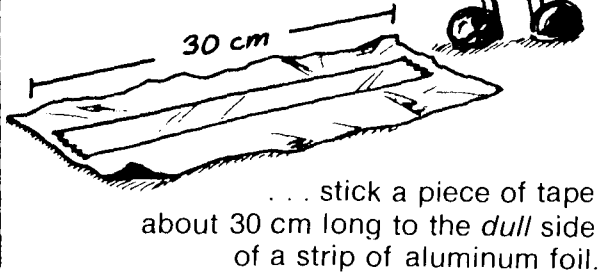


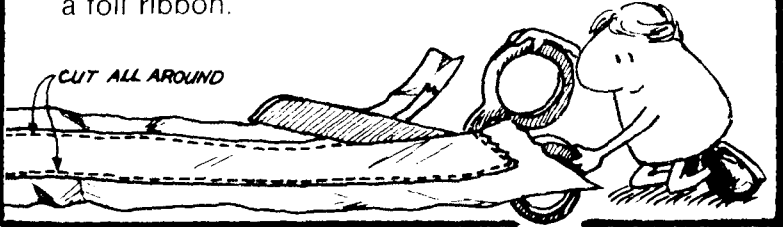
IT WORKS!

1 Make some wire from aluminum foil and tape. To do this ...

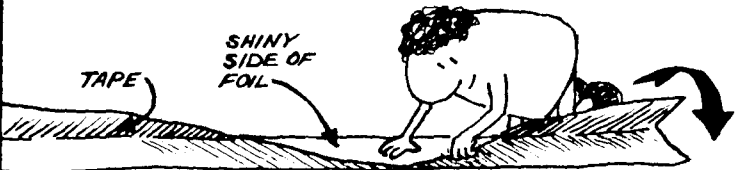
30 cm
IS A LITTLE LONGER
THAN THIS PAGE.



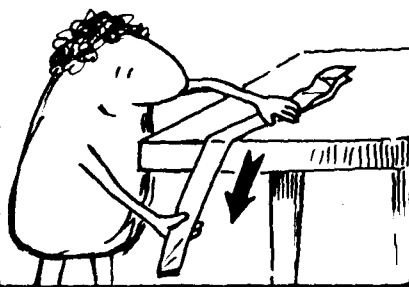
2 Cut around *inside* the edge of the tape to make a foil ribbon.



3 Fold the ribbon along its length, so the shiny side stays out and the tape is folded inside.



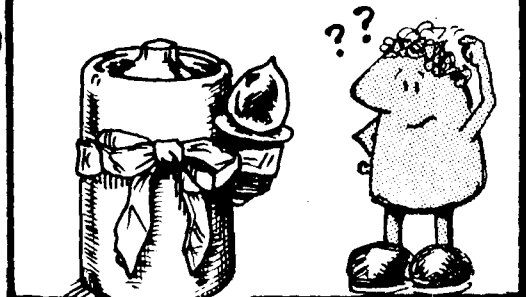
4 Crease the fold along the edge of your table.



5 **TOPS WIRE FACTORY**
REMEMBER HOW YOU MADE THIS RIBBON. YOU'LL NEED MORE LATER.



6 Use this foil ribbon to light a bulb with a dry cell.



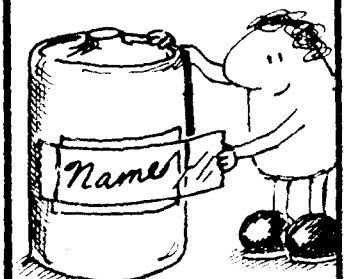
7 Using pictures like these, draw how you made the bulb light. Also draw a way you tried that didn't work.



THIS WORKS:

THIS DOESN'T:

8 Tape your name to your dry cell. You will use it during this whole module on Electricity.



CONSERVE ENERGY:
make your dry cell last!

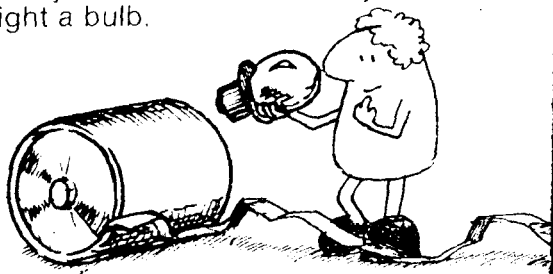
NAME:

CLASS:

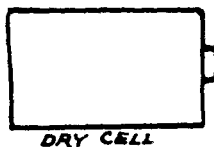
Electricity ()₂

TO LIGHT OR NOT TO LIGHT

1 Use your foil ribbon and dry cell to light a bulb.



2 In each **YES** box, draw a way that works. In each **NO** box, draw a way that doesn't work.



Use pictures like these in your drawings.

3 Touch the *bottom* of the bulb to the dry cell. Do a different way than in the last activity.

YES

NO

4 Touch the *sides* of the bulb to the dry cell.

YES

NO

5 Use two foil ribbons. The bulb must *not* touch the dry cell.

YES

NO

6 Use *two* dry cells and *one* foil ribbon.

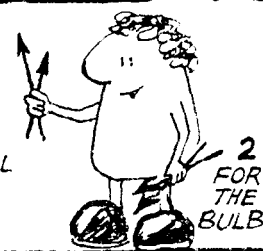
YES

NO

7 To light a bulb, 2 places on the dry cell must connect with 2 places on the bulb. Use arrows to show where these contact points are.



2 FOR THE DRY CELL



NAME:

CLASS:

Electricity ()₃

LIGHT BULB PREDICTIONS

1

In the table below, guess if the dry cell lights the bulb. Write your *prediction* next to each hook-up.

