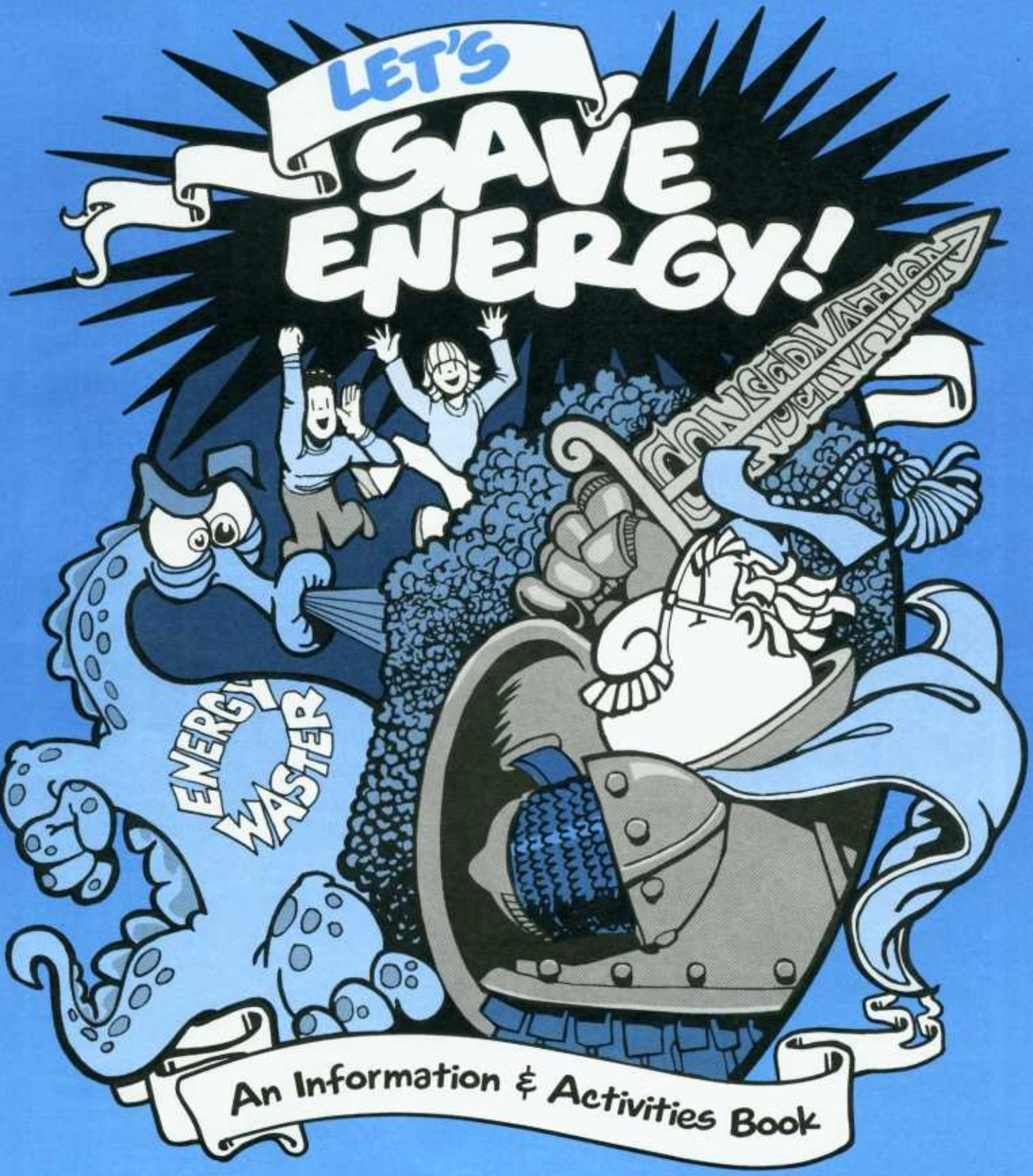
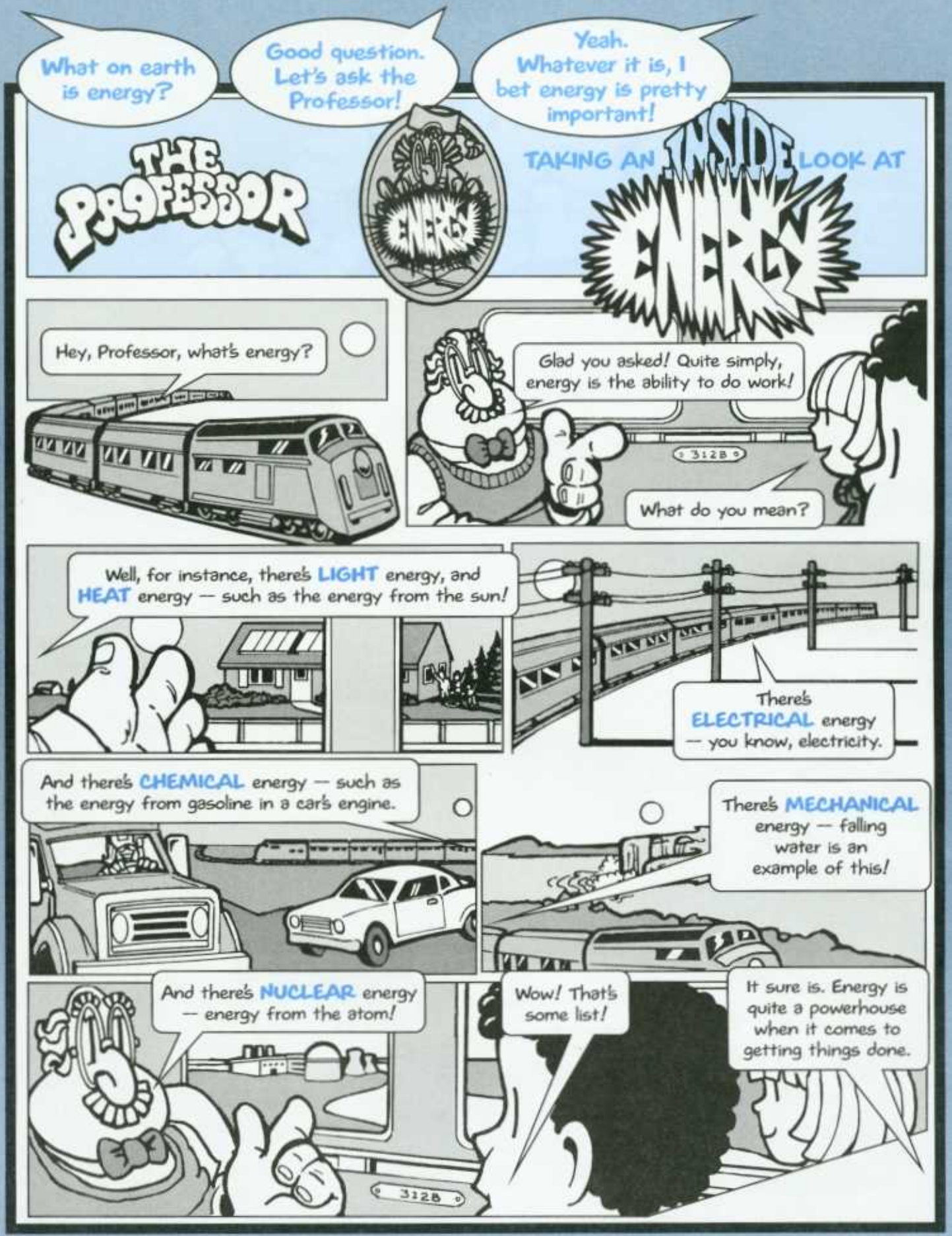

