending their vacation with their father and relatives.

Mrs. Wayne Conklin, who has been having the flu, while visiting her son, Bruce at Philadelphia, is improved.

Miss Mary, Edna and Genevieve Hefft, Mr. John ana and Mr. Leigh Hefft, motored to New Jersey recently.

Miss Iva Conklin is spending some time at her brother's, Mr. Bruce Conklin, of Philadelphia.

The following students have returned to their studies after spending their vacation with their parents: Misses Marian Young, Rachel Cour- sen, Mildred Jones, Alice Sword,

Christina Sword, Bob Dana and Philip Harris.

Mr. Willard Prynne, children Sheldon and Mary, called at the home of Mr. and Mrs. George Schooley recently.

Born, to Mr. and Mrs. Berton Kintz, a son. Mrs. Kintz was Miss Alite Gay before her marriage.

Miss Madge Anderson has been spending her vacation with her parents.

Miss Margaret, Etta and Charles Knorr visited their grandmother, Mrs. Mary Knorr on Sunday.

Sunday School will be at 1:30 followed by church at 2:30.

The Ladies' Aid will hold a bazaar and dinner on Wednesday, January 9 at the home of Mrs. George Brown.

Mrs. John Coon and son, Bertram,

are ill with the flu.

Mrs. Steve Covert is recovering from the flu.

Mr. and Mrs. Isaac Coursen visited the latter's mother, Mrs. Rozelle on Sunday.

Miss Sarah Knorr is ill. Mrs. Charles Parrish is ill.

Property Transfers

Lewis J. Spencer of Kingston Township to George W. Cook, of Larksville, property in Kingston Township for \$1.00.

Lewis J. Spencer, of Kingston Township to Katherine Keller, of Larksville, property in Kingston Township for \$228.

H. A. Brown, of Lehman Township, to Paul J. Kolesnikoff of same place, property in Lehman Township for \$1.00.

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