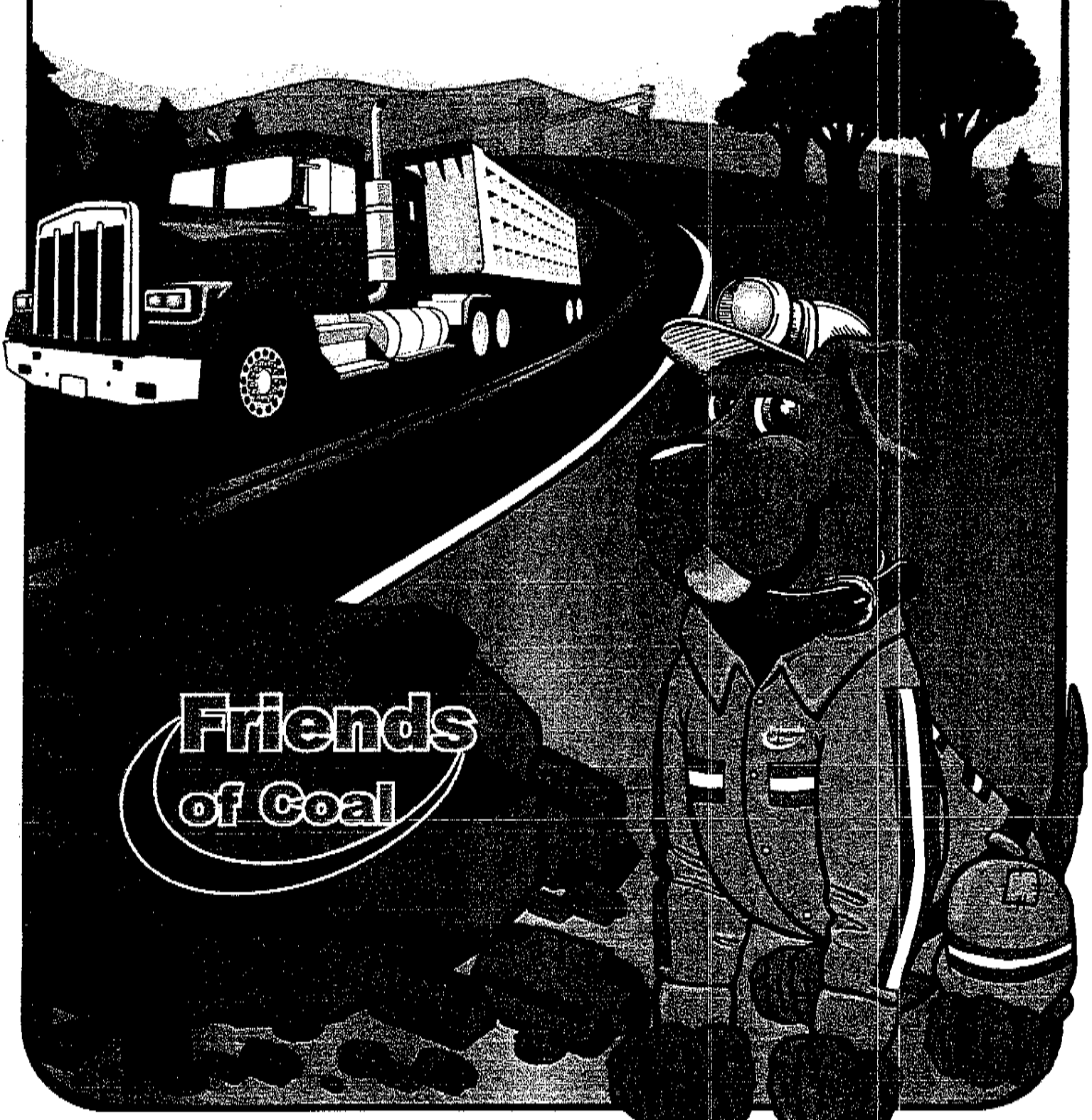


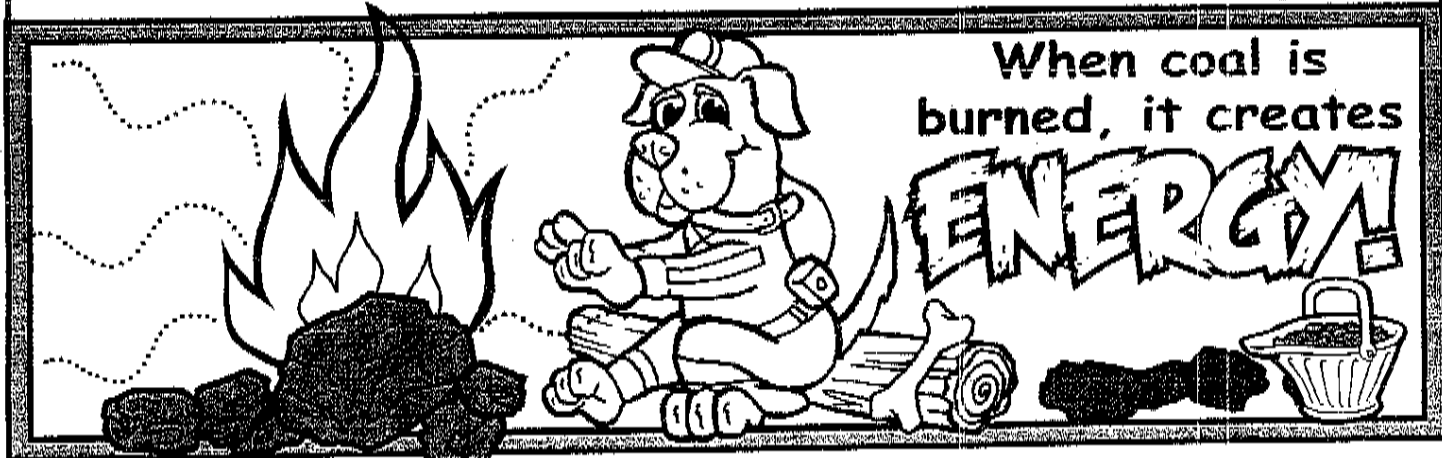
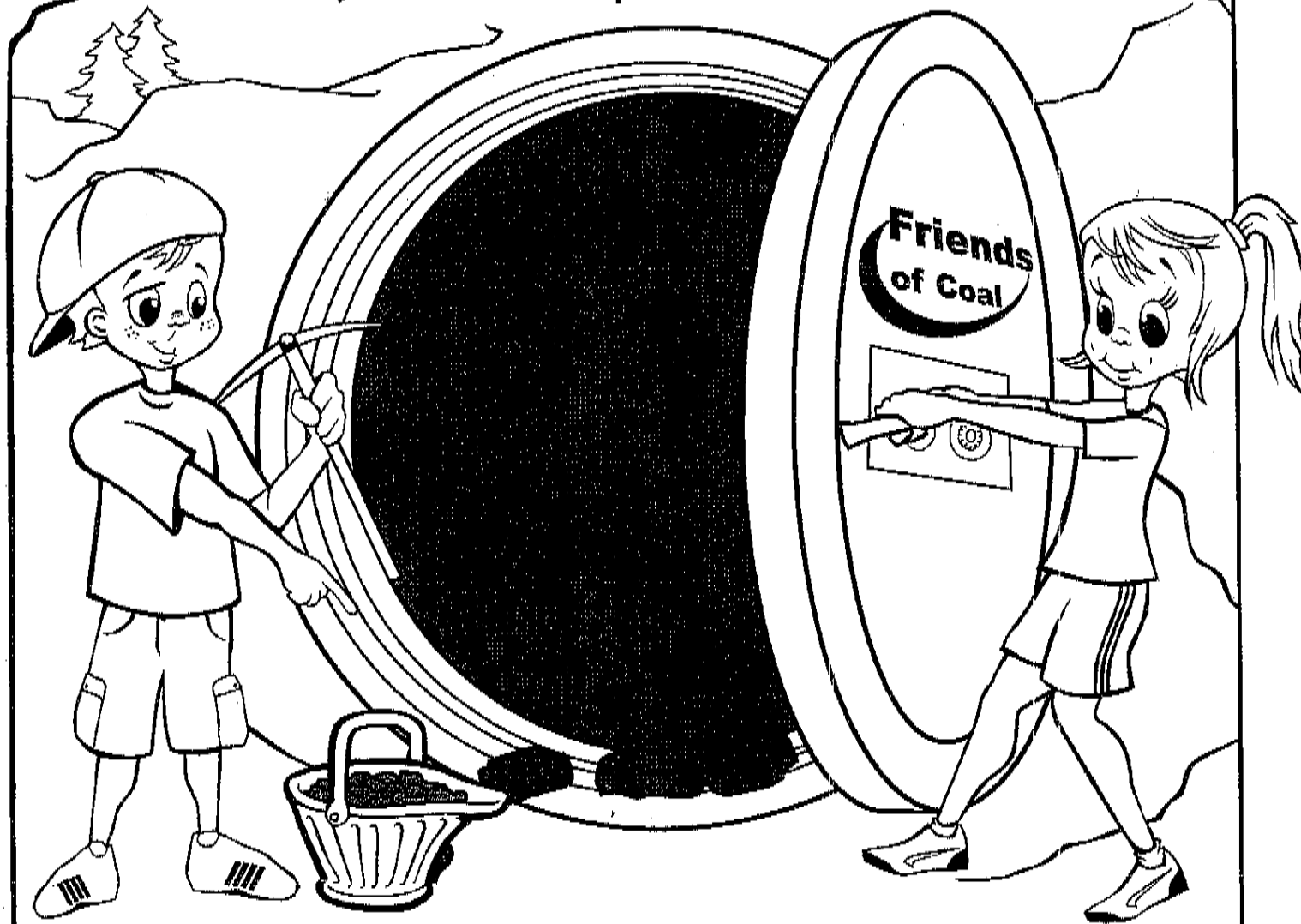
LET'S LEAVE NO COAL UNBURNED



**Friends
of Coal**

WHAT IS COAL?