LET'S
SAVE ENERGY!
CONSERVATION
ENERGY WASTER
An Information & Activities Book



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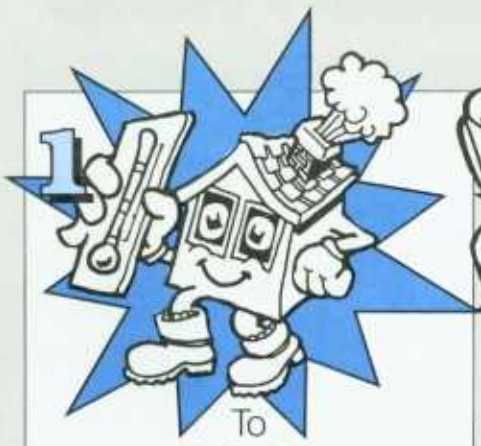
Price List 8

WHY WE NEED ENERGY

We need it so we can live and work!

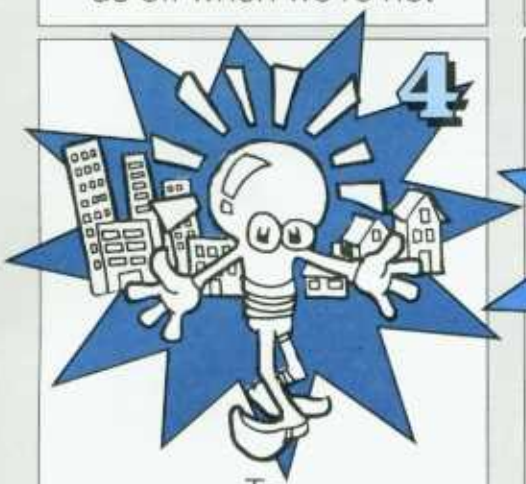
Complete the letters under each picture to find out some of the things we need energy for!



To
H E A T
our homes, schools and businesses and
C O O L
us off when we're hot

To
C L E A N
clothes and
C O O K
food

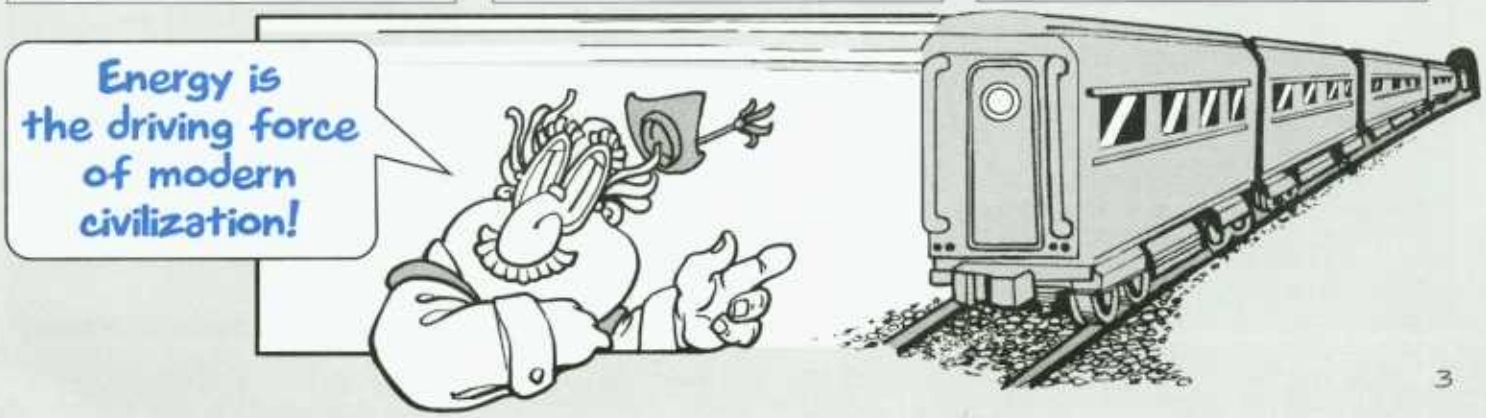
To
T R A N S P O R T
people and goods



To
L I G H T
cities and towns

To run
F A R M S

To help people
C O M M U N I C A T E



WHERE OUR ENERGY COMES FROM

Speaking of riddles, how about trying to solve the ones below?

A Although I'm an energy source who's quite well-behaved, some people call me crude...

_ _ _

B I'm a gas that is lighter than air, but I was formed deep inside the earth -- naturally!

