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How to Keep Warm in Maine: Report of the New England Governors' Fuel Committee

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How to Keep Warm in Maine

REPORT OF THE NEW ENGLAND GOVERNORS' FUEL COMMITTEE

Relative to the Selection and Use of Fuels for Home Heating

EXECUTIVE COMMITTEE

New England Governors' Fuel Committee

John Hays Hammond, *Chairman*

Eugene C. Hultman, *Vice Chairman*

Bernard P. Scanlan, *Secretary*

State House, Boston

<i>Connecticut</i>	Edward W. Goss, Waterbury
<i>Maine</i>	James C. Boyd, Portland
<i>Massachusetts</i>	John Hays Hammond, Eugene C. Hultman
	Henry L. Shattuck, State House, Boston
<i>New Hampshire</i>	John C. Storrs, State House, Concord
<i>Rhode Island</i>	E. L. Sprague, State House, Providence
<i>Vermont</i>	J. C. Sherburne, State House, Montpelier

Printed by the State of Maine upon the recommendation of the Fuel Administrator to help Maine citizens solve the fuel problem. Certain minor changes have been made in the report to adapt it to the conditions in the State of Maine.

Additional copies of this booklet in any quantity desired may be obtained by addressing James C. Boyd, Fuel Administrator, State House, Augusta, Maine.



OFFICE OF FUEL ADMINISTRATION
STATE HOUSE
AUGUSTA, MAINE

October 5th, 1925.

Hon. Ralph O. Brewster,
Governor of Maine,
Augusta, Maine.

My dear Governor:

The accompanying report on the uses and selection of fuel for domestic uses has been prepared under the direction of the New England Governors' Fuel Committee for the information and guidance of our householders to the end that they may meet the situation brought about by the present Anthracite Coal strike with as little inconvenience as possible. The facts presented should also enable them in the future to select fuels other than Anthracite, if they so desire, and keep for themselves the large savings thus made possible.

It must be borne in mind, however, that unlike Anthracite, prepared sizes of Bituminous will not stand shipment by water, making it necessary to ship them by rail. Thus the savings through their use will be much less in Maine, especially in the eastern parts, than for example in Connecticut or Massachusetts, where all rail freights from the mines are much lower.

It is my hope that this report may have a wide distribution through the state and reach the ultimate consumer largely through the coal dealers who have already offered their hearty cooperation.

Very respectfully yours,

JAS. C. BOYD,
Fuel Administrator.

INTRODUCTION

MILLIONS of dollars are paid annually by the people of New England, because of their customary and ingrained habit of demanding certain sizes of Anthracite for heating their homes. Periodic suspensions of Anthracite production have been followed by higher prices to consumers and a poorer quality of coal has been shipped from the mines.

Additional millions of dollars are wasted annually in New England by wasteful and extravagant use of fuels; the average householder burns his fuel very inefficiently, as the same service could be obtained with about one-half the fuel.

Therefore, to help the families of New England rid themselves of the idea that they are dependent upon Anthracite, as well as save money on their fuel bill, this bulletin is issued for the information and guidance of our householders.

Care of heating apparatus and general principles to be observed in selecting and burning various domestic fuels available for use are described briefly in this report.

Anthracite and Bituminous coal, either in the raw state or in the form of Coke or Briquettes, are the principal fuels on which our householders must rely for heating their homes.

Bituminous coal is now burned by about two-thirds of the householders in the United States.

Comparison shows that the annual household heating bill of New England is at least double that of other sections of the country having a similar climate and with which we compete industrially. Translated into dollars it means that about \$70,000,000 a year additional is included in wages and living costs in New England, due to its dependency on Anthracite. The lower home heating bill in other parts of the country is due, either to climatic conditions or to the fact that Bituminous coal is generally used for domestic fuel. Our household heating bill for Anthracite is more than the bill of our industries for twice the tonnage of Bituminous coal for power purposes. Therefore, every one dependent upon the welfare and prosperity of New England is vitally concerned with our domestic fuel problem.