Coal is a black rock made up mostly of carbon. It's the most plentiful fuel we have!



COAL COMES FROM INSIDE THE EARTH!

Use this word list to complete the sentences below.

MUD	PRESSURE	MILLIONS
COAL	SAND	WEIGHT
PEAT	SWAMPS	HEAT

1

_____N____
 of years ago,
 ___A_____
 covered much
 of America.
 Giant trees
 and plants
 grew here.



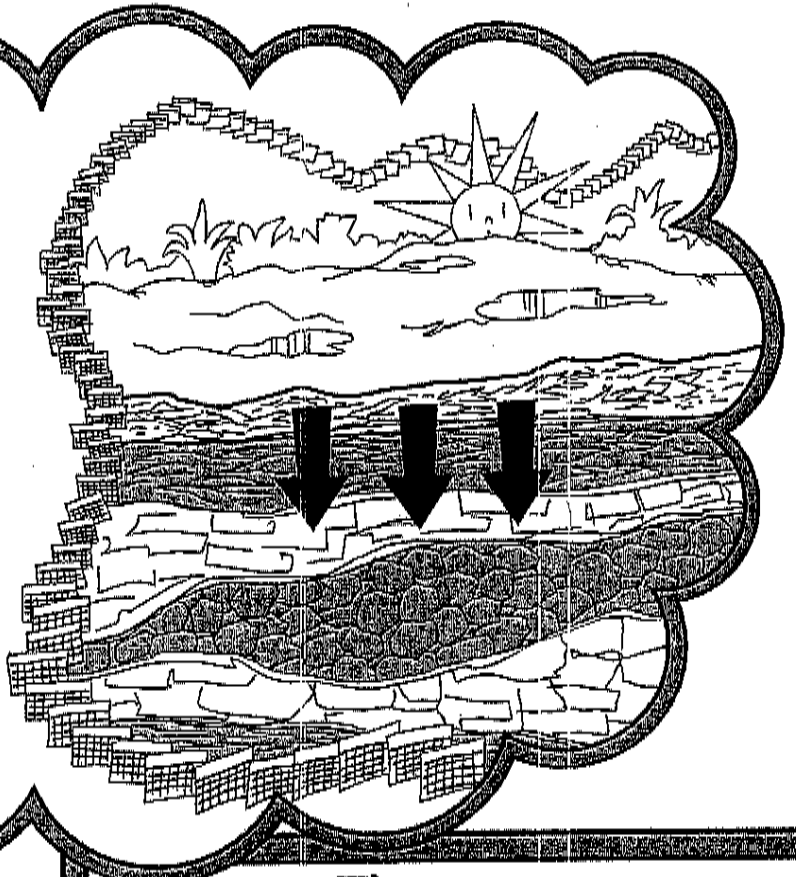
2

When the plants
 died, they were
 buried by
 ___D. and
 ___U___ A
 spongy material
 called ___E___
 was formed
 from the
 rotting plants.



3

The _____ G _____
 of the mud and sand
 created great
 _____ R _____
 and _____ A _____. Over
 time, this caused
 the peat to turn
 to _____ O _____.



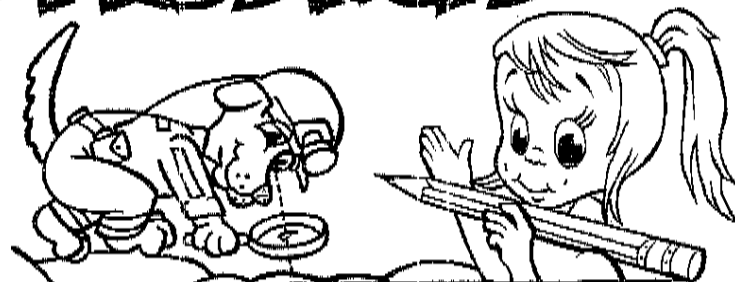
There are
4 DIFFERENT TYPES

LIGNITE (brown coal)	SUB-BITUMINOUS coal
BITUMINOUS coal	ANTHRACITE coal

The more carbon coal has, the more energy it has. Lignite has the least. Anthracite has the most energy.

WHERE IS COAL PRODUCED IN THE US?

Use the secret code below to find the top 10 states for producing coal. (State #1 produces the most coal; state #10, the least.)