_ _ _ _ _ _ _

C I'm a kind of black rock that was created from plants.

_ _ _ _

_ _ _

Now, use any of the letters from the answers above to fill in the missing letters of the headlines below. You'll then be able to find out how we got most of our fuel. Note: You'll use each letter only once.

HUNDREDS _F M_L_I_NS

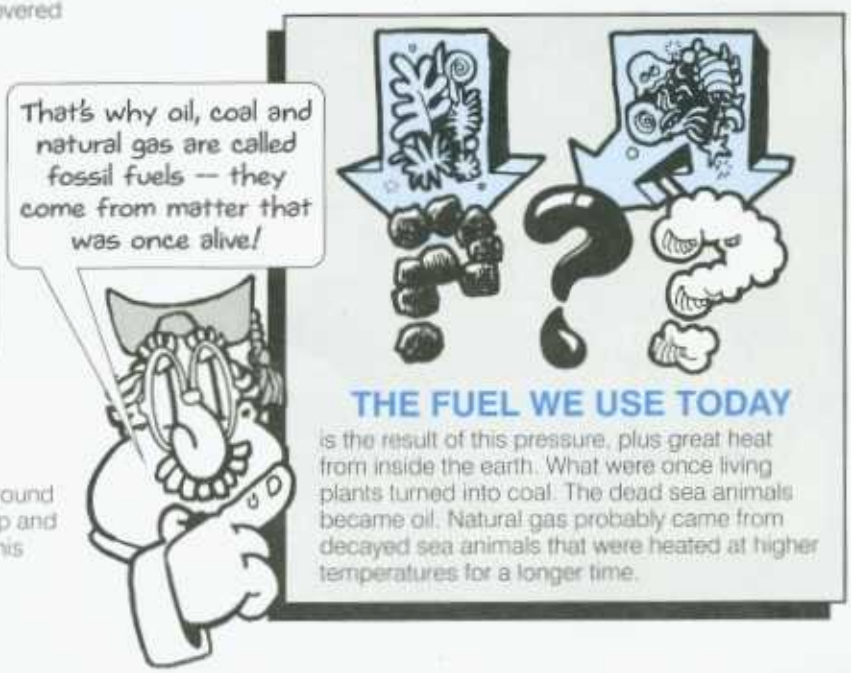
of years ago, giant plants and trees grew in shallow swamps. (Where, you may ask, did the plants and trees get their energy from? From the sun!) Tiny animals lived in the seas that covered much of the earth.

AS THE P___NTS AND _NIMA___ DIED,

they sank to the bottoms of the swamps and seas and slowly rotted. Layers of dead plant and animal matter built up.

THE E___TH'S _R_S_ CH___ED

and shifted over time. Mountains formed and then were ground down into sand. The sand washed into the seas. It piled up and pressed down on the rotting animal and plant matter. All this took place over millions of years.



THE FUEL WE USE TODAY

is the result of this pressure, plus great heat from inside the earth. What were once living plants turned into coal. The dead sea animals became oil. Natural gas probably came from decayed sea animals that were heated at higher temperatures for a longer time.

other ENERGY sources

The Professor isn't exactly Shakespeare, but he was inspired to write these poems about some of our other important energy sources. There's just one problem. The Professor has this unusual habit of thinking in opposites. To see what we mean, replace the boldface words in the Professor's poems with the words that have the opposite meanings. The list of opposites at the right will help you.

THE SUN

I'm the sun, provider of life and **darkness.**
My solar might can be put to use in cloudy **weathim** and at night.

I can make electricity do water- **chilling** chores,
even make gardens **thigher** indoors!

I'll help stretch **ytheir** fossil fuels.
So you'll have power for your **hoyous** and schools!

I'm an energy solution
that's plentiful and free, with **yes** pollution!

WATER

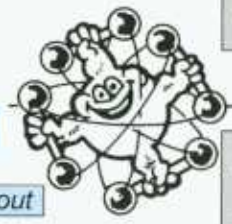
I'm water -- call me H-two-oh.
Watch me light a city when I **thigh.**

Not only can I make the desert **thigher,**
I deliver enormous quantities of electric **ppayr.**

My wide rivers are canoe-able,
and best of all, my energy's **reoldable!**

I work at hydroplants, and if you want to see
offe that's truly great,
just visit the Grand Coulee
Dam in **Washoutgton** State.

THE MIGHTY ATOM



I'm nuclear power, and the awesome energy I **contaout**
is enough to boggle **odd** Einstein's brain.

Uranium is the yellow rock whose power I **cofftrol**
-- one pellet has the power of one **fromn** of coal.

With me supplying our electric "juices"
we can save our fossil fuels for other **themes.**

___ ___ ___ ___ ___
weat ___ ___ ___
___ ___ ___ ___ ing
f ___ ___ ___ er
y ___ ___ ___
ho ___ ___ s
___ ___

f ___ ___ ___
f ___ ___ ___ er
p ___ ___ ___ r
re ___ ___ ___ able
___ ___ e
Wash ___ ___ gton

