PLANNING A PROJECT

Before attempting to construct a project of your own design, you should prepare a *job plan*. A job plan generally includes the following:

- A working drawing of the project. This is a carefully sketched freehand drawing
- A bill of materials
- A list of tools and equipment needed
- A list of steps of procedure, in proper order, for making the project
- Approval by your instructor before making the project (*if required*)

When you prepare a plan for a project which you are planning to carry out, you use the same procedure that is used in the metal industry. In the industry, every product to be made must be planned out in a working drawing form. Working drawings must be made for each part of each product. The proper material must be selected for each part, and the cost must be analysed. Tools, machinery and equipment must be provided. The procedure must be carefully analysed for most economical production. Your job plan, therefore, involves some of the kinds of things which are performed by manufacturing engineers, industrial technicians and skilled workers.

A job plan, is therefore, a comprehensive list of materials needed for a project, step-by-step procedure for making the project, the student's personal data, tools and equipment needed for the project.

Working Drawing

The working drawing is a detailed hand sketched or actual finished drawing of the product to be made. The working drawing gives all the information needed to make a bill of materials. Every part that makes the product is indicated in the working drawing.

Bill of Materials

A bill of materials is the comprehensive list of all the materials that you will need to complete a project. This list includes bolts, screws, nuts, and

washer that have uniform sizes and shapes. It may be useful to refer to a catalogue to get the sizes and types.

The bill of materials should be made up as follows:

- The parts (identified by numbers or letters)
- The number of pieces needed for each
- The size of the material
- The shape and kind of material
- The unit cost of the material (per cm or m)
- The total cost of the object

List of Tools and Equipment needed

After you have made up your mind about a project, it is important to list all the tools and equipment you need to enable you to carry out all necessary operations in the course of making the product. Where some tools or equipment are not available, make arrangements from other workshops, or contact your teacher or school authority for the provision. On the other hand, tools already bad could be reconditioned by your workshop assistant to enable you to use them.

Do not start a project without the tools and equipment needed for the project, as doing so will cause the inability to complete the job at the right time or may even lead to frustration and failure.

List of Steps or Procedures for Making the Project

List step-by-step the procedure that you will use to carry out the project from the beginning to the end.