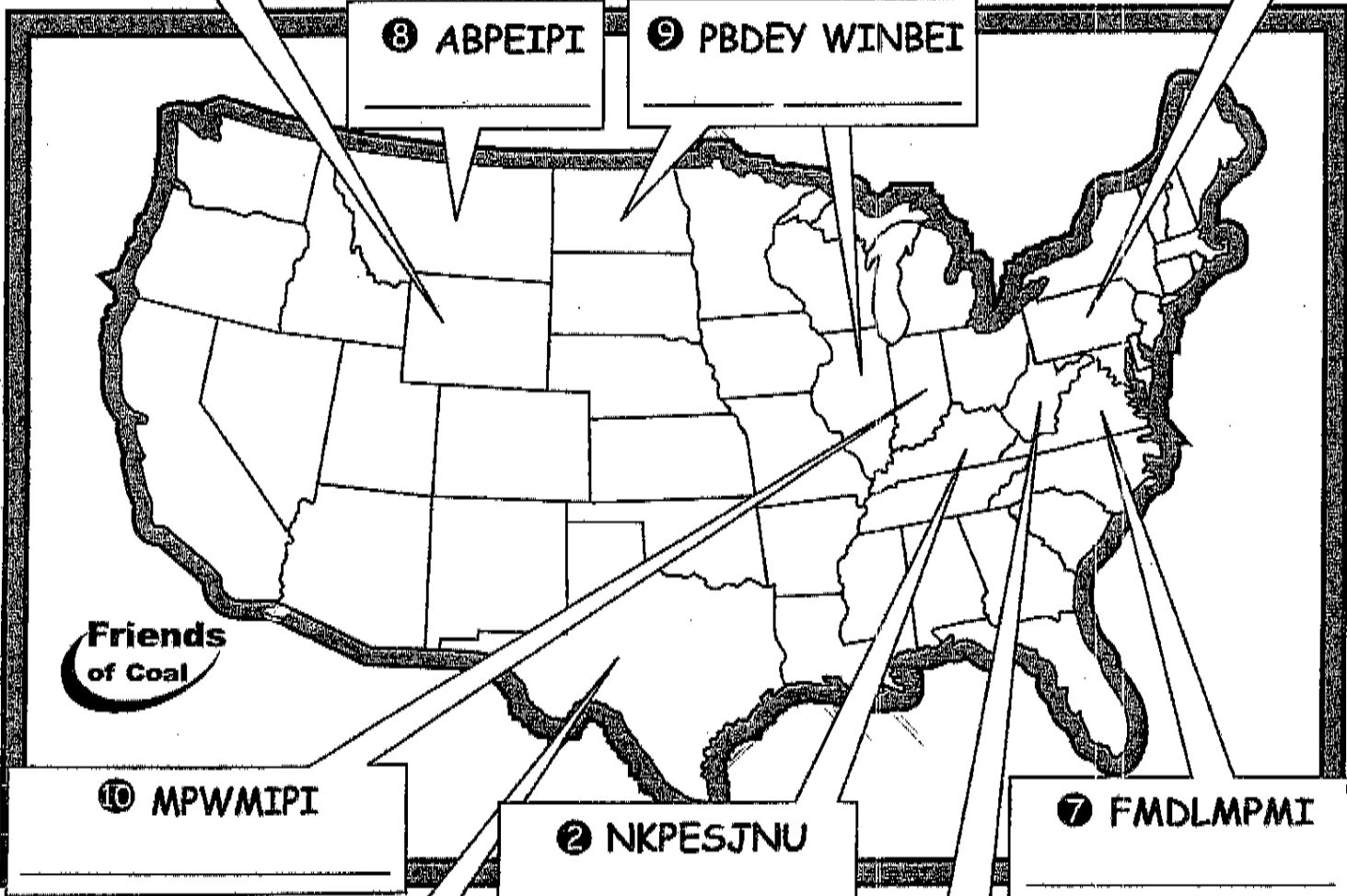
1 TUBAMPL

6 MOOMPBMR

4 CKPPRUOFIPMI

8 ABPEIPI

9 PBDEY WINBEI



Friends of Coal

10 MPWMIPI

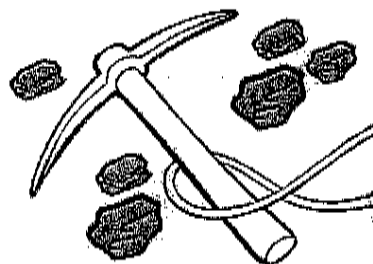
2 NKPESJNU

7 FMDLMPMI

5 EKGIR

3 TKRE FMDLMPMI

SECRET CODE



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

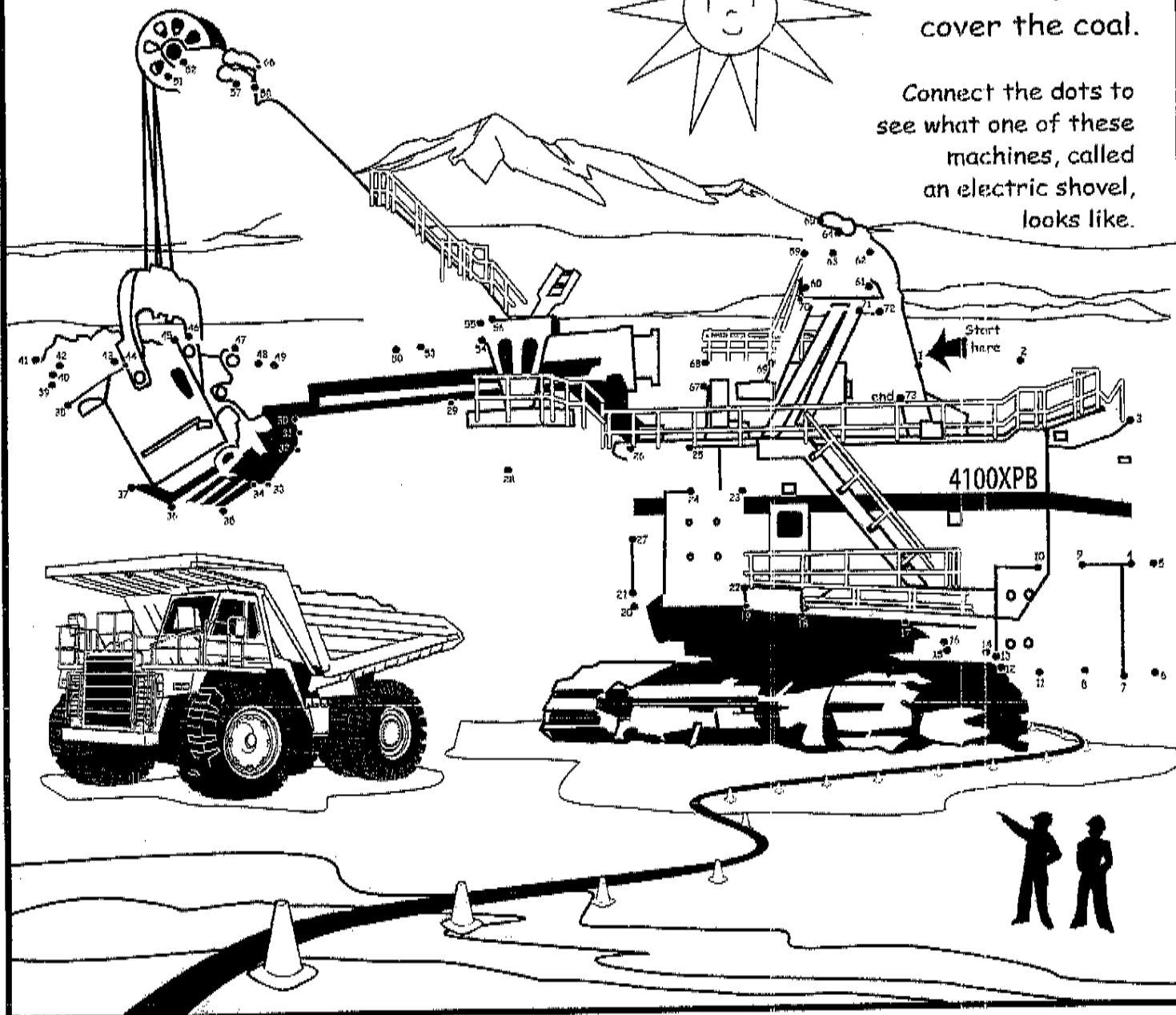
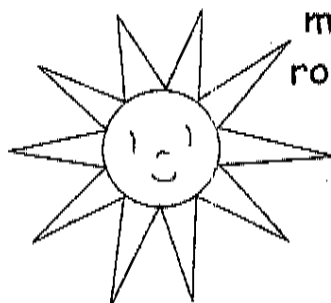
WE GET COAL

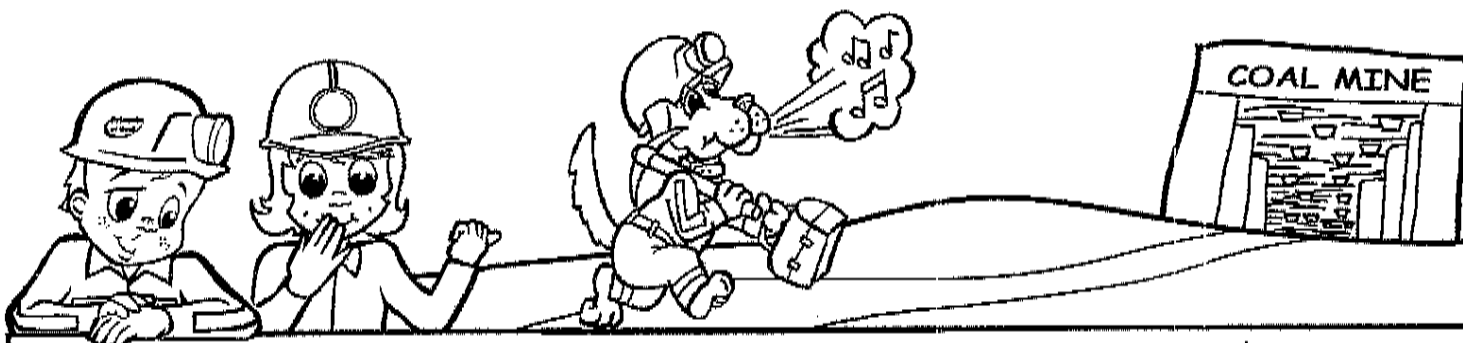
by digging it out of the earth. This is called mining. There are 2 kinds of mining:

1 SURFACE MINING

Huge earth-moving machines take away rock and dirt (called overburden) that cover the coal.

Connect the dots to see what one of these machines, called an electric shovel, looks like.

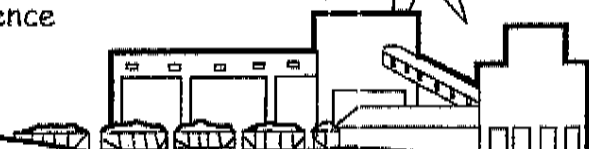
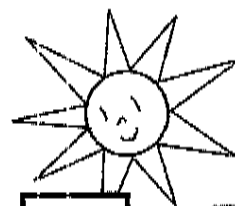




2 UNDERGROUND MINING

(deep mining)

To reach the messages, start at the end of each sentence and read each letter back toward the beginning.



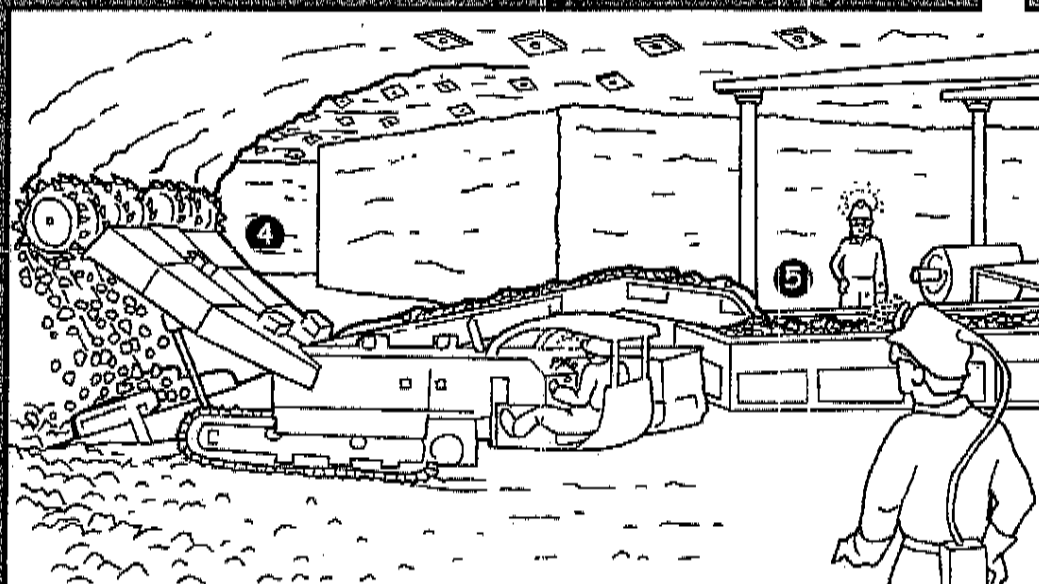
1 .srac cirtcele ni yad hcae
slennut otni og srekw

2 .ria hserf ni gnirb
stfahs riA

3 .ytefas rof detset si
slennut eht ni ria ehT

4 .(laoc fo llaw a) "maes" a
morf laoc spir enihcam A

5 .stleb royevnoc otno ro
srac elttuhs otni laoc eht
sdaol enihcam eht ,emit
emas eht tA

