

31 PROJECT WORK ON HERBARIUM

31.1 INTRODUCTION

A herbarium is a collection of pressed and dried plants arranged according to some valid system of classification and available for reference. All research and educational institutions related to the study of plants, besides collection of local specimens have millions of gradually accumulated specimens which document the flora of one or more continents. The herbarium—a repository for plant collections is a research, training and service institution that functions as a reference centre, documentation facility, and data store house. Collections consist of specimens that are samples of populations and taxa from nature, experimental garden, or laboratory.

Objectives

The objective of this project are

- to collect specimens for herbaria
- to learn to preserve specimens for herbaria
- identify diverse forms of plants.

31.2 EQUIPMENT FOR COLLECTION

Below mentioned equipment are necessary for collection Fig. 31.1.

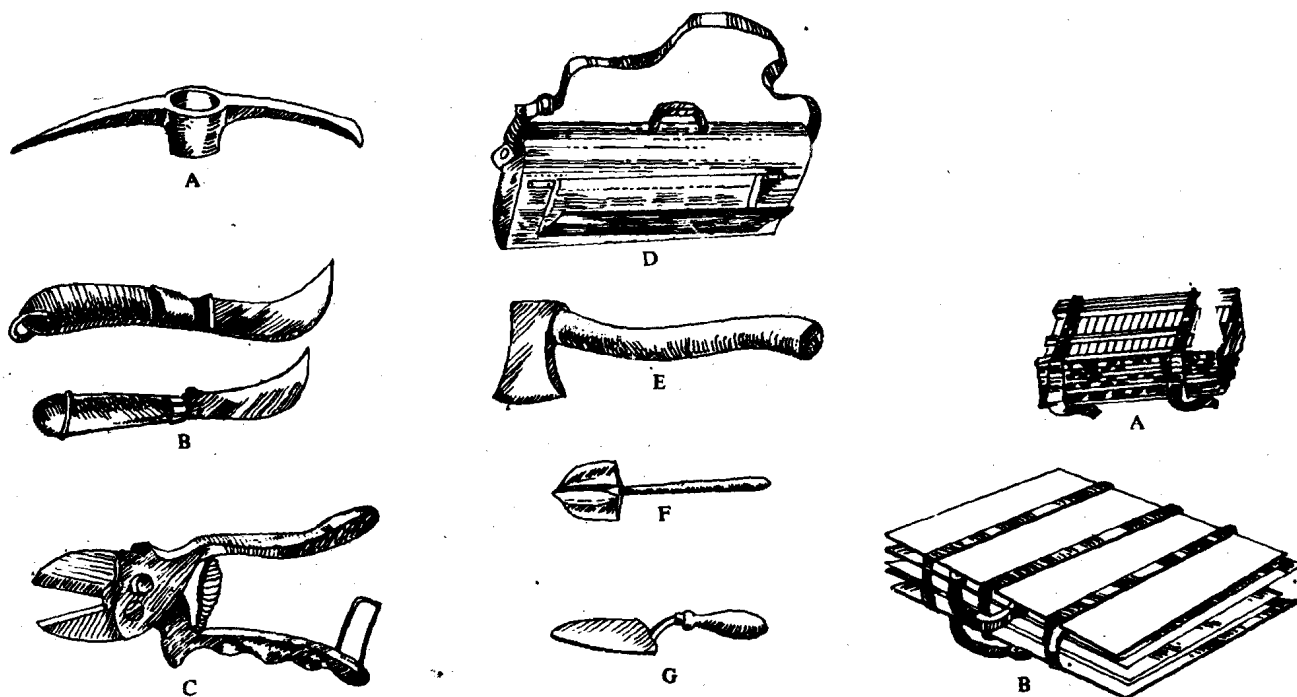


Fig. 31.1 : Equipments used in collection. A, Collecting pick; B, Knives; C, Secateur; D, Vasculum; E, Hatchet; F, Spade; G, Trowel..

Fig. 31.2 : Plant Press. A. Perforated plant press, B. Wire netted-plant press.