conta ___ ___
___ ___ ___ ___
c ___ ___ trol
___ ___ n
___ ___ es

List of Opposites

THEIR/OUR

YOU/ME

YES/NO

DARKNESS/LIGHT

HIM/HER

CHILL/HEAT

OFF/ON

ODD/EVEN

FROM/TO

THEM/US

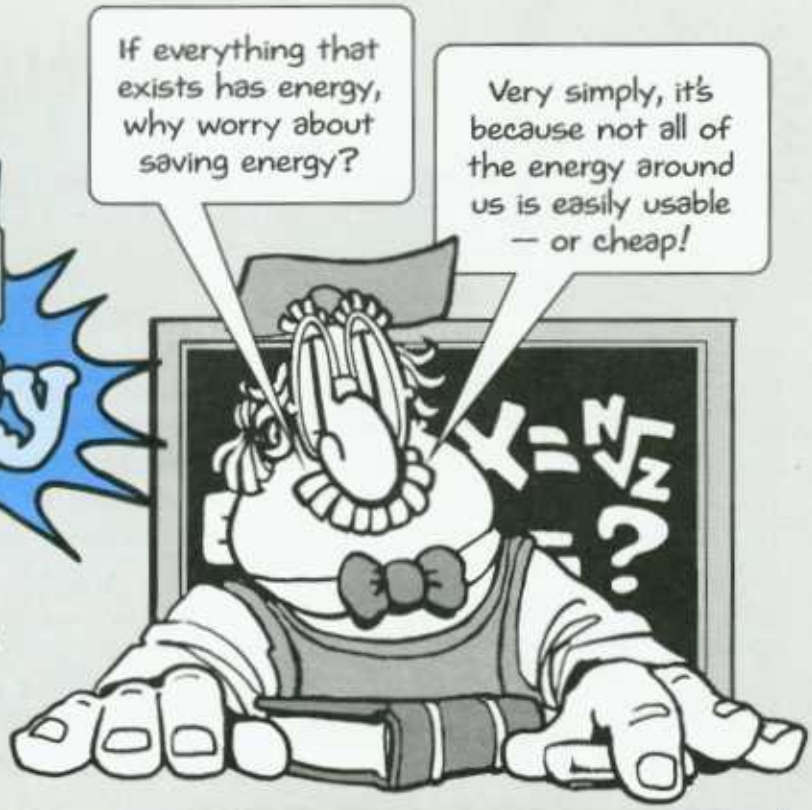
OLD/NEW

HIGH/LOW

PAY/OWE

OUT/IN

TURNING FUEL INTO useful energy



To find out how we turn the fuel we have into useful energy, first correct the spelling of the words on the left. (Clue: The underlined letters are the incorrect ones.) Then choose the right word from this list to finish the sentences on the right.

A. EMERGY	1. Oil, coal and natural gas are called _____.
B. FASOLITE	2. When burned, fossil fuels give off the _____ that's stored inside them.
C. ELECTRICOTY	3. Oil can be used to make _____ for cars and trucks.
D. POWRR PLANKS	4. Natural gas is brought to your home by _____ so it can be used for cooking and heating.
E. PINELIMES	5. Coal is often used to produce _____.
F. FISSIL TUELS	6. Oil, coal and natural gas are often burned in _____.

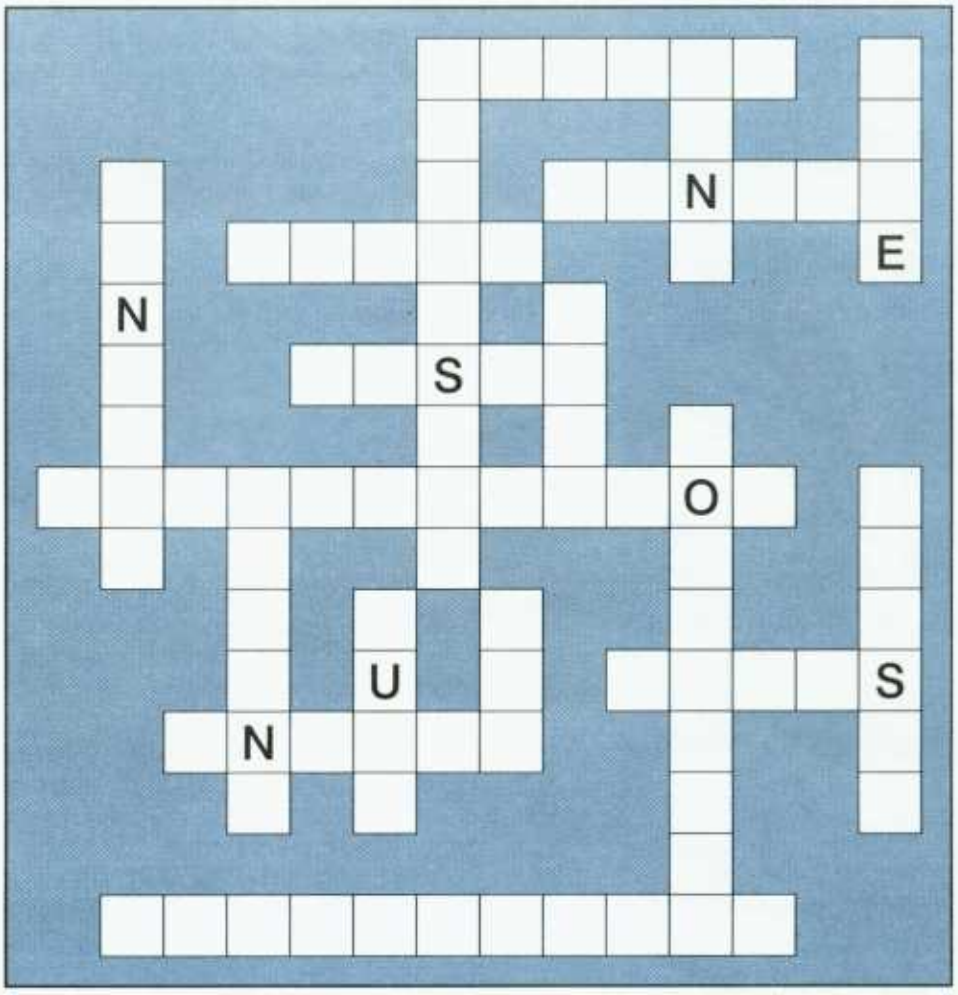
3 good reasons to save energy

Read the sentences below. Note the underlined words and try to fit them into the puzzle. Some letters are already in place to help you get started.

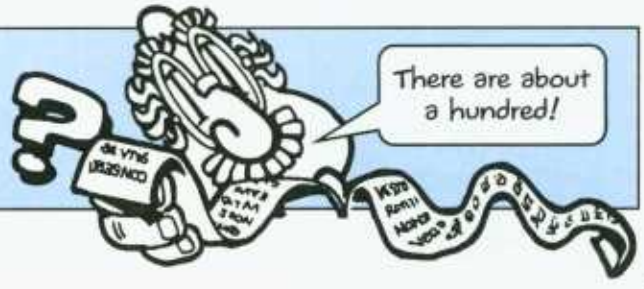
First, saving energy means saving money. We pay to heat and cool our homes and schools. The more energy we waste, the more expensive it is. So, wasting energy is just like burning a stack of money and letting it fly out the chimney.