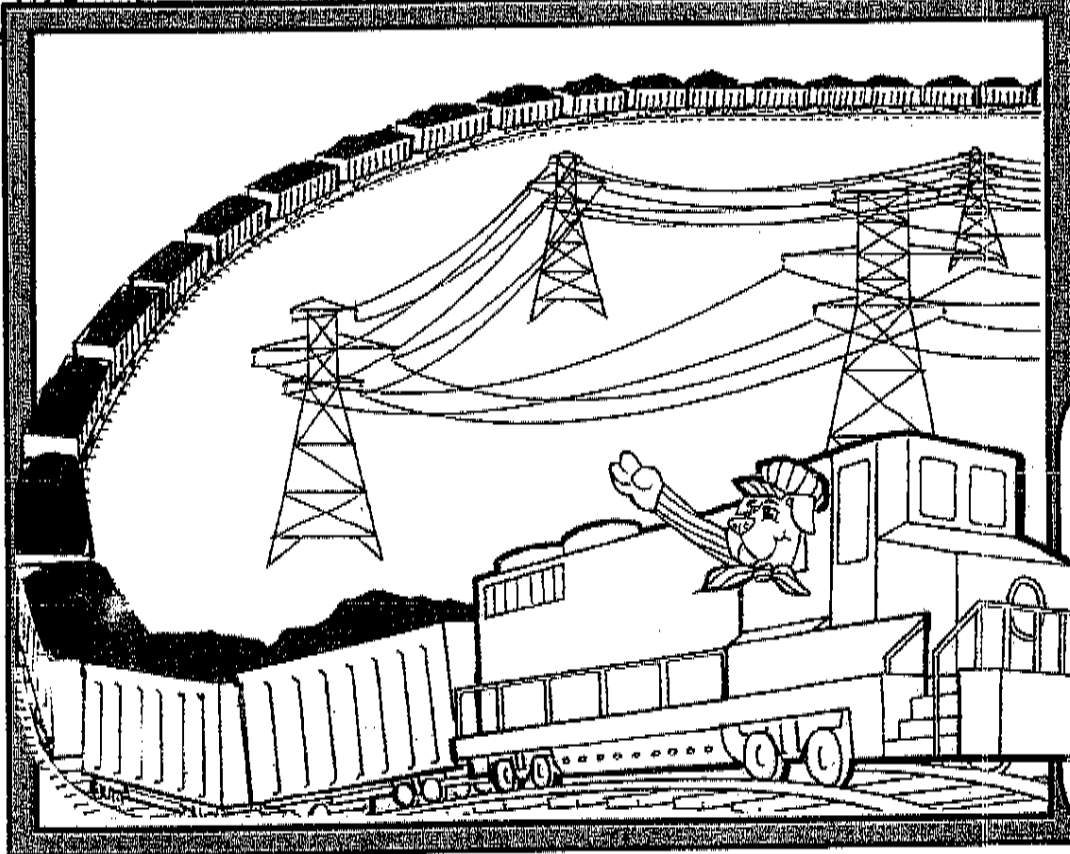
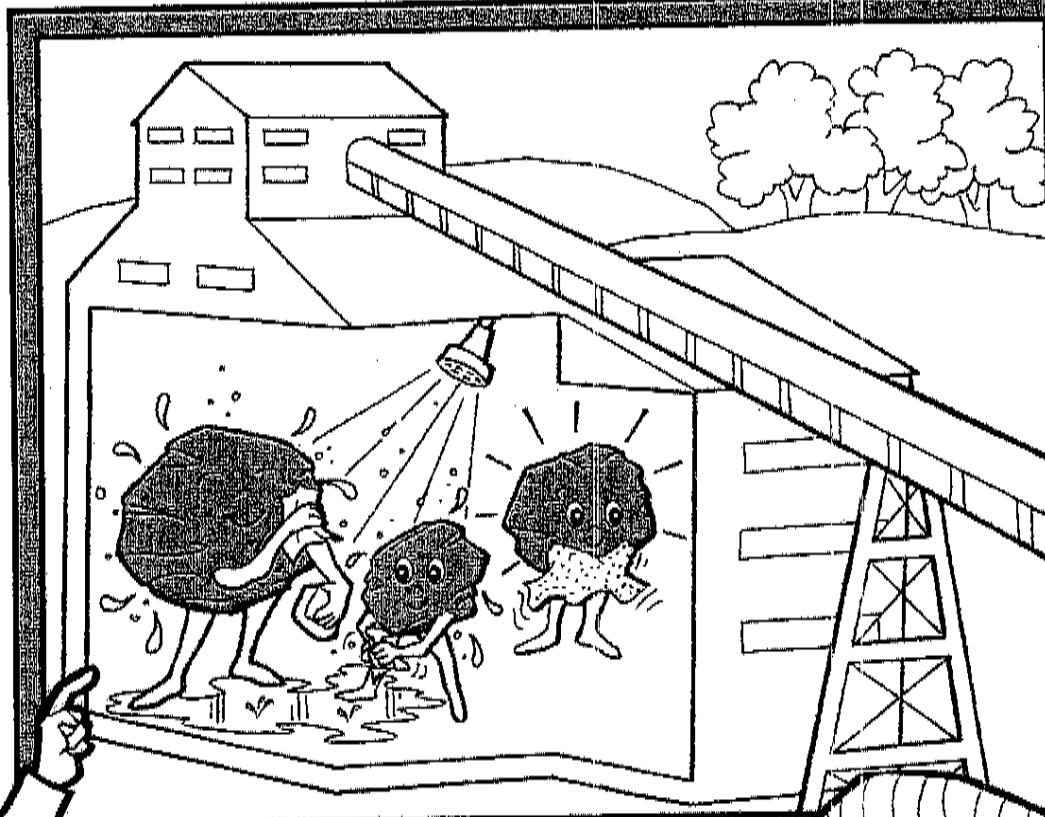


AFTER COAL IS MINED



MOST COAL IS WASHED

sorted by size at the preparation plant, or "tipple."