After you predict, experiment to see if you are right. Write each result in the table.

TO MAKE A GOOD PREDICTION,
THINK ABOUT HOW MANY
CONTACT POINTS MUST
TOUCH TO MAKE
THE BULB LIGHT.



2

HOOK-UP	PREDICTION		RESULT
	Will it light?	Did it light?	
A.			
B.			
C.			

HOOK-UP	PREDICTION		RESULT
	Will it light?	Did it light?	
D.			
E.			
F.			

IF YOU
CAN'T HOLD ALL
THE WIRES DOWN,
ASK A FRIEND
TO HELP!



3

You are now an expert on how to light a bulb. Write directions for someone who doesn't know how:

PSSST...
REMEMBER TO
TALK ABOUT
CONTACT POINTS.



Large empty box for writing directions.

NAME:

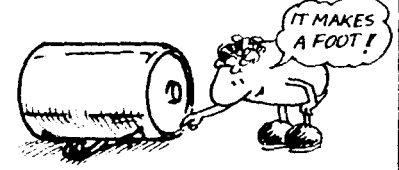
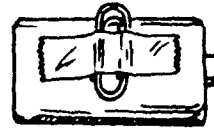
CLASS:

SERIES MEANS IN A ROW

1 Wrap a 30 cm foil ribbon around the collar of your bulb. Pinch the foil against the collar, then twist to hold the bulb tight.



2 Tape a paper clip to the side of your dry cell so it won't roll.



3 If the bulb shines "dim" with 1 cell, find out how it shines with more cells connected in a series. Tell if it shines bright, medium or dim.



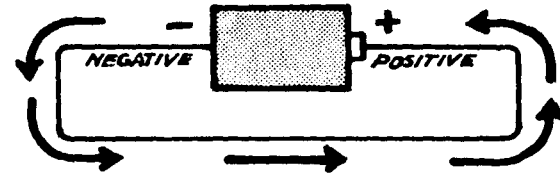
SERIES



What happens as you add more cells in a series?

.....

Electrons flow away from negative (the flat side) and towards positive (the bump side):



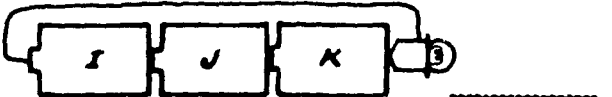
Use arrows to show how electrons flow through each circuit to the left.

.....

4 If the bulb shines "dim" with 1 cell, tell how it shines with more cells connected in opposition and series: bright, medium, dim or not at all.



OPPOSITION



Cells B-C are in *opposition*. Other cells in opposition are Cells D-E are in *series*. Other cells in series are and

Use arrows to show how electrons flow through each circuit. (In one circuit they don't flow at all.)

.....

Why do cells B-C give no light?

.....

Why do cells F-G-H give only about as much light as cell A?

.....

NAME:

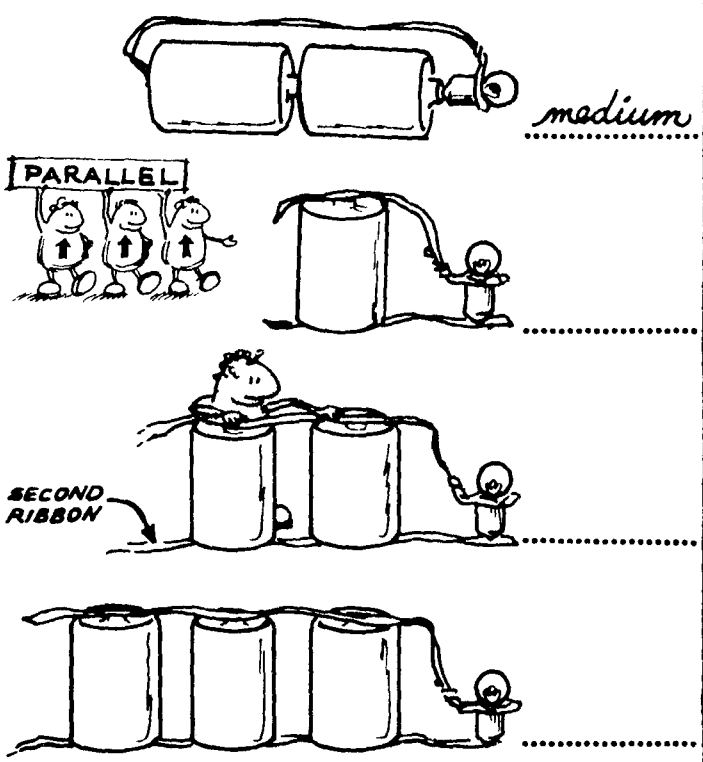
CLASS:

PARALLEL MEANS SIDE-BY-SIDE

1 Start with about 30 cm of foil ribbon attached to your light bulb.

2 Make a second foil ribbon about 20 cm long (almost as wide as this paper.)

3 If the bulb shines medium with 2 cells in *series*, find out how it shines with cells connected in *parallel*: bright, medium or dim.

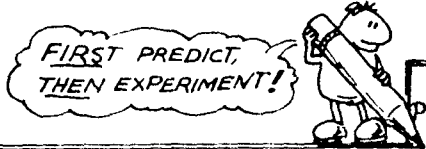


Finish each sentence.

When you add more cells in parallel, the bulb . . .

To make a bulb shine brightest, it is best to connect . . .

4 Predict how each bulb shines: bright, medium, dim or not at all. Then experiment to see if you are right.



	1. Prediction	2. Result
a.		
b.		
c.		
d.		
e.		

Cells A-B are connected in

C-D are connected in

E-F are in G-H-I are in

K-L are in

while J is in to the m both.