1. A collection pick is required for digging up roots and rhizomes (underground parts) of herbaceous plants so that the collected specimen is complete.

2. A strong knife is required for cutting branches and other parts.
3. A pair of pruning shears or secateur is needed for cutting woody and hard material.
4. A pair of forceps for opening the flower bud to study floral whorls (sepals, petals, stamens and carpels).
5. A vasculum for accommodating collected specimens to be studied and pressed as soon as opportunity permits.
6. A plant press together with blotters or news print for pressing and keeping the collected specimens.
7. A field book for noting down the details of collected plants.
8. Thin tin or aluminium pieces of size 2 × 10 Cms. with a hole at one end. Number each piece with a coloured wax pencil and tie to specimen. This number should correspond with the number of the page of field book on which you will note down the details of plant.
9. Polythene bags are needed for keeping fresh plant specimens. after storing plants in these bags, close the mouth of bags to avoid wilting of specimens.
10. Plant press is needed to hold plant material under a constant and firm pressure

Preparation for field trip

Before you plan for a field trip:

1. Obtain necessary permission from the authorities concerned to visit a forest, a national park or a wild life sanctuary.
2. Ask for forest guide or any other official assistance.
3. Always keep a copy of all essential documents in your camp.
4. Make proper arrangements for your stay, food, clothing and wear field shoes.

31.3 PROCEDURE

Our motherland is rich in flora. Look for plants in rocky crevices, sand dunes, marshy regions, mountains, calcareous regions, and also on dead and fallen trunks. Observe the nature of the plant, its association with other plants and substrata, collect complete and perfect plants with flowers and fruits.

In the following sub sections we will give you the instructions for:

1. Collection for specimens.
2. Pressing of plant.

31.3.1 Collection of Specimens

Collect fresh plants for processing into herbarium. At least five specimens of each should be collected out of which you can present the best 20 plants at the completion of project. Specimens collected should be in flowering and fruiting stages.

Collect herbs along with their underground parts and only twigs of shrubs and trees, discard specimens without flowers and fruit. Press individual plant specimens as soon as you collect it from the site. However, you can keep them in vasculum for about twelve hours and later on press them as soon as you find time to do so.

31.3.2 Pressing of Plant

Now press the plant specimens either by using a plant press, that you have to purchase from a biological supply house or you construct it out of plywood sheets cut into 12/10" pieces to be used for either end of the press. Use newspaper for pressing the specimens. While pressing the plant specimens follow below mentioned steps:

1. Spread single specimen in a folded newspaper.
2. Cut large foliated specimen into two or more pieces and arrange each piece into two or more folded pressing papers.
3. Plant specimens longer than the herbarium sheet should be folded in N, U or V shape and then pressed.
4. Close the press with ropes or straps to prevent the wrinkling of the specimens.

5. Now keep the press for drying.
6. Arrange a few leaves with their lower surface facing upwards.
7. Press a few flowers with the specimens, split open some of the flowers to expose their essential organs and the nature of the thalamus.
8. While collecting specimens note down the necessary data on field book like?

1. Flora of :
2. Specimen No. :
3. Date of collection :
4. Local name :
5. Family :
6. Locality :
7. Habit :
8. Habitat :
9. Flower colour :
10. Smell :
11. Pollination :
- Mechanism :
12. Latex :
- Present/Absent:
13. Collector :

9. Prepare herbarium labels and record:

1. Collection No. :
2. Locality :
3. Habitat :
4. Date of collection :
5. Name of collector :
6. Botanical name :
- A. Family :
- B. Genus :
- C. Species :

31.3.3 Mounting of Specimens

Mount dry specimens on herbarium sheets. Purchase good quality herbarium sheets from the market also you can use thick drawing sheets as herbarium sheets. Apply paste or glue to the lower surface of specimen with the brush and place it properly on a mounting sheet. You can also use adhesive-coated cellophane tapes for affixing specimens to mounting sheets, but it is not of permanent nature. The best way is to apply plastic paste to specimens with the help of slim-nosed squeeze bottle. Fasten fruits and flowers with transparent linen tape. If you have not been able to identify some specimens keep them separately and try for identification by making use of keys. In the following sub section we will write more above the "Keys to identification".

