20 WAYS

to SAVE money in home heating...

Essoheat
Fuel Oil

20 tips on how to save money on your annual oil heating costs . . . .

Read them over carefully . . . then keep this booklet in a convenient place for easy reference.

#1 KNOW YOUR THERMOSTAT AND HOW TO OPERATE IT

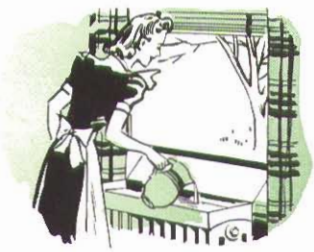
An "overheated" house saps your strength...wastes your fuel and money. The average heating system is built for economical operation at maintaining an interior temperature of 70° during cold weather. The normal, healthful indoor temperature during winter weather ranges from 70° to 72° . . . so for health *and* economy, set your thermostat at this figure during the daytime.

When you're away from home, you don't need the normal amount of heat...turn the thermostat down a few degrees. Don't turn your burner off entirely, however, it will cost you more to bring the temperature back to normal when you return again and if the weather turns extremely cold the pipes in your house may freeze.

If you intend to be away for an extended period, you can turn the thermostat down as low as 55° with safety . . . it also may be advisable to have someone check the house periodically to see that the temperature is being properly maintained during your absence.

Depending upon the locality in which you live, the daily range of exterior temperatures and your own particular house, it may be possible to save even further on fuel consumption during the 8 hours you sleep by turning down your thermostat 10° to 15° at night. A little experimentation on your house will show whether this is worth while in your case.

#2 KEEP THE AIR IN YOUR HOME PROPERLY HUMIDIFIED



If you feel chilly at 72°, it may mean your home lacks proper *humidity*. A certain amount of humidity adds to your comfort.

Most warm air conditioning systems are equipped with humidifiers . . . but with a hot water or steam heating system, raising the thermostat gives you more heat but *less* humidity . . . increases fuel consumption and costs without necessarily giving the desired results in comfort. Inexpensive, automatic humidifiers, or water pans on or near your radiators mean a more healthful atmosphere and will aid in obtaining greater economy in heating costs.

#3 WATCH THE ADJUSTMENT OF RADIATORS, REGISTERS AND THERMOSTAT

Turn the thermostat down when windows are opened for any length of time for airing or cleaning rooms, or when you retire.

Also, if the room in which your thermostat is located is closed off while being aired, remember to turn the thermostat down to prevent the rest of the house from becoming overheated by needless functioning of your burner, the action of which is controlled by the temperature of that room.

In rooms you're not using, shut off radiators or registers.

#4 KEEP RADIATOR VALVES IN GOOD OPERATING CONDITION

Check steam radiator vent valves from time to time during heating season to make sure they are operating as they should, permitting the radiators to heat all the way across, not become blocked by "dead-air" at one end. If steam radiator vent valves are not operating properly, they should be replaced immediately.

Open hot water radiator vent valves once a month, if necessary, to let out air and prevent the radiators becoming air-bound. This assures thorough hot water circulation.

#5 PAY ATTENTION TO DOORS AND WINDOWS

Close doors and windows of unused rooms . . . it takes just so much more fuel to heat such rooms . . . they take heat from the rest of the house, requiring your burner to work more often.

Close all windows not needed for ventilation . . . you're not paying for fuel to heat your yard.

Close doors leading upstairs or to the attic . . . warm air rises, escapes upstairs and lowers the temperature downstairs where most thermostats are located—makes your burner work overtime and wastes fuel.

#6 CLOSE BEDROOM DOORS AT NIGHT

Shut your bedroom door when you retire. Opening your bedroom window with the door open allows cold air to circulate down through the house . . . lowers the temperature and causes the burner to operate more frequently during the night, consequently burning more oil than necessary.

#7 KEEP VENTS AND FIREPLACE FLUES CLOSED WHEN NOT IN USE

Close all vents or dampers to open fireplaces not in use. Open fireplace flues can increase your fuel consumption by sucking warm air out of your rooms and up the chimney, making rooms drafty and requiring your burner to run more often and consequently use more fuel.

