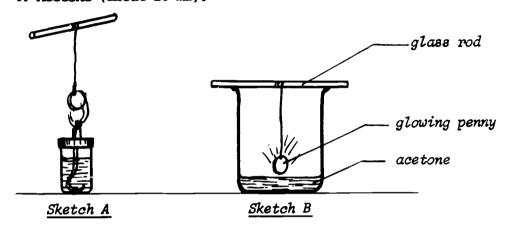
CHEMISTRY CATALYTIC REACTION

5.19. THE GLOWING PENNY

Materials:

- 1. A penny or other copper coin.
- 2. Copper or other thin metal wire.
- 3. A glass stirrer, small beaker, alcohol or propane burner.
- 4. Acetone (about 20 ml).



Procedure:

- 1. Make a small hole in a penny (punch a small nail through) and tie a short length of wire (about 10 cm) through the hole.
- 2. Wind the other end of the wire around the middle of a glass stirrer and heat the coin in an alcohol or propane flame until red hot (Sketch A).
- 3. Immediately after heating, hang the coin about 3 mm above the acetone level in a beaker (check this level before heating the coin, by rolling more or less windings around the glass stirrer—see Sketch B).
- 4. Observe the glowing penny in the dark.

Questions:

- 1. What made the penny glow in the flame?
- 2. What made the penny glow in the beaker?
- 3. Would the penny glow if it was hanging higher above the acetone level?
- 4. How high can the coin hang and still have it glowing?
- 5. How long will the penny stay glowing?
- 6. Would other metals do the same when hung above the acetone?

Explanation:

Holding the penny in the flame makes it to hot that it gives off a red glow. While the temperature of the penny is still high, it can speed up or facilitate the reaction of:

without participating in the reaction itself. Copper functions as a catalyst for the above reaction. The reaction is exothermic, thus it produces heat, which keeps the penny glowing. The glowing will stop only when all the acetone has evaporated. No other metal is as efficient a catalyst as copper for this particular reaction.