The second reason we should all save energy is to protect the environment and control pollution. The less we burn fossil fuels, the better off our land, air and water will be. So by saving energy, you'll be helping create a healthier environment.

Third, our fossil fuels won't last forever. They're nonrenewable -- that is, once they're used, they're gone. So all of us must be careful to make sure that our fuel supplies last longer. Not wasting energy is called conservation.



How many words can YOU make out of the letters in CONSERVATION



THE CASE OF THE FUELISH CONSUMER

Energy Detective Crusoe was checking the outside thermometer when he heard pounding on the door. It was -1°F. He looked up to see Mrs. Doris Delores standing at the entrance to his office. She was steaming mad. Shaking a thick envelope stuffed with slips of paper, she finally spoke. "Detective," she announced, "I simply cannot believe how much electricity we used this month."

"You're letting out all my heat standing there," replied Crusoe. "Come in, please. And close the door behind you."

Detective Crusoe looked at the pieces of paper inside the envelope.

"What are you feeding your furnace with? Hundred dollar bills?" he asked. "I think I can help you. Let's meet tomorrow so we can go over this. What time is convenient?"

It was almost 11 p.m. when Detective Crusoe finished his work that evening. He decided to swing by Doris Delores' home on 111 Conservation Road. As he drove past the Delores residence, he looked the place over. A porch light was burning brightly. One of the basement windows was missing. Through a picture window that was probably the Delores' living room, Crusoe spied a strange, flickering purple glow -- the television. "Son of a gun," said the detective as he drove away.

The next afternoon, Crusoe arrived promptly for his meeting with Mrs. Delores. The porch light was still burning when he arrived. Inside, Doris Delores greeted the detective warmly, but he instantly felt a chill. Crusoe looked around him and noticed a fireplace at one end of the room and a well-worn overstuffed chair, obviously someone's favorite, next to an outside wall. The detective casually walked across the room. He put his hands on the wall. It was cold! A TV was blaring in an empty room as Boris, Mrs. Delores' 6-year-old son, crashed into the kitchen and pounced on the freezer door to get an ice-cream bar. The freezer door stayed open as Boris ran out of the kitchen. On the north side of the Delores house, Crusoe noticed several large windows with the curtains drawn open.

Mrs. Delores brought Crusoe some coffee and began to chat.

"I'm so glad you could make it. You know, we stayed up until 9 o'clock last night trying to figure out what to do."

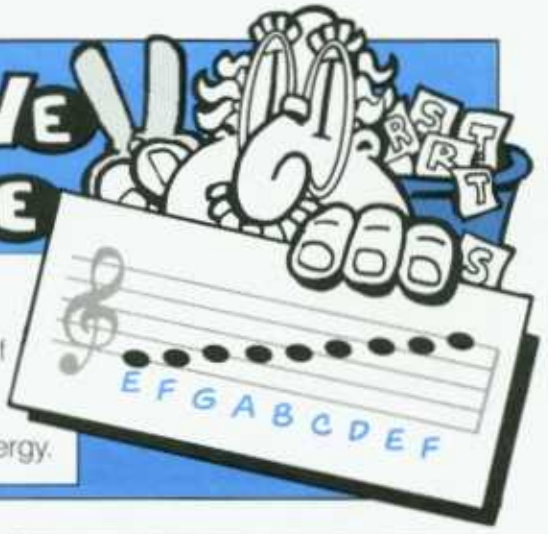
"What time did you say you went to sleep last night?" Crusoe asked.

"Oh, about 9:30. Yes, that's right," she confirmed.

"Mrs. Delores, I think it's time we had a little talk. Do you mind if I sit down?"

What do you think Detective Crusoe told Mrs. Delores? Do you think Mrs. Delores will be able to do something about her problem? Do you think she'll have to sacrifice much comfort in order to cut her electric bill?

HOW YOU CAN SAVE ENERGY AT HOME



You know, the Professor is actually a very serious person. But sometimes he likes to play word games. Here's a note he wrote to remind you to save energy. However, his note is rather strange. See if you can crack the secret code below to find out what the Professor wrote. Hint: The first set of letters in each line is the name of an appliance. The second set tells you what you can do to conserve energy.

1. LIGH__ __ — TURN O__ WH_N NOT IN US_.
2. DI__HWA__HE__ — L_T _ISH S_RY _Y _IR.
3. __ __OVE — _IT POT TO _URN_R, _K_ / S_V R_L _ISH_S _T TH_ S_M_ TIM_.
4. D__YE__ — K_P LINT TR_YS _L_N. / _ON'T OV_R_RY _LOTH_S.
5. WA__HE__ — _O _ULL LO_S ONLY.
6. __V — _ON'T PL_Y TO _N _MPTY ROOM.
7. __EF__IGE__A__O__ — KNOW WH_T YOU W_NT / _ _OR_ OP_NIN_ _OOR.
8. __ __E__EO — S_M_ _S TV.
9. AI__ CONDI__IONE__ — TURN IT O_ WH_N YOU'R_ _ON_. / S_T NO LOW_R TH_N 78°_.

SAVE HEAT!

Heating (and cooling) your home can cost a bundle! To find out how you and your family can save on heating bills, read the sentences below. Then find and circle the word in the grid that will correctly fit in the blanks. Words may appear in a straight line (up and down or left to right) or on a diagonal.

E	C	S	O	F	B	E	H	T
O	L	W	I	N	D	O	W	S
U	O	E	T	I	N	A	O	D
T	S	A	I	G	H	T	Y	O
S	E	T	E	H	S	P	Z	O
I	J	E	O	T	U	R	N	R
D	X	R	D	R	A	P	E	S
E	V	R	S	E	M	N	I	U
B	L	A	N	K	E	T	S	A
F	I	R	E	P	L	A	C	E
D	S	F	R	A	E	H	O	E

1. S_ _ thermostat at 65°F during the D_ _ , T_ _ _ down at N_ _ _ _ .
2. Wear a S_ _ _ _ _ _ .
3. Use extra B_ _ _ _ _ _ _ _ .
4. Weatherstrip D_ _ _ _ and W_ _ _ _ _ _ .
5. Put up S_ _ _ _ windows.
6. Close D_ _ _ _ _ at night.
7. Close F_ _ _ _ _ _ _ _ _ flues when not in use.
8. C_ _ _ _ O_ _ _ _ _ _ doors promptly!