#8 BE SURE THAT FUEL IS BURNED EFFICIENTLY

The principal product of combustion is carbon dioxide and the amount of carbon dioxide passing up the chimney indicates the efficiency of combustion in the heating plant.

The simplest way to determine whether you are getting good combustion and efficient heating is to take a look at your chimney from time to time. Smoke emanating from the chimney contains vaporized, unburnt fuel particles and carbon. This smoke is a definite sign of wasted fuel from improper combustion which means your burner needs

adjustment. Call your burner service man at once.

Reliable service organizations have the necessary testing equipment to measure the amount of carbon dioxide in the flue gases passing up your chimney and be able to determine the degree of combustion efficiency of your burner's operation.

See pages 13-14 for further details on "Carbon Dioxide Percentages" and "Stack Temperatures."

#9 HAVE YOUR OIL BURNER ADJUSTED AND CLEANED REGULARLY

Before the start of the heating season, your oil burner should be adjusted, thoroughly cleaned and lubricated by a competent service man to maintain high operating efficiency and to prevent undue depreciation and wear. That's when the service man can do any other repair work that may be necessary. By getting this service at that time, you reduce the possibility of trouble during extreme weather which might be expensive as well as uncomfortable.

If your oil burner is not in use in the Summer, it is well to run the burner for short periods from time to time to keep the burner, furnace and flues dry and free from corrosion, especially if your cellar is apt to be damp. When not in operation, it may be covered with waterproof paper or rubberized material to protect it from dirt and dust, condensation, and rust. This may save you possible damage due to moisture and dirt and unnecessary repair and reconditioning costs.

#10 CLEAN YOUR FURNACE AND BOILER ANNUALLY

You should clean your furnace and boiler at least once a year . . . preferably in the Summertime . . . to get rid of all scale and soot.

Excess soot may be caused by poor burner adjustment, inferior oil, improper draft, or other conditions; but oil burning, even in a *perfect* installation, will deposit *some* soot. Excess deposits keep heat from reaching furnace boiler surfaces, and consequently increase fuel consumption. This waste material should be cleaned out once a year by means of a wire brush or scraper or vacuum cleaner to insure thorough heat transfer . . . to lower your fuel costs.

Inside your boiler water jackets heat wasting scale and deposits will eventually collect and form an undesirable insulation that reduces heating efficiency and raises your fuel costs. A steam boiler occasionally should be "blown down" or cleaned by means of approved chemicals or boiler cleaning compounds to assure greatest heating efficiency and lowest fuel consumption.

In the Summer when the burner is not in operation, furnace doors should be left ajar to allow free circulation of air through the fire box.

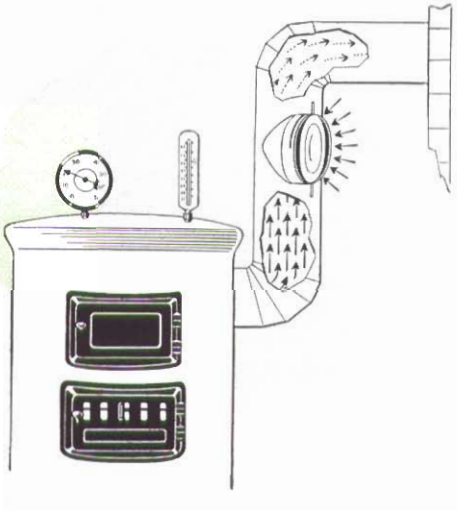
If your steam boiler is equipped with a "low-water cut-off," — periodically during the heating season this device should be flushed out to protect your heating system against damage due to clogging of the cut-off by foreign material.

Reliable oil burner service and boiler repair men can do these things for you at a reasonable cost . . . save you time, trouble and money.