After mounting the specimen, paste a label (already prepared) at its lower right hand corner. Also you can get the label printed on herbarium sheet.

You are advised to type the data on the label. Entries on the label should be made in legible hand using water proof black ink.

31.3.4 Keys to Identification

After collection of specimens of a particular area, next important job is to identify them.

For identification of specimens you should prepare an artificial key. We have already discussed "Keys to identification" in Unit 6, Block 2, LSE-07 (Course on Taxonomy & Evolution).

Key is a device to identify specimens quickly and easily hence:

1. Key should be as simple as possible so that you can identify plants even in the field.
2. Key should be short and limited to a pair of contradictory propositions.
3. Key should be dichotomous one and each statement of couplet, known as lead should be either numbered 1, 2, 3 etc. or use lettered leads in place of numbered leads.

We have developed "Key to identification" of four generas of family Liliaceae namely Asparagus, Asphodelus, Aloe and Gloriosa. This will serve as a guide and you can easily prepare keys to identification to generas of various families collected by you.

1. **Flowers minute and white:**
 1. Cladodoes present; leaves absent; stem spiny
Asparagus.
 2. Cladodoes absent; leaves long, terete and hollow; stem not spiny
..... Asphodelus.
2. **Flowers neither minute nor white:**
 1. Leaves succulent; margins thorny; tip not tendrillar
..... Aloe
 2. Leaves not succulent; margins entire; tip coiled in tendril
..... Gloriosa.

31.4 PRECAUTIONS

1. While examining the herbarium specimen carefully shift the herbarium sheets.
2. Lift herbarium sheets with the hands so that it does not bend.
3. Do not turn over the herbarium sheets like the pages of a book.
4. Do not keep heavy objects on herbarium sheets.
5. Store herbarium sheets in wooden or steel cabinets and use repellents to keep them safe from insects. Fig. 31.3.

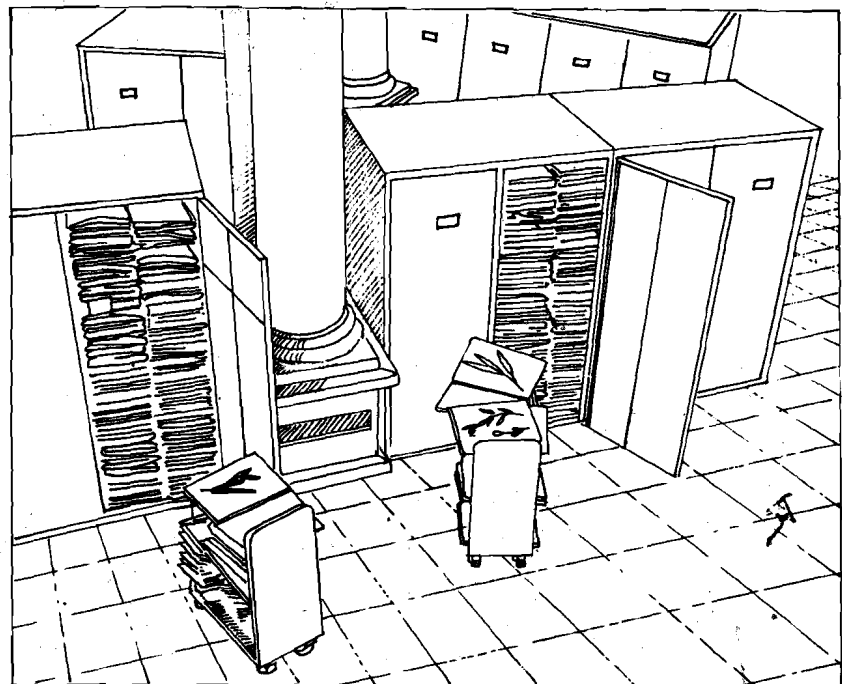


Fig. 31.3 : A herbarium in use.