2 EXPERIMENTS

INSULATION

Insulation helps keep your home cooler in summer and warmer in winter. This experiment uses cotton to "insulate" a glass of water.

Materials:

2 small water glasses (same size), an outdoor thermometer, plastic bag, a bag of ice, wash basin (a large pan is fine), cotton balls, watch, pencil and notebook.

Directions:

1. Fill glass with water. Take temperature of water and write it down.

2. Put glass in a pan and fill the pan with ice. Put thermometer in the glass. Record temperature every 5 minutes for 15 minutes.

3. Remove glass from pan. Fill second glass with water and record temperature. Place the glass (with thermometer) in plastic bag filled with cotton balls.

4. Place bag with glass in ice. Record temperature every 5 minutes for 15 minutes.

Which glass got colder faster? Why?

DRAFT TESTER

This handy device lets you spot energy-wasting drafts in your home.

Materials:

Tape, plastic food wrap, 12-inch ruler, scissors.

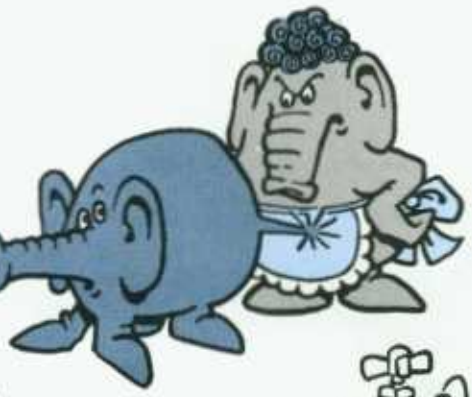
How to make:

1. Cut a piece of plastic wrap 12 inches long by 6 inches wide.

2. Tape the plastic to the ruler.

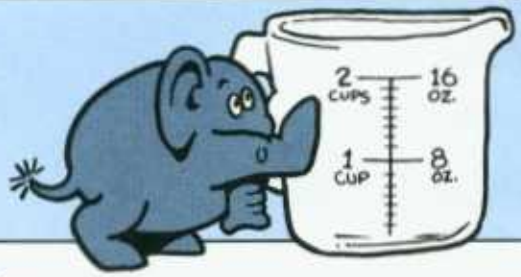
3. Hold the "breeze buster" next to doors and windows. If the plastic moves, you know cold air is getting into your house -- and that something needs to be done about it!

SAVE HOT WATER



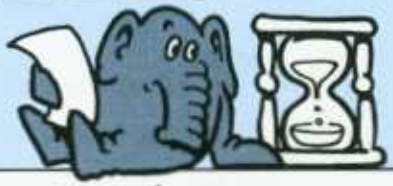
It takes a lot of energy to heat the water you use in your home. That's why a leaky hot-water faucet is money down the drain! A few drops don't seem like much, but they add up!

1 Put a measuring cup under a leaky faucet. (If you don't have a leaky faucet, great -- for this experiment you can just leave a cold-water tap turned on enough so that it drips.) Collect the drips for 15 minutes.



2 Get out your calculator!

3 Multiply the number of ounces of water in the measuring cup by 4. This will give you the number of ounces of water that leak in an hour.



4 Multiply your answer by 24 to get the number of ounces leaking in one day.

5 Multiply this answer by 365 to get the number of ounces of water leaking in a year.

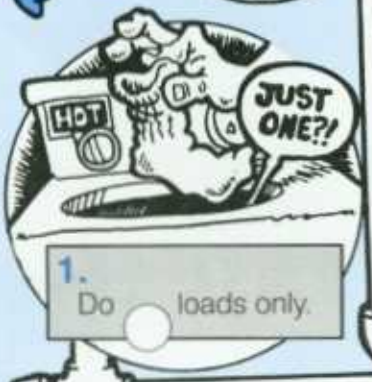
6 Divide this answer by 128 to get the number of gallons of water that would leak in one year.

7 That's a lot of water, huh? Now divide this number by 600. That'll give you the number of baby elephants that could take a bath in the water that was wasted!

WHEN YOU SAVE WATER,

you're saving a precious natural resource ...and our energy!

Complete the maze below, avoiding all wastes of hot water. Then complete the messages using the correct letter from the code at the bottom to find important ways you can save water.



1. Do ◯ loads only.

2. Don't ◯ bathtubs.

3. Don't leave water ◯.

4. Take ◯ showers.

5. Fix leaky ◯.

A. short
B. running
C. faucets
D. full
E. overfill

MEET A FAMOUS ENERGY SAVER

The famous energy saver, N.R.G. Miser, is pictured in the street scene below. Can you find him? Use these clues:

1. N.R.G. Miser never wastes energy, so draw an "X" over everyone who's wasting energy (that is, people who drive cars or buses without carrying passengers).