#11 SAVE HEAT BY PROPER "DRAFT" CONTROL

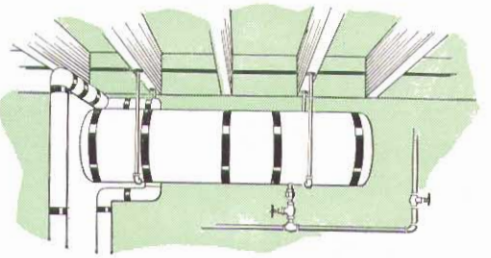
To assure proper functioning of your oil burner and to obtain the maximum in heating efficiency, your heating plant must have a certain amount of air or "draft." Upon combustion, waste materials are formed which must be eliminated by "draft" through the furnace smoke pipe, flue and chimney. Some heat must escape along with waste materials through these channels ...if an excess amount of heat escapes up the chimney, it means that the efficiency of the heating system is correspondingly reduced. "Draft" in the chimney fluctuates with atmospheric conditions, wind, opening of cellar doors, etc. This variation in "draft" results in uneconomical fuel oil combustion and consequent excess consumption of oil. This waste can be prevented at a saving to you by means of an *automatic stack draft control* which stabilizes "draft" conditions and will improve fuel combustion.

Automatic stack draft controls should be inspected from time to time to see that they operate freely and that bearings have not become corroded.



#12 SAVE HEAT WASTE BY INSULATING DOMESTIC HOT WATER STORAGE TANK

It is a fairly simple and inexpensive undertaking to insulate the galvanized iron or copper tank used for the storage of service hot water, as well as the pipes leading from the heating plant and the pipes leading to outlets throughout the house. Such insulation means a more economical year-'round hot water supply at the turn of a tap, less rapid cooling off of the water in the tank and a cooler cellar in Summer.

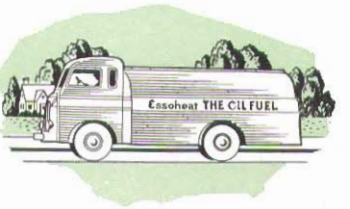


#13 WATCH CELLAR TEMPERATURES

An overheated cellar or boiler room (over 70°-75°) means wasted heat . . . heat that should be going upstairs through your radiators. This can be corrected at a saving to you by proper insulation of the boiler, hot water storage tank, and steam or hot water pipes with one of the approved insulating materials made for this purpose.

#14 BUY YOUR FUEL FROM A RELIABLE SOURCE— INVESTIGATE "BARGAIN PRICES"

Sometimes it is possible to purchase a good grade of fuel at a reduced price. More often, however, "bargain price" fuels are just cheaper quality oils and you get just what you

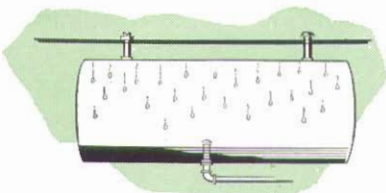


pay for. As a matter of fact, "bargain price" fuel oil can actually cost you more in the long run than a good fuel. "Bargain fuels" are frequently improperly refined and lack uniformity in grade and quality — which means, without constant readjustment of your burner for variation in grade and quality, that you cannot get efficient combustion. As a result your burner uses more oil for a given amount of heat. Due to this lowering of the efficiency of your burner, the burner runs longer, requires more service and is more frequently subject to trouble.

It pays to buy your fuel from a recognized, reliable source that can assure you a high-quality, uniform product of accepted "high-heat" value.

#15 KEEP YOUR TANK FULL IN THE SUMMER

Even though you may not use your burner at all during the Summer months you should keep your fuel supply tank full to prevent "breathing" and "sweating." This will help avoid trouble and needless repair expense from water condensation, dirt and dust accumulating in your tank which might be sucked into your burner when you start using heat again next Fall.



In addition, exterior underground tanks which are empty during a heavy Summer rain have a tendency to "float" to the surface. Keeping your tank filled prevents the possibility of this happening.

Usually Summer prices for fuel oil are lower than through the peak heating season and a saving may be made by getting your tank filled during this low-price period.