In connection with our use of Anthracite, it should be borne in mind that the amount produced has been practically stationary in the last fifteen years, while the population of the Anthracite consuming section of the country has increased over 20%. Either the production of this coal must be increased with lower costs or the consumption decreased to prevent prices from going even higher; this is an immutable economic fact.

Governmental action in regard to the mining and preparation of Anthracite must be largely confined to Pennsylvania. In November, 1922, the United States Supreme Court upheld the contention of the Commonwealth of Pennsylvania that the mining, preparation, and taxation of Anthracite were entirely State matters; the New England states unsuccessfully contested this discriminatory coal tax levied on

our householders by Pennsylvania. It is apparently futile to expect Pennsylvania interests to take action to repeal discriminatory taxation, give good quality coal, insure a dependable supply, increase the production or lower the price of Anthracite.

Yearly fluctuations in the output of Bituminous coal are more than the entire annual production of Anthracite, and the Bituminous coal industry is eager and anxious to increase its business.

Experts report that the easily mined Anthracite is being rapidly exhausted, and in the future the cost of mining Anthracite will increase. Geologists estimate the supply of Bituminous coals to be adequate for more than 2,000 years; consequently, the ultimate depletion of Bituminous coal is not a factor affecting the price to the present generation.

Already many thrifty New England householders have successfully solved their heating problem by using Bituminous coal or Coke, and some are saving as much as one-half of their domestic fuel bill. It requires **gumption** and **common sense** to use other fuels than Anthracite and save money. New England citizens have a world-wide reputation for possessing these qualities in generous amounts. The time is ripe to prove it by dealing effectually with our acute domestic fuel problem.

1

KINDS OF DOMESTIC FUEL

Anthracite

Domestic-sized Anthracite, when well prepared, is an excellent fuel for heating the home. Uncertainty of supply, poor quality, high price, and limited deposits make it necessary that New England should burn other domestic fuels for its economic protection.

The so-called "steam sizes" of Anthracite, costing at present about one-half the price of Stove coal, may be profitably used with the larger domestic sizes. However, to burn these smaller sizes exclusively a forced draft or special grate is usually required. Detailed information in regard to the use of Steam Sizes of Anthracite in household heaters may be secured on application to the Anthracite Bureau of Information, 437 Chestnut Street, Philadelphia, Pa.

Bituminous Coal

There are hundreds of different kinds of Bituminous coals, some of which are unsuited for use in our household heaters. However, the semi-Bituminous coals produced in the union and non-union districts, such as "smokeless" Pocahontas, New River, and Winding Gulf, of West Virginia, George's Creek of Maryland, some coals of Virginia, and the Somerset, Broad Top and Central Pennsylvania fields of Pennsylvania, are good domestic fuels. If properly fired and drafts properly regulated, such coals can be burned without trouble from smoke or soot. These "smokeless" coals are available to our markets. They are higher in heat value than Anthracite, and much cheaper. Because of their heat

value if sold at two-thirds the price of Anthracite, the purchaser actually gets almost twice the amount of heat for his money. With proper care in operating his furnace the householder can realize this entire amount of saving, but even with careless handling considerable saving will result.

Prepared Sizes of Low Volatile Bituminous Coal can be burned smokelessly in our household furnaces and heaters with a saving in fuel consumption and money, compared with the domestic sizes of Anthracite. Preparation of this coal in sizes at the mine adds a dollar or more to the price. However, many domestic users prefer to use a so-called "coarse run-of-mine" low volatile Bituminous coal and thereby effect an even greater saving on their fuel bill.

Coarse Run-of-Mine Low Volatile Bituminous Coal is the most available and best suited low-cost fuel for domestic purposes at the present time. This coal should be at least 60% lumps that will pass over a 1" screen, less than 23% in volatile matters, and contain not less than 14,000 B.T.U. A certain amount of fine coal is desirable for banking and holding the fire. **Consumers should require that the analysis and preparation of the coal purchased be stated on bill.**

Commercial Run-of-Mine Low Volatile Bituminous Coal, commonly used by our industries, containing about one-fifth lumps, can be advantageously used in most homes having an annual consumption of ten tons or more. It can be purchased for less than one-half the price of Stove size Anthracite.