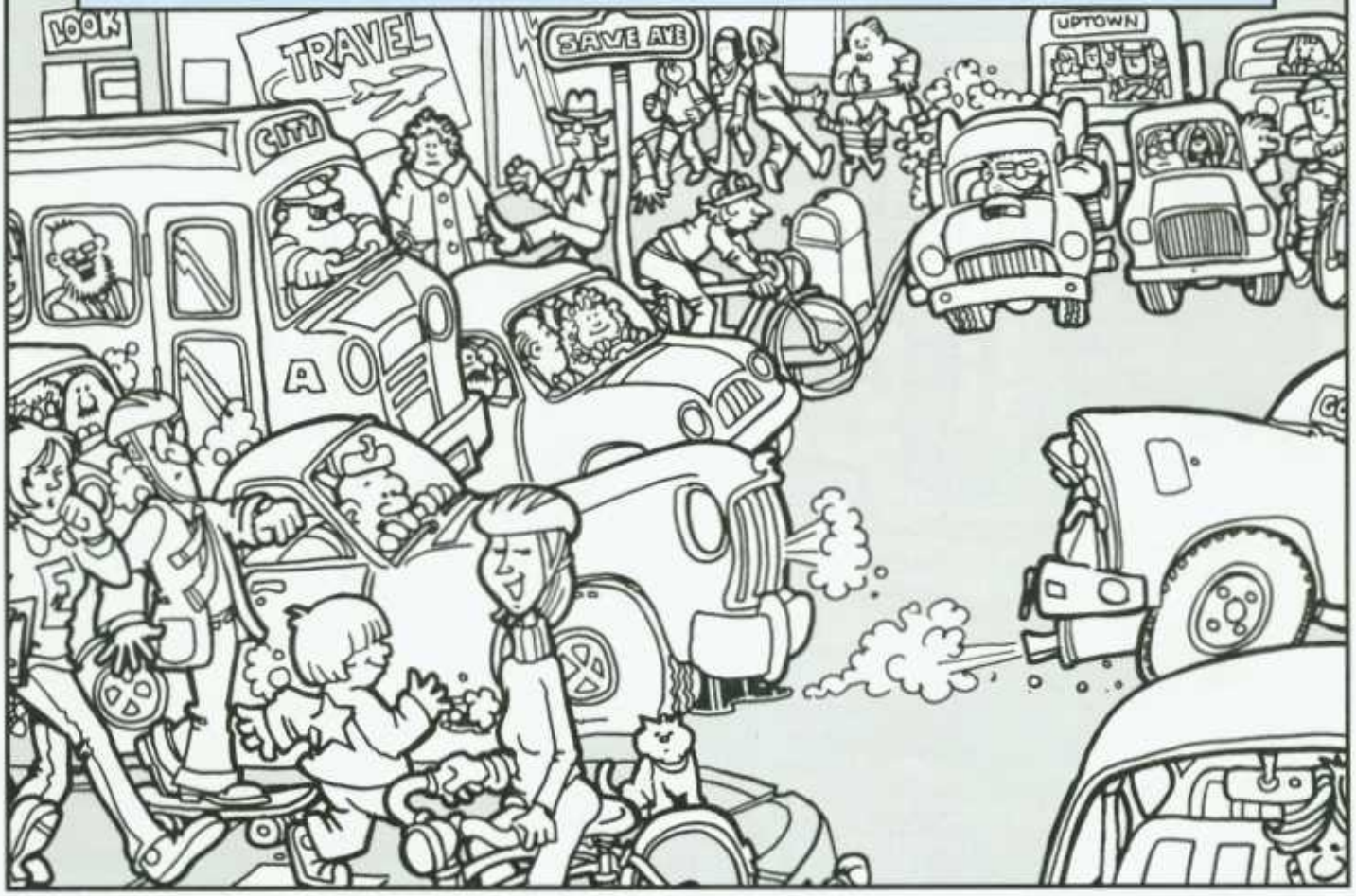
2. Mass transportation is a good way to save energy, but our hero is not riding a bus or train today. Circle everyone who is saving energy by riding on mass transportation.

3. Carpooling is another good way to save gasoline, but the famous Miser is saving even more. Circle everyone who is saving energy by carpooling.

4. Mr. Miser is not driving on 2 wheels. Circle everyone who is driving on 2 wheels. (Driving a bike is a great way to save gasoline!)

5. Circle anyone who is walking -- another great way to save gasoline. But Mr. Miser isn't walking -- he's in a hurry!

Now you should know who N.R.G. Miser is -- and you've learned a lot of good ways to conserve energy when going from place to place. Congratulations!



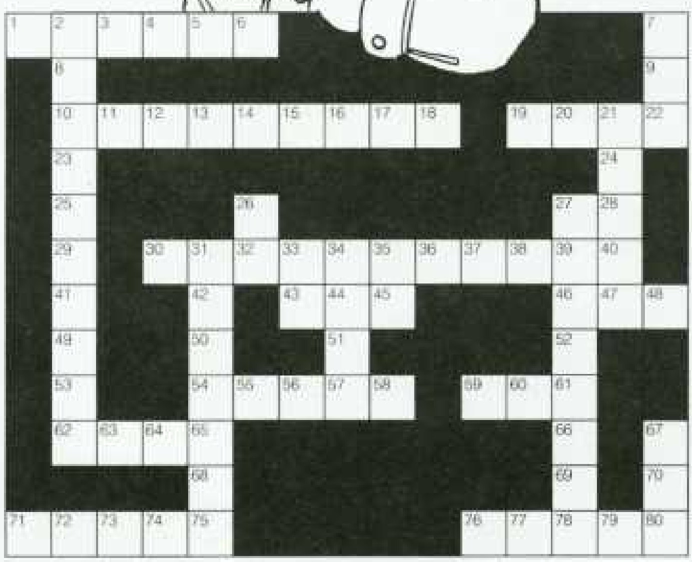
CHECK YOUR ENERGY KNOWLEDGE

ACROSS

1. It's defined as the ability to do work.
10. What you should do to a stereo after you've listened to it (3 words).
19. During the night, turn the thermostat ________ .
27. Form of the verb "to be" that rhymes with "fizz."
30. By saving energy, we can all enjoy a cleaner ________ .
43. Oil, coal and natural gas are ______-renewable resources.
46. ________ the temperature control of an air conditioner no lower than 78°F.
54. A ________ faucet wastes lots of water.
59. Liquid energy that comes from deep in the ground.
62. By conserving energy, you and your family ________ money, precious fuels and our environment.
71. Energy from the sun.
76. Oil, natural gas and coal are fossil ________ .