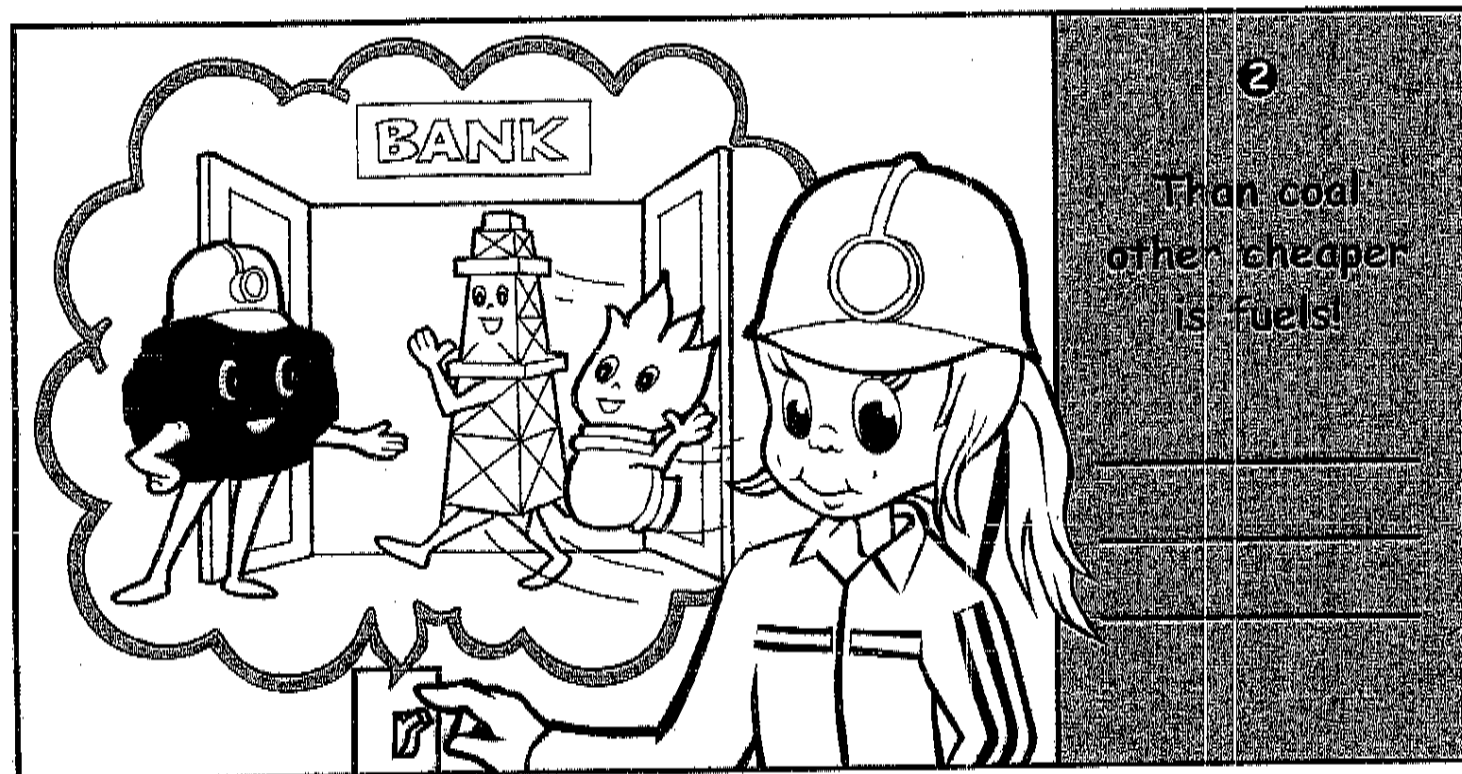
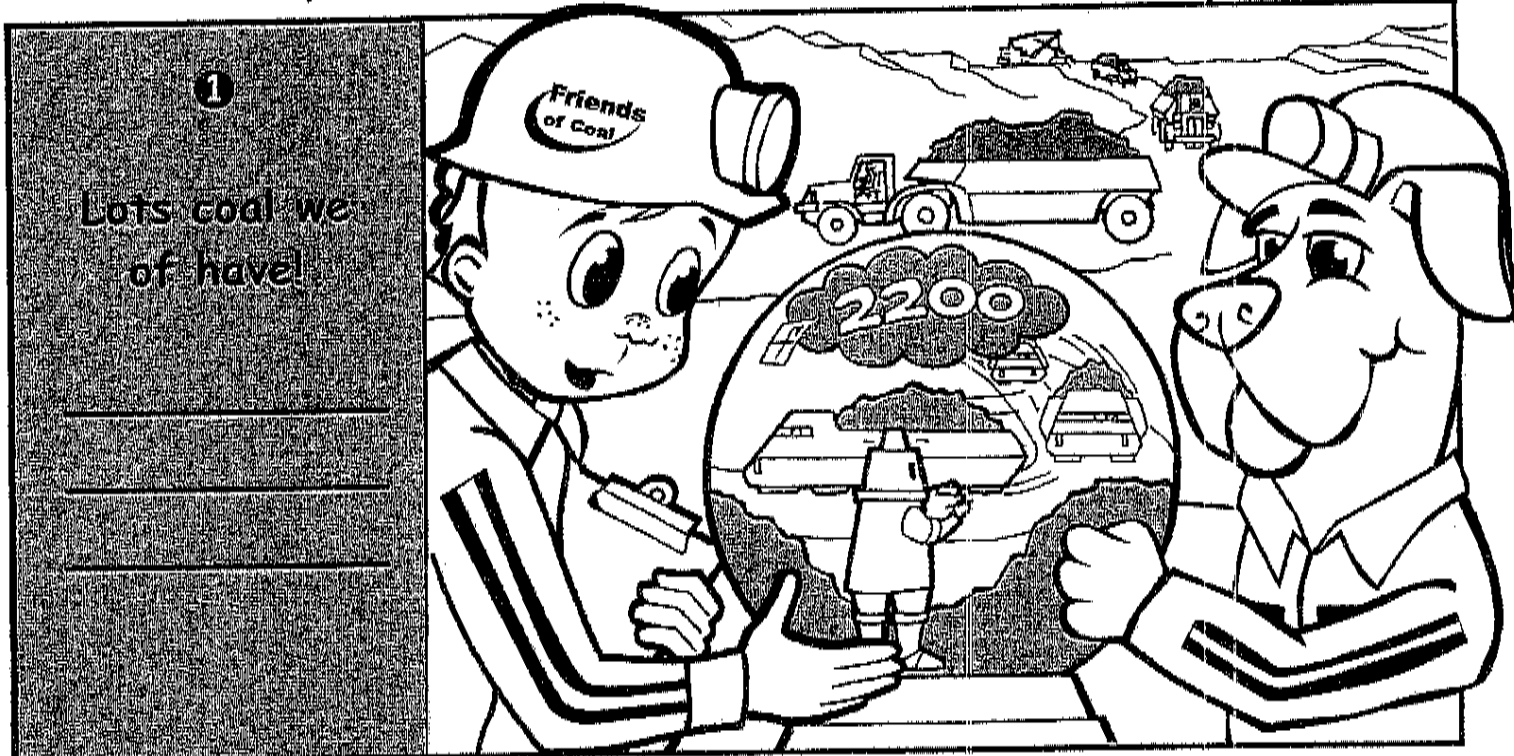
RAILROADS

carry the coal to electric plants or other places in long "unit trains." Barges and trucks may carry the coal, too.

THE ADVANTAGES OF COAL

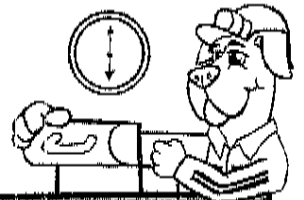


Unscramble the sentences below to find out why coal is such a good source of energy.

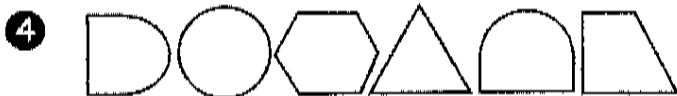
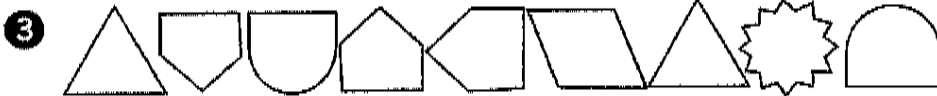
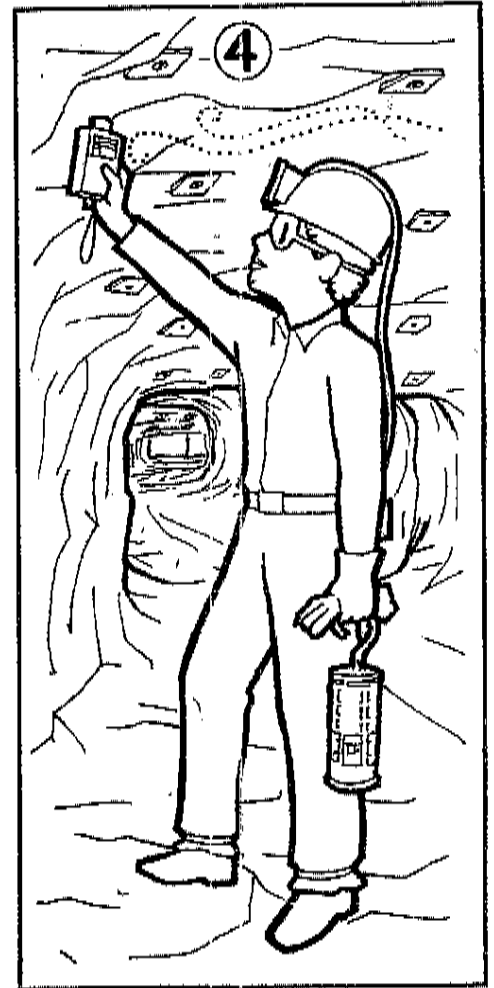
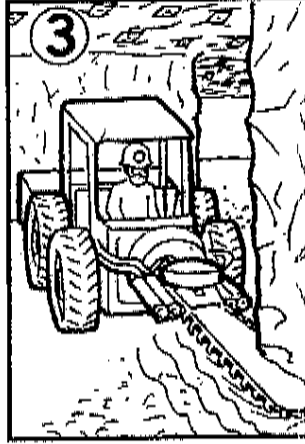
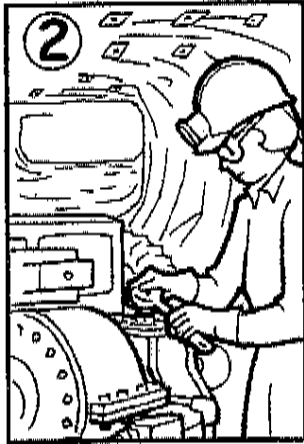
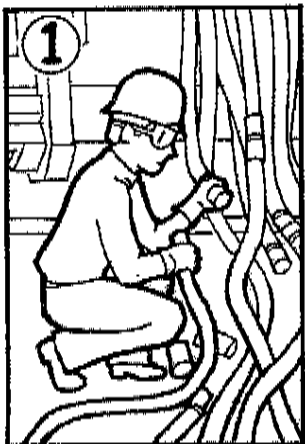
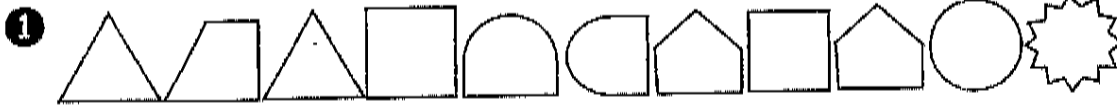
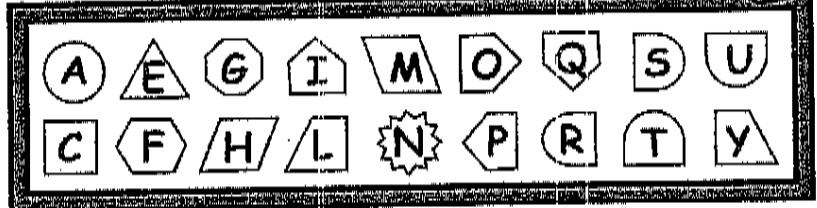


In other words, the more coal we use in the U.S., the less we have to depend on other countries for our energy!