Those who already have in their cellars part of their Winter's supply of domestic-sized Anthracite, or those who desire to experiment with the use of Bituminous coal can also save money by using one-half Anthracite and one-half low volatile Bituminous coal of run-of-mine sizes.

If any dealer or consumer finds difficulty in securing a supply of suitable low volatile Bituminous coal, he should communicate with the associations of producers listed below:

- Broad Top Coal Operators, Philadelphia, Pa.
- Central Pa. Coal Producers, Altoona, Pa.
- National Coal Association, Washington, D. C.
- New River Coal Operators, Mount Hope, W. Va.
- Pocahontas Coal Operators, Bluefield, W. Va.
- Smokeless Coal Operators of W. Va., Washington, D. C.
- Somerset County Coal Operators, Somerset, Pa.
- Tug River Coal Operators, Welch, W. Va.
- West Virginia Coal Association, Huntington, W. Va.
- Winding Gulf Coal Operators, Beckley, W. Va.

It should be borne in mind that any consumer or group of consumers can purchase a car of low volatile Bituminous coal, suitable for domestic purposes, direct from the mine, if the retail dealer neglects to purchase the proper kind of coal or if the consumer is dissatisfied with the margin taken by the dealer.

Coke

Coke is a good domestic fuel. It is chiefly carbon and ash remaining after volatile gases have been distilled from Bituminous coal. Production of Coke is limited at present, and the price is generally several dollars a ton below the price of domestic Anthracite. Coke is a free burning fuel, requiring but little draft to burn in household heaters. By-product Coke is of harder structure and therefore sells at a premium above the average gas company Coke. Coke burns with a smokeless flame, and an increasing number of householders prefer it to Anthracite for both heating and cooking purposes.

By using the small steam size of Anthracite (Buckwheat) with Coke, the fire may be easily kept for about the same period as a fire of domestic-sized Anthracite.

Other Fuels

In rural districts Wood is still the principal fuel for heating purposes; in the urban communities high cost prohibits its use for other than fireplaces and heaters in mild weather.

The high price of Anthracite and economic conditions in the oil industry have resulted in an aggressive campaign to promote the use of oil for heating homes. The uncertainty of the future supply and cost of furnace oil make it largely a luxury fuel.

Various forms of briquetted coal are offered, most of which are sold at a price based upon that charged for domestic-sized Anthracite.

The use of Gas and Electricity for cooking purposes is increasing, but these fuels are not used at present to any great extent for home heating, although they may be used to advantage in mild weather or to supplement other heating agencies.

II

GENERAL INSTRUCTIONS

(1) Seal all air leaks, particularly in ash pit around clean out doors and smoke pipe. Cover steam and water pipes with insulation thick enough to prevent heat losses. Grates must be in good order.

(2) Prevent air leakage from house with weather strips and storm windows. Pulling window shades down at night or during a cold storm tends to preserve heat in rooms. Let in sunshine. Provide for recirculation of air with hot-air furnaces; about 20% additional fuel is required when cold air is taken from the outside. Do not over-heat the house—65° to 70° is sufficient for most people.

(3) Arrange coal bins so that two kinds of fuel can be kept separate, if desired.

(4) Use supplementary heaters in mild weather, such as kitchen ranges, fireplaces, gas logs, and kerosene heaters. Use supplementary fuel, such as wood, in furnace. **Bituminous coal may be used to advantage in mild weather, because a new fire can be easily and quickly kindled on top of any unburned Coke remaining in fire pot from a previous fire.**

(5) House heaters are operated most economically by burning fuel at an even and uniform rate. Alternately forcing and checking the fire results in consumption of much more fuel and necessitates more attention to fire than burning fuel with an even draft. Get thermometers and watch inside and outside temperatures to aid in regulation of fire.