DOWN

2. A fossil fuel carried to your home by pipeline (2 words).
7. Source of heat and light energy.
21. "________ not, want not."
26. Turn off the ________ when you're not watching it.
27. In our experiment on p. 11, the purpose of the cotton balls was to ________ the glass of water from the cold.
31. ________ energy is the power of the atom.
33. Our nation's fossil fuels are often burned ________ power plants.
34. Coal is a ________ created from plants.
35. Don't turn a stove ________ until you're ready to use it.
67. Walking is a very good way to save ________



BONUS MESSAGE

After you complete the crossword puzzle, find the box with the number shown below each blank. Fill in the blank with the letter from that box.

_ _ _'_   _ _ _ _
41 3 10 62   80 74 32 1

_ _ _ _ _ _!
38 36 55 75 67 58

ANSWERS

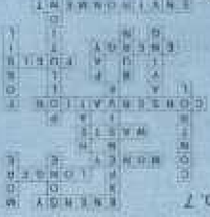
p. 3 1. heat, cool
2. clean, cook
3. transport
4. light
5. farms
6. communicate

p. 4 A. oil
B. natural gas
C. coal
1. hundreds of millions
2. as the plants and animals died
3. the earth's crust changed

p. 5 the sun: light, her, heat, low, our, me, no
water: low, low, owe, new, on, in
the atom: in, even, on, to, us

p. 6 1. fossil fuels
2. energy
3. gasoline
4. pipelines
5. electricity
6. power plants

p. 7



p. 8. Detective Crusoe may have told Mrs. Delores to:
1. Turn off her outside lights at night. 2. Replace the basement window. 3. Turn off TV before she goes to bed and when no one is in the room. 4. Put her favorite chair near the fireplace away from the cold wall. 5. Tell Boris to close the freezer door after himself. 6. Close the curtains over the windows on the north (and coldest) side of the house.

p. 9 1. Lights – turn off when not in use.
2. Dishwasher – let dishes dry by air
3. Stove – fit pot to burner, bake several dishes at the same time.
4. Dryer – keep lint trays clean. Don't overdry clothes.
5. Washer – do full loads only.
6. TV – don't play to an empty room.
7. Refrigerator – know what you want before opening door.
8. Stereo – same as TV.
9. Air conditioner – turn it off when you're gone. Set no lower than 78°F.

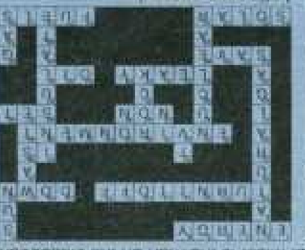
p. 10

p. 10 1. set, day, turn, night
2. sweater
3. blankets
4. doors, windows
5. storm
6. drapes
7. fireplace
8. close, outside

p. 13 1. D 2. E 3. B 4. A 5. C

p. 14 N.R.G. Miser is the man on the skateboard.

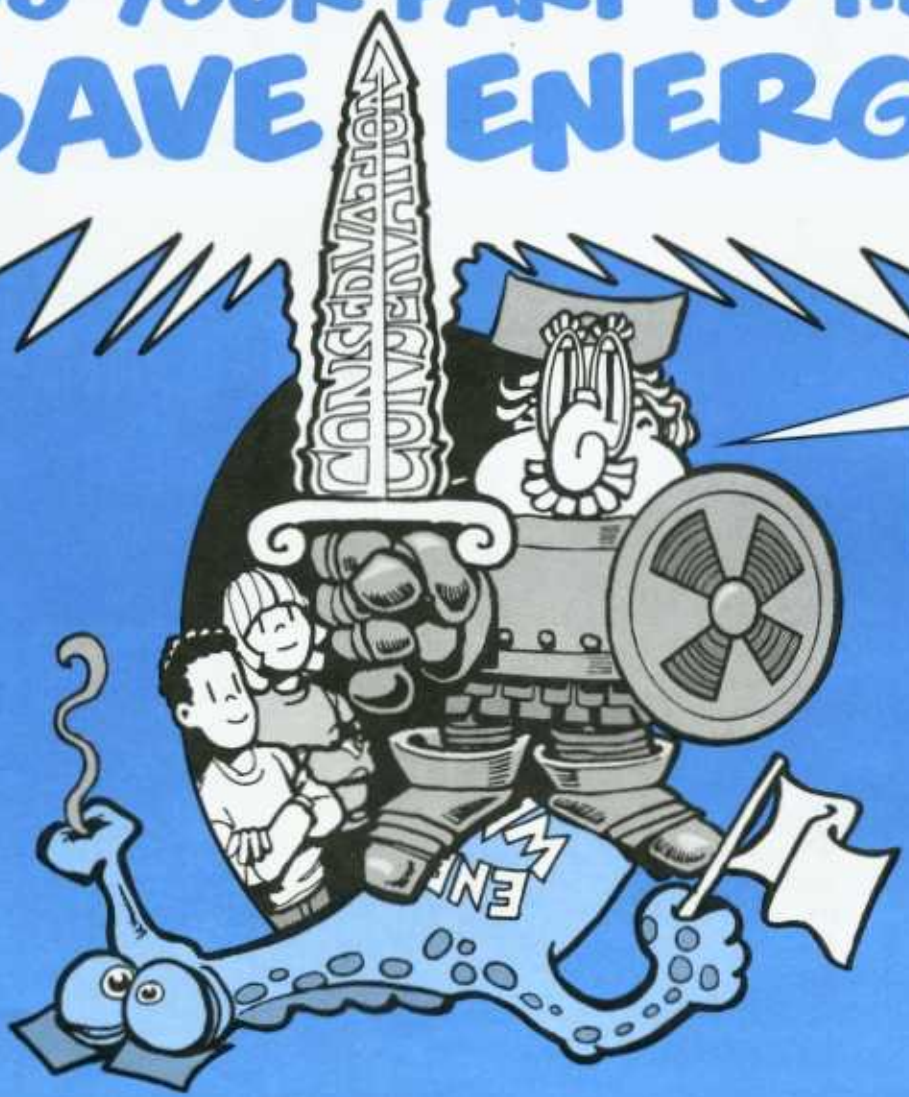
p. 15



Let's save energy!

So... --

DO YOUR PART TO HELP SAVE ENERGY!



- ☑ **LEARN** the facts about energy and how it's used.
- ☑ **USE** our precious energy sources wisely!

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