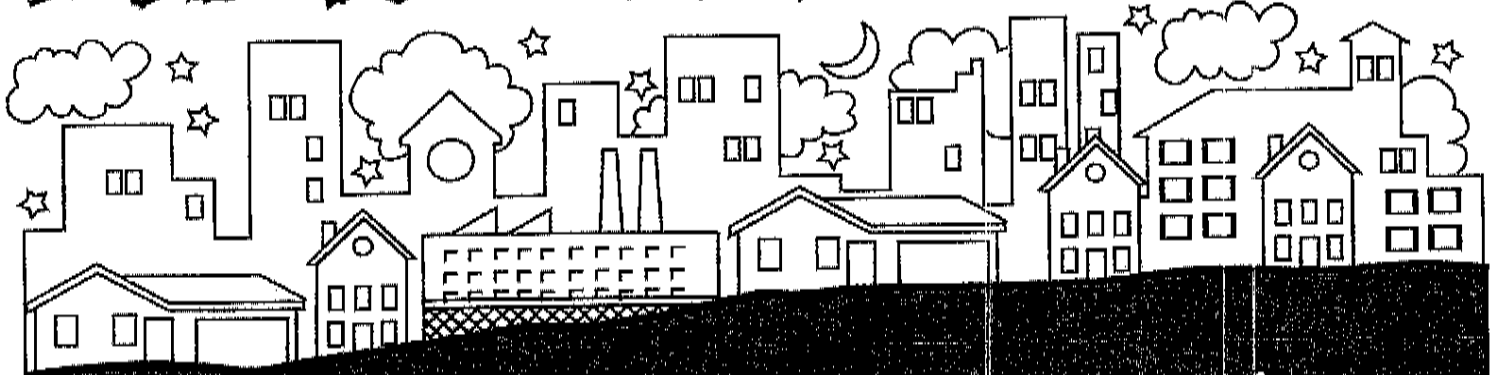
COAL MINING PROVIDES JOBS FOR LOTS OF PEOPLE!



Match each shape in the messages below to one in the box to the right. Write down the letter inside the shape.

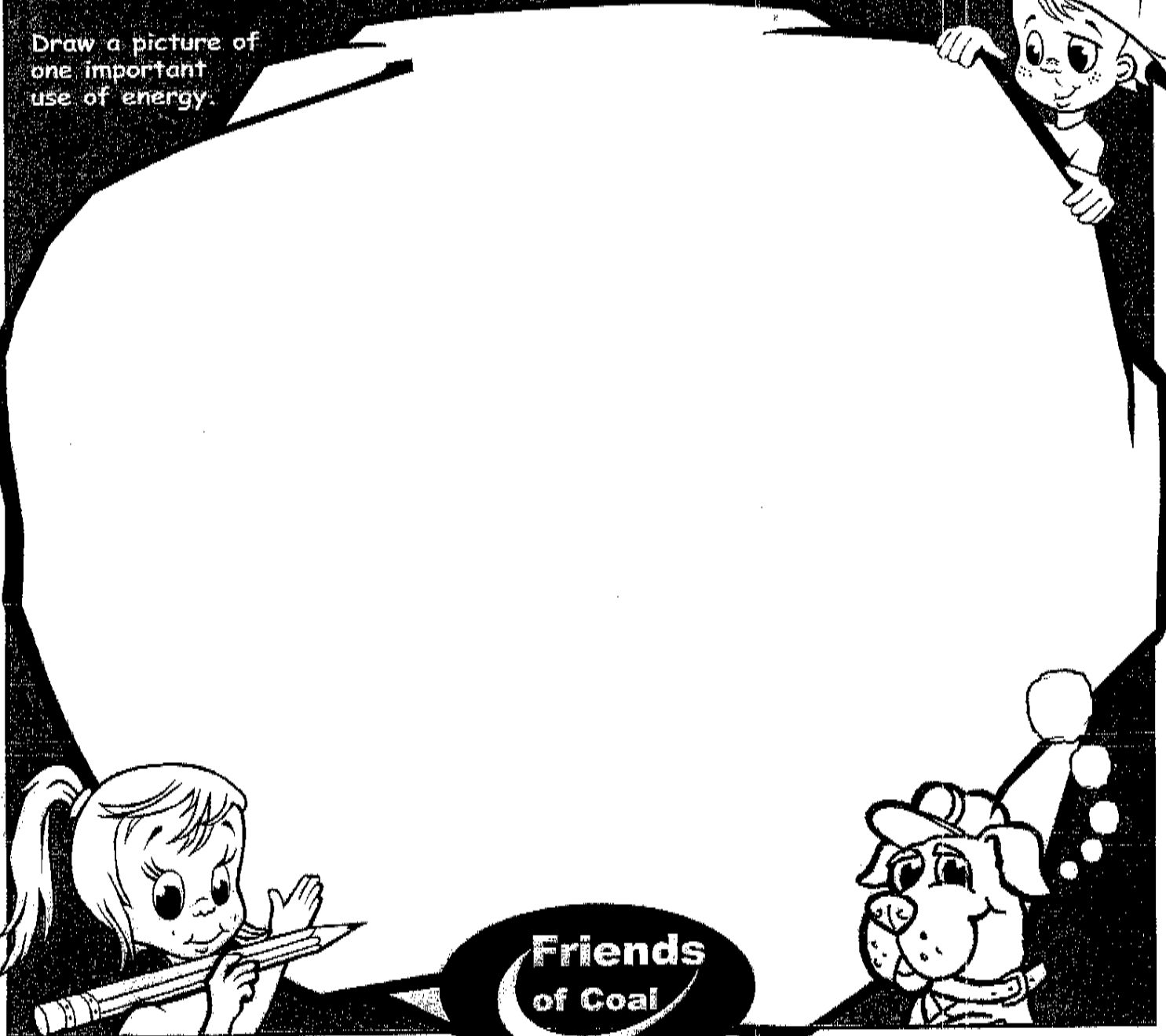


WHY IS COAL IMPORTANT?



Because we need coal for more than half our nation's electricity!

Draw a picture of one important use of energy.

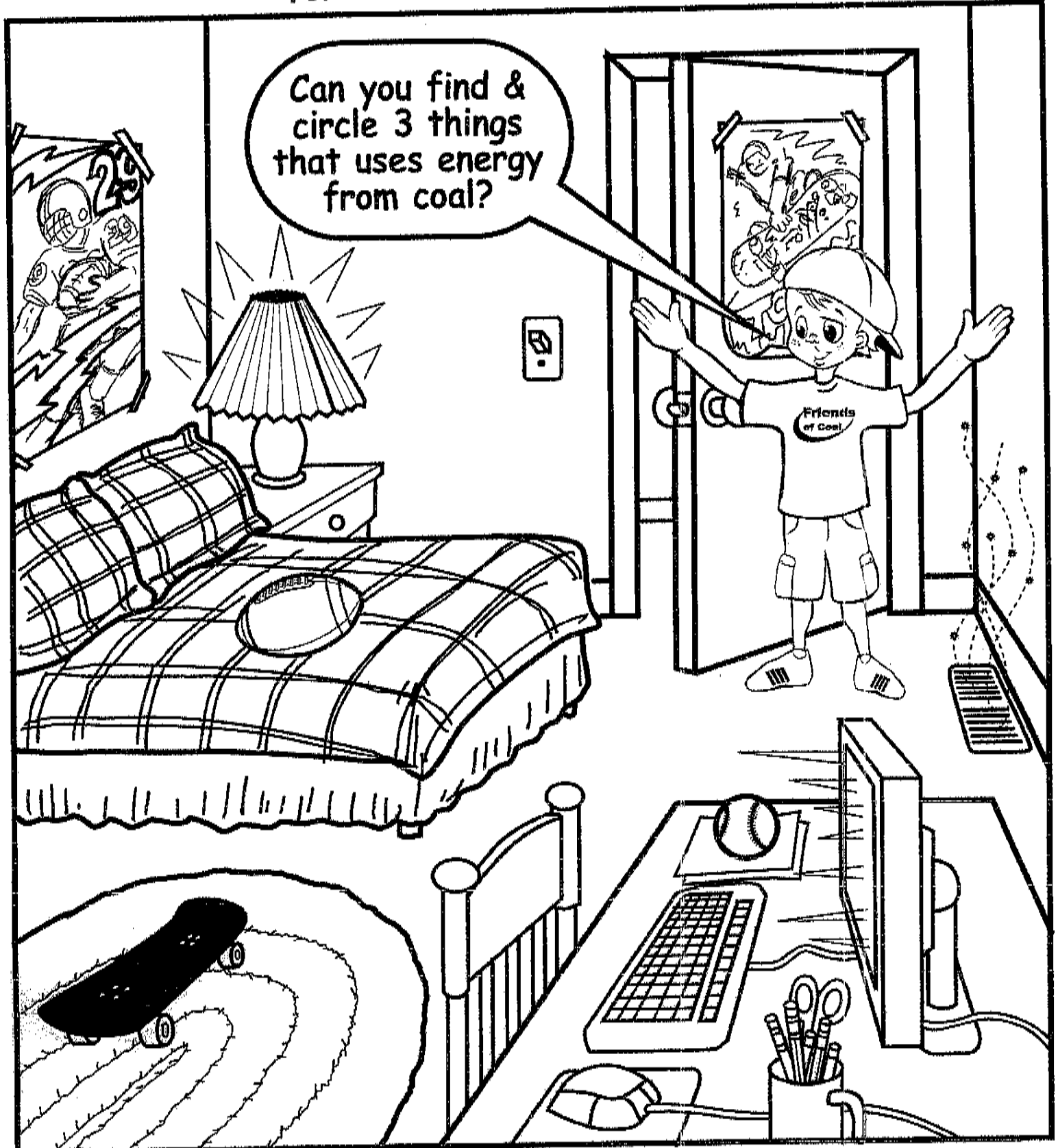


**Friends
of Coal**



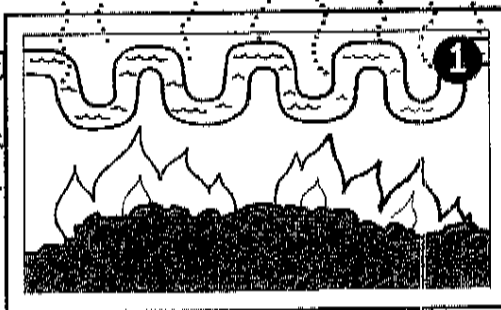
EVEN TODAY

nearly everyone in the U.S. uses energy from coal for basic and hi-tech needs.