#16 USE ONLY THE RECOMMENDED GRADE OF FUEL OIL FOR YOUR BURNER

Most burners will operate on more than one grade of fuel oil. However, any burner will operate better and more economically on one grade than another—and the only man who can tell you which grade of oil to use in *your* burner and your furnace installation is an experienced oil heating engineer.

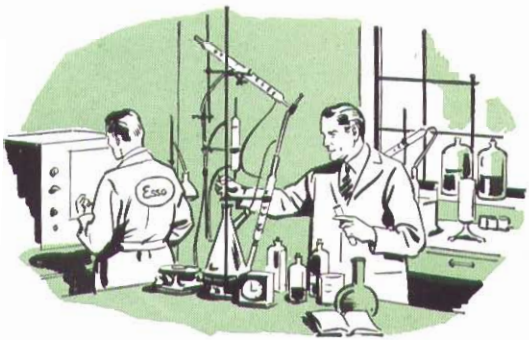
Many burners carry a plate which states "Approved for Fuel Oil No. . . or lighter." This does not necessarily mean, however, that the burner will operate most efficiently and most economically on the heaviest grade of fuel oil for which it is approved. It simply means that the burner will operate *safely* on an oil as heavy as that.

Too heavy a grade may cause incomplete combustion, resulting in excess smoke and soot . . . indication that particles of your fuel have not been fully burned up and are going to waste.

Too light a grade of fuel oil may burn well but may also increase your fuel costs unnecessarily . . . as lighter oils are generally more expensive.

There are many factors entering into the selection of the grade of fuel for a given heating plant; rate of consumption, make of burner, type of furnace and fire box and others.

It is best to obtain the recommendation of a qualified oil heating engineer as to grade of oil you should use in *your* house for most economical heating. Consult your local Esso Marketers representative for this information.



#17 INSTALL STORM DOORS AND WINDOWS

The warm air in your home is rapidly cooled by glass in windows and doors . . . the more glass you have, the more fuel you require to heat your home. BUT, *storm windows* and *doors* can greatly reduce this heat loss.

The "dead" air space created between the storm sash and your permanent doors and windows acts as a heat loss insulator that can save you as much as 20% in fuel consumption.

Storm doors and windows, however, must fit properly to achieve the desired results. They should be examined to this end.

#18 INVESTIGATE THE ADVISABILITY OF INSULATION FOR YOUR HOME

You can save from 10% to 45% on your fuel bills by proper insulation of walls and roof, and also floors over unexcavated foundations, dependent of course upon the original construction of your house.

More often than not, the original investment you may make in insulating and weatherstripping will be repaid fully by economies in fuel consumption, in addition to assuring you more enjoyable even temperatures throughout the house, and increased comfort from the elimination of drafts.

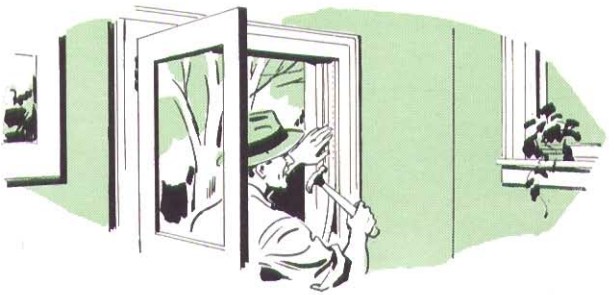
There are many satisfactory methods of home insulation and it is recommended that you seek the advice of a qualified heating engineer or contractor in planning proper, economical insulation for *your particular house.*

#19 USE ADEQUATE WEATHERSTRIPPING

Doors and windows should be weatherstripped. Even though they may seem to fit tightly, they may have worn sills or cracks in sashes that let cold air in and hot air out, which means they can cost you plenty in wasted fuel. Even doors and windows in good condition admit a certain amount of cold air unless they are weatherstripped.

Weatherstripping is an inexpensive yet highly efficient means of insulating doors and windows against infiltration of cold air and the escape of warm air.

On stone construction or where metal casement windows are used, it is necessary that the space around the window frames be properly caulked to prevent heat leakage.



The last but by no means least important tip on saving money on heating is . . .

