the egg, the larva, and the pupa. The pupils will then be able, and should be required to, write a full description of the butterfly and moth, including their life history, and present the same neatly written in a blank book kept for the purpose. They should also be shown how t > breed the insects and watch the transformations for themselves.

For the ACADIAN SCIENCE CLUB.

LECTURES ON MINERALOGY.

II. - BLOWPIPE ANALYSIS-Continued.

Determining the fusibility is often a very important means of distinguishing mine-A pointed fragment is held by rais. means of platinum wire, or better in platinum-tipped forceps, in the flame of the lamp. If it does not fuse apply the O. F. of the blow-pipe; never use the R. F., because its action might cause change in composition. Care should be used in general not to let the fused part come in contact with the p'atinum, for it would be injurious if sulphides or metals were under treatment. Powders may often be tested in the same way if they are first mixed with water to a stiff paste, spread on coal and genily heated in the O. F. until hardened to a crust, which is then lifted off and placed in the forceps. If the substance decrepitates or flies to pieces in the flame it must be first heated in a closed glass tube until decrepitation ceases, then tested as above. The fusibility of metals and substances generally that have a metallic lustre should be determined on charcoal.

Observe car fully during the heating whether the s. stance bubbles and swells (intumesces, ; throws out sprouts (rumifies); swells and cur's up (exfoliates) with or without fusing; whether the fused mass is clear and glassy; enamel-like; made opaque by numerous very small bubbles forming a blebby glass, or is only partially fused to a versicular scoria; all of these being vory important. The lens will be found useful in these observations.

The following minerals form a good scale of fusibility :--

- 1. Stibnite, fuses readily in lamp flame.
- 2. Natrolite " with difficulty in " "
- 3 Almandite fuses easily in B. P. flame.
- 4. Actinolite, less readily ""
- 5. Orthoclase, with difficulty "
- 6. Bronzite, edges only slightly rounded in B. P. flame.

Closed Tube Tests.—The tubes for these tests are best made by the student. Get a stick of thin glass tubing about one-fourth of an incl. in diameter. Cut it in pieces about 5 in. long by scratching with a file, then breaking. Heat these pieces in the middle by the lamp, using the B. P. if necessary, and by drawing out the softened glass sea? the end of each piece.

A piece of the substance to be tested, the size of a grain of wheat, is crushed to a coarse powder and placed at the bottom of the tube. The glass above should be cleaned by a bit of paper. It is then carefully heated in the alcohol flame. Finally the strong heat of the blowpipe is applied and the appearances noted, *Charring* indicates organic matter, and in that case the odor of burnt sugar, feathers or coal is generally noticed.

Water condensing on the tube may be mechanically combined with the substance, or it it had been dried it is due to water of crystallization, or comes from hydrated oxides.

GASES OR FUMES ARE EVOLVED.

Oxygen rekindles or causes to glow more brightly a splinter of wood having a spark at the end, when introduced into the tube. It is given off by oxides, chlorates &c.

Exp.-Try the test, using potassium chlorate.

Ammonia, recognized by its color, is given off by some ammonia salts.

Iodine gives violet fumes.

Nitrates give off reddish brown fumes.

A sublimate forms, i. e, the vapor condenses to a solid on the cool part of the tube.

1. White sublimates denote ammonium salts arsenous oride (in octahedral crystals, seen with a lens.) Mercury chlorides.

2. Colored sublimates. — Brownish - red when hot, yellow on cooling, shows sulphur.

Exp.-Try iron pyrites.