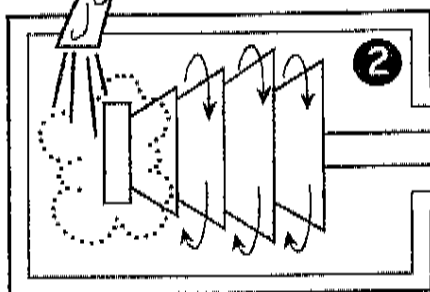


WE USE COAL TO MAKE ELECTRICITY!

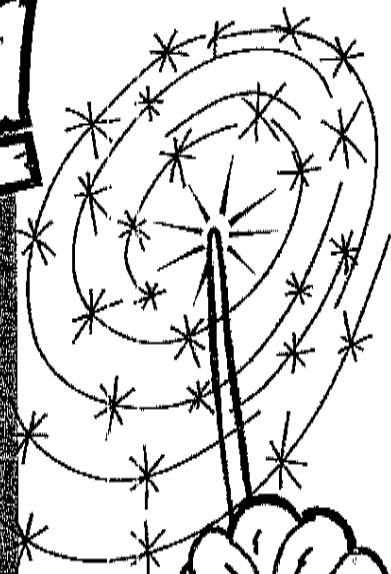
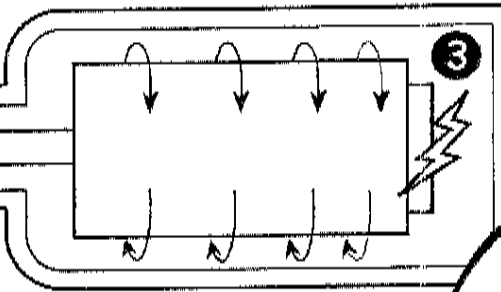
1. Coal is burned in a boiler to heat water. This makes steam.



2. Steam turns a turbine (a propeller on a rod).



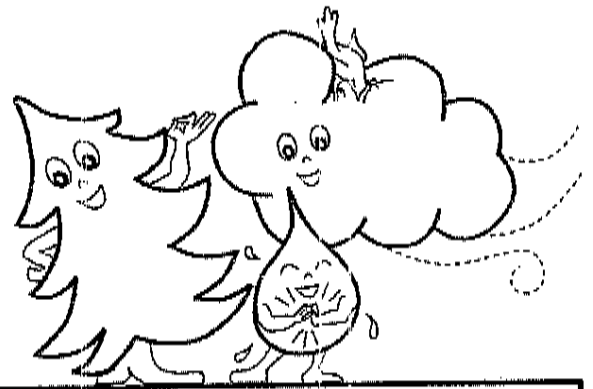
3. The spinning turbine spins magnets inside loops of wire. This is called a generator.



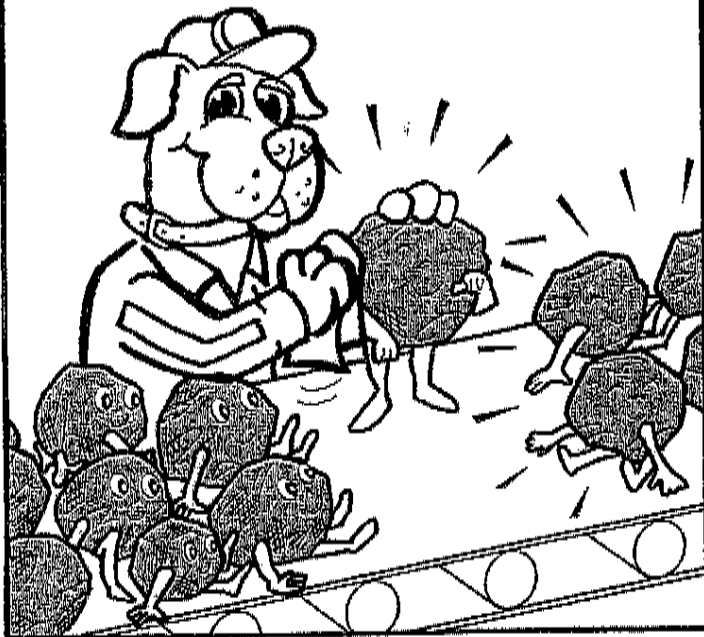
The Result is Electricity!

COAL AND OUR ENVIRONMENT

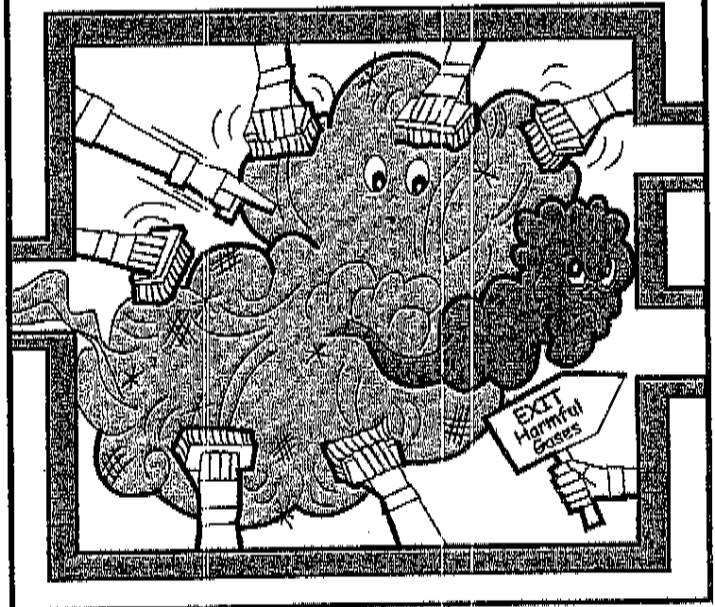
To keep coal from harming our land, air and water:



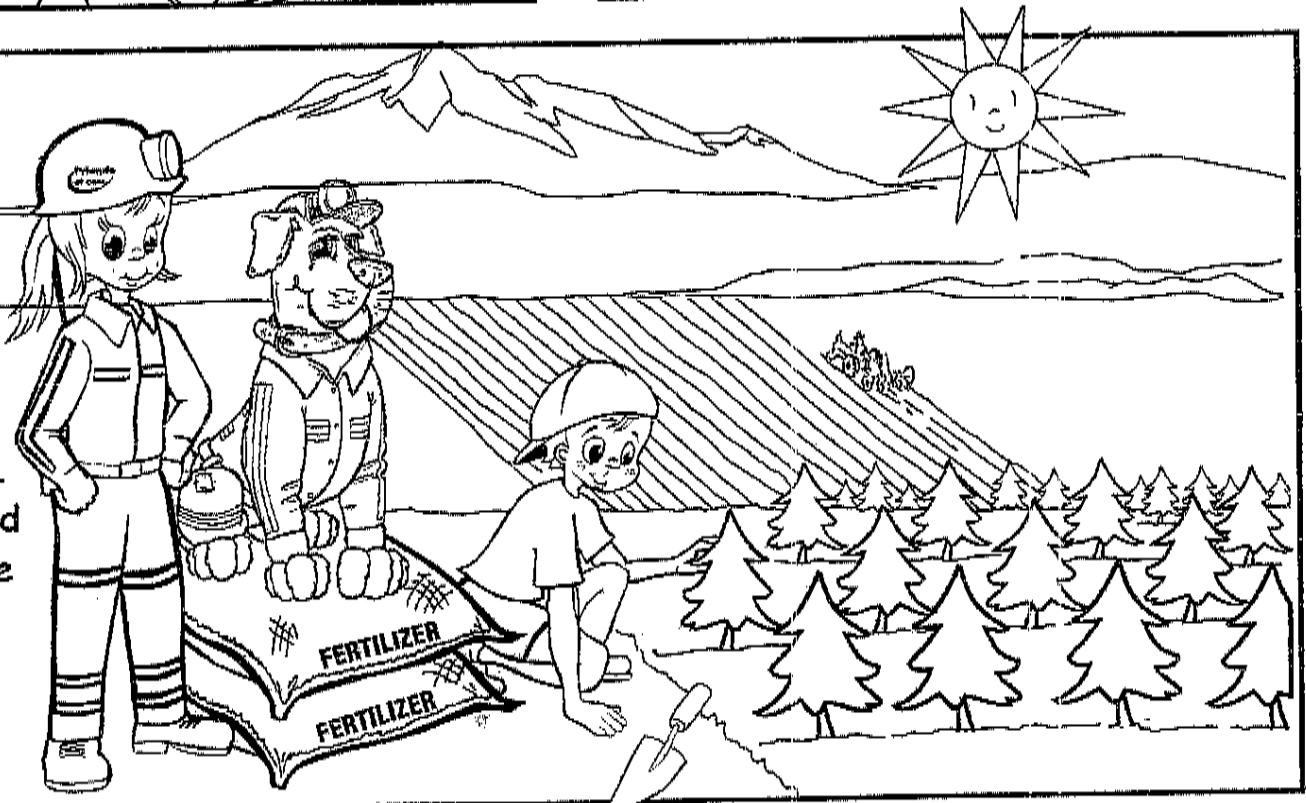
Coal is cleaned before being burned.