#20 DON'T EXPERIMENT WITH THE MECHANICAL PARTS OR CONTROLS OF YOUR OIL BURNER!

. . . without the advice and assistance of qualified oil heating engineers or burner service men.

An oil burner is a precision-built machine that mixes air and fuel oil for combustion in the most scientific manner to give you maximum heat at lowest fuel cost. Like the carburetor of your automobile it can be put out of adjustment by an inexperienced person who does not have a thorough knowledge of the equipment and the proper tools, gauges and testing devices with which to work.

General Information about Oil Burning

WHAT DO THEY MEAN WHEN THEY SAY "CO_2 PERCENTAGE?"

Fuel oil combustion is a chemical reaction between a hydrocarbon compound (fuel oil) and the oxygen in the air that produces heat. The principal products of this reaction are normally carbon dioxide (CO_2), and water (H_2O); both of which are in the form of gases which pass up the flue.

In the laboratory it is possible to mix the exact proportion of air with the fuel oil to burn it completely without any excess of oxygen left over. In that case the percentage of CO_2 in the exhaust or flue gases will be about 16%, and that is as high as it is possible to go even under theoretically perfect conditions.

In actual home furnace operation, the flue gases do not have this much CO_2 because more than the exact proportion of air has to be added for clean combustion. This "excess" air really passes through the burner and is heated up by the furnace, where it dilutes the CO_2 in the flue gases, reducing the percentage of CO_2. It is easily seen that the less the dilution with this excess air, the higher will be the CO_2, the more nearly perfect will be the combustion, and the more heat there will be per gallon of fuel consumed. As stated before, it is not practically possible to secure laboratory perfection in a home heating installation and the percentage of CO_2 normally experienced in home furnace operation is 8% to 11%.*

Properly equipped service men use this carbon dioxide (CO_2) measurement to guide them in the proper adjustment of your oil burner.

However, there is another factor which also has a definite effect on the economy of your heating system. The efficiency of the furnace itself, in transferring this heat of combustion into usable heat to be distributed through the house, must be

considered in any evaluation of efficiency of the burner and furnace unit.

*8% is the minimum CO_2 required by the U.S. Department of Commerce Commercial Standards CS75-39.

WHAT DO THEY MEAN BY "STACK TEMPERATURES"?

The temperature of the flue gases—or "stack temperature" as it is called—is a measure of the efficiency of the furnace in converting the heat of combustion into usable heat for warming the house.

In any heating operation there is bound to be some stack heat loss, but the more this loss is minimized, the more economical is your operation.

A stack temperature of 600°F. means approximately 20% heat loss with carbon dioxide (CO_2) percentage at 11%; whereas, a stack temperature of 400°F. means only about 15% heat loss with the same 11% carbon dioxide (CO_2) content.

Too low a stack temperature, however, is not desirable because it may mean improper burner adjustment, incomplete combustion, insufficient draft . . . which results in uneconomical heating. It can also cause harmful corrosion and "sweating" in flues and chimneys. Stack temperatures between 450° and 650° are normally found in home installations.

The combination of relatively high carbon dioxide percentage in the flue gas and a relatively low flue gas or stack temperature means an economical burner-furnace unit and low heating cost, assuming that the distribution and radiation in the house is proper for the size of the house.

YOUR HEATING PLANT SHOULD SUIT YOUR NEEDS

Are you sure your oil burner is the *right* size and type for the load required by your home? Many times extra radiation is added to a heating system due to rooms added to the house or conversion of cellar space into playroom space, etc. . . . but no compensating changes are made in the heating system to carry the extra load. In other cases, the load similarly may have been reduced.

Have your furnace and boiler checked for proper size to assure its ability to carry full heating load with greatest economy. A heating plant that is either oversized or undersized uses an excess amount of fuel oil to keep your home at proper temperature.

A furnace not fitted for your needs, whether hot water, hot air, or steam means inefficient transfer of heat from your fuel to your rooms and may cost you too much to operate.

For major improvements, have your heating plant checked by competent oil heating engineers. The cost will be repaid in fuel economies.

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