(6) Keep in mind that the combustion of every fuel is the chemical combination of the combustible ingredients in the fuel with oxygen from the air. Efficient fuel combustion can be secured only by the use of the correct amount of air supplied in the right way.

Smoke shows improper combustion and waste of fuel.

(7) No definite rules can be given for the correct adjustment of dampers, which must be ascertained by trial with each installation. Intelligent regulation of dampers will save money in the fuel bill of practically every householder in New England. Most of the air which coal needs for combustion is admitted to the fire through the ash pit; the chimney flue carries off the poisonous products of combustion. Household heaters usually have four dampers or drafts:

Smoke pipe damper to control the draft or drawing of the chimney—

Check damper to admit cold air into the smoke pipe, thus reducing the chimney draft to retard the fire—

Ash pit damper to regulate flow of air, necessary for combustion through the fire. It is commonly called the control damper—

Feed door damper to admit air directly over the burning fuel bed to burn gases being generated. It also acts as a slight check on flow of air through fire. The correct adjustment of this damper will reduce fuel consumption.

(8) Accumulation of one-eighth of an inch of soot will compel the consumption of 25% more fuel than when heating surfaces are kept clean. Clean out boiler flues frequently. To remove soot from heating surfaces throw about two handfuls of common salt, thoroughly dried, upon a substantial body of hot fuel about twice a month. Dampers should be kept open until the fumes from the salt have entirely disappeared, which will take about fifteen minutes. Zinc scraps may be used instead of salt for this purpose.

(9) Clean out ash pit daily; accumulation of ashes interferes with draft and destroys grates.

(10) Lack of sufficient moisture in heated rooms is the cause of much sickness and annoyance. Give particular attention to the problem of supplying plenty of moisture to air of heated rooms. It will also save on fuel consumption by reducing the degree of heat necessary for comfort.

(11) If you have trouble in using low volatile Bituminous coal in your furnace or heater take up your difficulties with State fuel authorities. Consult manufacturer of heater for advice and assistance, if heater does not function properly. Those having a thermostat device to maintain a certain temperature in the house by automatic control of drafts should consult with manufacturer, if difficulty is experienced in making adjustment when different fuels are used.

(12) Remove and clean smoke pipe at end of season, keeping pipe in dry storage. Clean all heating surfaces. Leave all heater doors open during the Summer.

III

USE OF ANTHRACITE

(1) Build fire with generous amount of wood to ignite coal. When a heavy charge of new fuel is to be added, the kindling fire should be hot and cover entire grate service.

(2) Carry a deep bed of fire—even with bottom of feed door—so that it will not burn through and admit too much air. In extreme cold weather round up fuel bed above lower level of feed door. It is wasteful to carry a shallow fire.

(3) Before adding fresh fuel, open chimney damper, close check damper and, if necessary, shake grates, stopping when light appears in ash pit. In mild weather allow ashes to accumulate on grates to retard rate of combustion.

(4) Fresh fuel should be spread evenly—but be sure to have one bright bed of burning fuel exposed to ignite gases distilled from the fresh fuel. This method of firing will minimize the danger of flare-back or explosion from an accumulation of gases.

(5) After firing, open ash pit damper wide until blue flame appears, then check off the draft as much as necessary to keep fire burning at desired rate. Open damper in feed door to admit air over top of fire, when a fresh charge is coming up; after banking fire for night leave this damper open to slow up combustion.

(6) A saving may be effected by using buckwheat size of Anthracite with the larger sizes. Keep buckwheat in separate bin, as fire should be built in layers of larger sizes and buckwheat. Use the larger size of Anthracite when starting a fire to prevent smaller sizes from passing through grate. Buckwheat should be added after larger coal has kindled. Take care not to burn buckwheat on top too rapidly by forcing fire. In severe weather 25% buckwheat can be used with larger sizes; in mild weather a larger percentage of buckwheat can be used. Follow general rules for care of fire and adjustment of dampers.

(7) Run-of-mine sizes of low volatile Bituminous coal with the larger sizes of Anthracite will also effect a saving to the householder. Fire separately, about half and half, leaving a pilot flame of red coals always visible. Give particular attention to proper setting of dampers.