"Scrubbers" take out most of the harmful gases.



Soil is replaced. Grass and trees are planted after surface mining.



OTHER THINGS

Find and circle the one thing in each box that coal helps produce.

STONES TREES SUN
 LEAVES STICKS
 MOUNTAINS STEEL
 CLOUDS HILLS PLANTS
 FOREST SUN MEADOW
 ANIMALS JUNGLE
 SWAMPS MOUNDS
 VALLEYS CANYONS
 MARSHES STONES
 TREES LEAVES SUN
 STICKS MOUNTAINS
 CLOUDS HILLS PLANTS

OCEANS WAVES SAND ISLANDS
 PEBBLES WIND BREEZES
 BEACHES TIDE SEAGULLS
 WHALES SUN SHELLS SEAWEED
 CLOUDS RAINBOWS FERTILIZERS
 WIND WARM HOT WET GLARE
 SEA SURF FLOAT SEASHORE
 COASTLINE SEACOAST STONES
 DEEP WHITECAPS SAIL SWIM

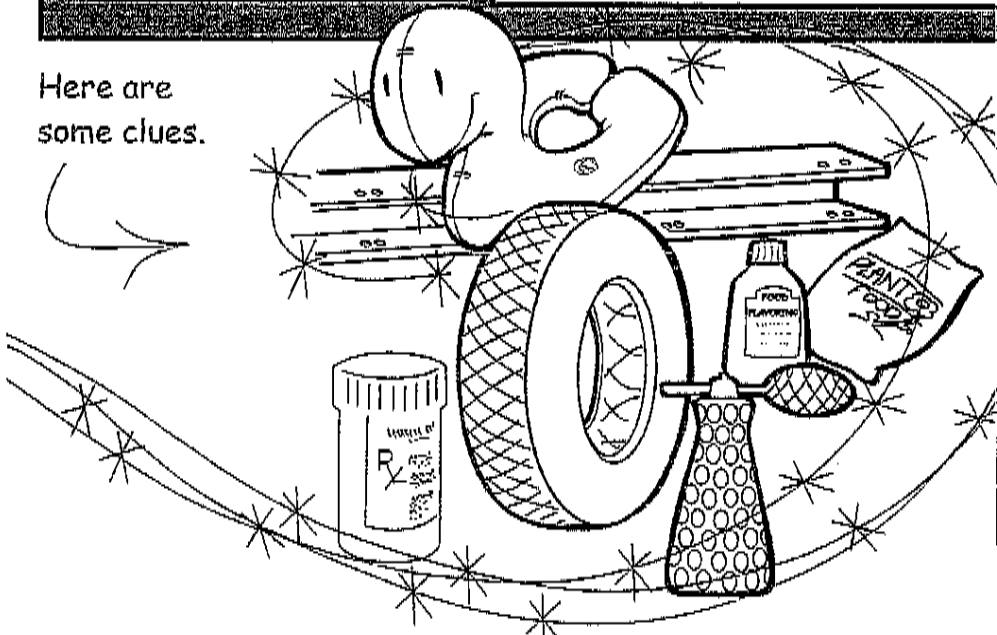
FLOWERS PLANTS SHRUBS
 VINES LILACS ROSES
 BUTTERCUPS DAISIES
 FERNS GRASS CLOVER
 WEEDS LILACS IRISES
 MARIGOLDS PANSIES
 VIOLETS PLASTICS
 DAFFODILS FLOWERS
 PLANTS SHRUBS VINES
 ROSES WEEDS
 BUTTERCUPS DAISIES

RED BLUE GREEN PINK WHITE
 YELLOW ORANGE PURPLE
 FOOD FLAVORS RED VIOLET
 TURQUOISE GREEN CRIMSON
 ROSE BLACK BROWN GOLD
 LAVENDER SCARLET TAN RED
 BLUE PINK WHITE YELLOW GOLD
 ORANGE PURPLE VIOLET
 TURQUOISE CRIMSON RED

TREES MAPLES ELMS PINES
 CEDARS DOGWOOD ASH OAKS
 MEDICINES FIRS
 COTTONWOOD SPRUCE
 BIRCHES WALNUT TREES
 PUSSY WILLOW SUMAC ASH
 HICKORY CHESTNUT ELMS
 HEMLOCK BEECH MAPLES
 PINES CEDARS DOGWOOD ASH
 OAKS COTTONWOOD

FRUITS BERRIES PEARS
 RASBERRIES CHERRY APPLES
 BLUEBERRIES LEMON
 STRAWBERRIES CITRUS
 PEACHES GRAPES BANANAS
 ORANGES PINEAPPLES
 TOMATOES MELONS OLIVES
 LEMON PERFUMES PEARS
 MANGO CRAB APPLES
 LIMES GRAPEFRUIT
 CUCUMBERS PAPAYA

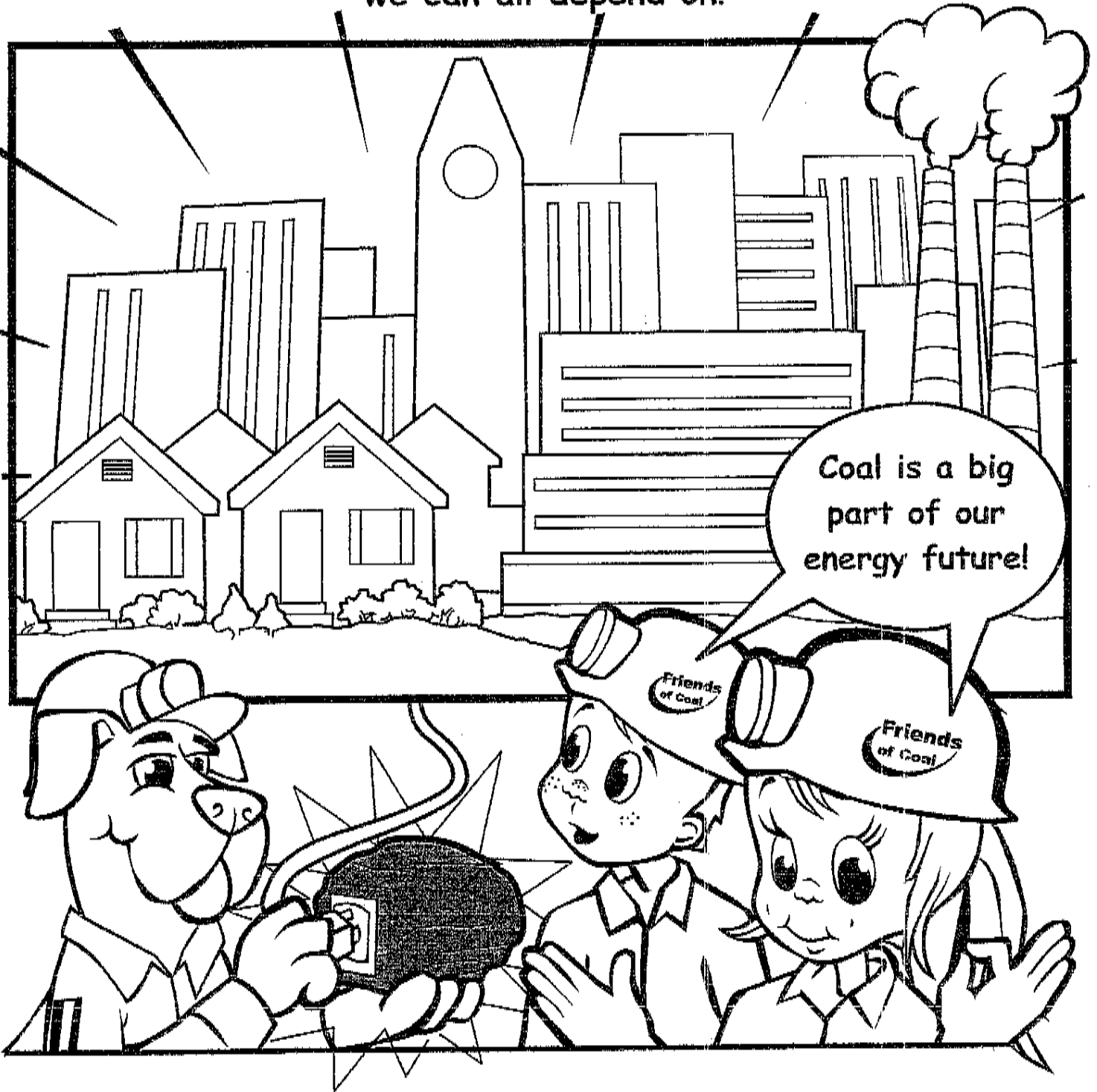
Here are some clues.



ANIMALS BIRDS ROBINS
 BLUEBIRDS BLUE JAYS
 CARDINALS DEER
 RACCOONS FISH
 EAGLES SPARROWS
 RUBBER RABBITS
 BEARS FISH HAWKS
 MOUSE SQUIRRLS
 BLACKBIRDS CANARIES
 FOXES CHICKADEES
 TIGERS ROBINS FISH
 BLUEBIRDS BLUE JAYS

COAL GIVES US POWER

we can all depend on!



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