IV

USE OF BITUMINOUS COAL

There should be absolutely no smoke nuisance in burning low volatile Bituminous coal. Smoke is caused by incomplete combustion. In burning any fuel, follow the "Bunsen Burner Principle," i.e., mix the proper amount of air with the gases given off by the fuel when heated. In this way fuel consumption will be reduced and there will be practically no smoke or soot. The amount and application of air necessary to make efficient combustion varies with the kind of coal. Low volatile Bituminous coal contains only two or three times as much gaseous matters as Anthracite.

No change is necessary in grate bars or fire pots to burn low volatile Bituminous coal. This coal will form a "light coke" when ignited which can be easily broken up if found necessary with a poker. Because of this fact, fine soft coal will not drop through grate bars until coal is completely burned.

Most furnace and heater manufacturers advise that their apparatuses are constructed to burn Anthracite, low volatile Bituminous coal or Coke.

There is no danger of spontaneous combustion occurring in storage of the amount of Bituminous coal necessary for the average household.

The ash content of Bituminous coal is generally less than one-half that of Anthracite. In recent years Anthracite has also contained large quantities of slate and other unburnable rock in addition to its inherent ash content.

Low volatile or "smokeless" Bituminous coal should be specified in making purchase from dealer. See "kinds of Domestic Fuel" for guidance in selecting a suitable grade. Prepared sizes (Egg, Stove, and Nut) or the coarse Run-of-Mine size (60% lumps) of this coal can be burned successfully in either furnaces or heaters.

DIRECTIONS FOR BURNING LOW VOLATILE BITUMINOUS COAL

(1) Start fire similar to Domestic Anthracite, using lumps. After small starting fire is thoroughly ignited, continue to add coal until there is a good body of fire on grates. Before adding fresh fuel, push some of burning coal to back or side of fire pot nearest smoke pipe vent. Do not completely cover fire with new coal. Build a bed of fire 10 to 14 inches deep.

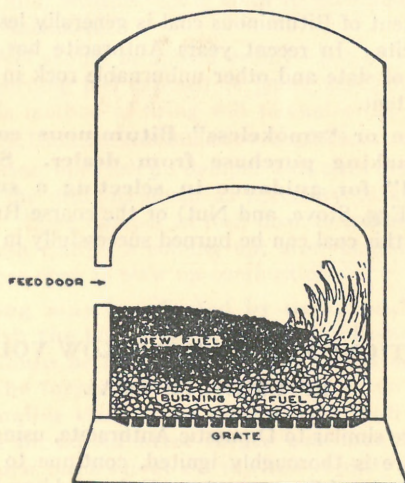
(2) Large lumps should be broken before firing, as lumps about the size of the fist give best results.

(3) When starting fire all drafts should be open, with check draft closed.

(4) Study carefully the proper adjustment of the chimney, ash pit and feed door dampers. Usually it will be found that:

- (a) When firing fresh fuel the smoke pipe damper must be left open; check draft damper closed; feed door damper open; and ash pit door and damper closed.
- (b) The ash pit damper should be opened after firing to start up fire, open slightly during the day, and shut at night or when firing fresh fuel.
- (c) When fire is well started, ash pit damper should be adjusted, chimney damper nearly closed and check draft damper opened to an amount determined by experience.
- (d) Adjust feed door damper after fire is burning well as found best by experience.

(5) Preliminary to firing a heavy charge of fresh coal adjust drafts to get good kindling fire, break up coke that may have formed on surface of fire with poker. Push part of burning coal to that part of fire box nearest vent to smoke pipe. **Do not cover entire bed of burning fuel with fresh coal as pilot flame should be kept visible to ignite gases given off by burning fuel.**



(6) Fine coal should be used on top of fire. This coal is very valuable for banking purposes.

(7) Shake grates seldom and stop as soon as light appears at bottom.

(8) Do not allow ashes to accumulate in ash pit. A partly filled ash pit interferes with proper draft and destroys grates.

Chap. 2

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