

## GROWING OUR OWN CRUDE DRUGS.

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A few years ago Prof. W. F. Gidley, of the Purdue University School of Pharmacy, started a garden of medicinal plants near the University in West Lafayette. The garden has steadily grown in size because of the number of different plants added each year until it now occupies two full size lots, a portion of which is shaded by trees, giving almost ideal conditions for the shade-loving plants.

The space is laid off in plots, five by twelve feet, on each of which is grown a single plant. Surrounding each plot is a 12-inch foot-path which enables the students to study the plants at close range.

The garden has four purposes, and it is difficult to state which of the four is the most important. One is to enable the students to see, and learn to know, some of the plants which supply medicinal products. It is always interesting to hear students make such statements as "Well, I didn't know that drug grew that way," or to hear the student who is just entering the pharmacy profession remark, "I have seen this plant growing and know it well, but I never heard that it had medicinal value." The instructor then feels gratified, because he knows that the students are really learning what is desired.

The instructor takes the students to the garden in small groups, and discusses the plants from various viewpoints. The discussion includes the various synonyms of the plant, the part used, methods of preparation for market, the active constituent, the natural habitat of the plant, and its therapeutic action.

Another purpose of the garden is to supply crude drugs for macroscopic and microscopic studies in the laboratory. The root, stem, leaf or flower, is gathered at the proper time, and treated as if it were going to be sold to a manufacturer. Members of the class assist in this work, and derive considerable experience thereby. The material is dried in a special drying room and later stored in proper containers. By collecting our own drugs we can prevent crushing, and hence secure better material for study. When this material is studied in the laboratory the student compares it with commercial drugs and thereby learns to know drugs which he will later meet in actual practice.

A third purpose is to supply some crude drugs to the Experimental Manufacturing Laboratory, where they are ground and the different preparations made from them.

The other use made of the garden is in the teaching of botany. The many families represented, the various methods of reproduction shown, the manner of growth, and other characteristics make the garden of considerable value in this course. The peppermint plant shows enough interesting features to occupy the student's thought for some time. The first thought, of course, is that of the flavoring properties of the plant. The student examines the leaves and stems, and learns that the volatile oil is in the numerous glandular hairs which cover the plant.

His attention is called to the square stems which characterize the family to which the plant belongs. The vegetative reproduction, brought about by certain stems growing along the ground and taking root, is the only means of propagation since the plant is a hybrid and sterile.

The Cannabis plants are of interest in that the staminate and pistillate flowers grow on different plants. Shortly after the pollen ripens the male plant stops growing and soon dies. Its work has been completed. The female plant shows a decided contrast as it grows much larger and lives for some time after the male plant has died. It does this in order to supply food to the growing seeds. It is on the leaves and tops of the pistillate plants that the resin is produced which makes the plant of value as a drug. Consequently, only the pistillate plants may be collected.

The castor plant is characterized by having staminate and pistillate flowers, but they both occur on the same individual.

The Irises, which supply us with orris root, are of interest because they hide their stems beneath the ground, and send up into the light only the leaves and flower-stalks. Other drug plants which hide their stems beneath the ground are Hydrastis, Sanguinaria, Male Fern, Ginger, Triticum and Rhubarb.

Some time is spent in the study of the shade-loving plants which include Hydrastis, Geranium, Hepatica, Podophyllum, Trillium, Asarum, Cimicifuga, Cypripedium and Caulophyllum. This list is composed of local plants of pharmaceutical interest and we are aiming to bring in all the native drug plants and have them establish themselves here.

In the spring before school closes for the summer vacation, the students do practically all the work that is done in the garden, such as spading the beds, planting and transplanting. City water is piped to the center of the garden so that the seedlings may be watered after transplanting and other plants watered in dry seasons.

Experiments in plant-breeding and selection have been started with a few drug plants. The purposes of these experiments are to increase the active constituents and to develop winter-resisting strains of such important drugs as Belladonna, Hyoscyamus and Digitalis. Our garden is not large enough to grow these plants on a commercial scale and, until a larger plot is provided, this phase will not be attempted.

Other schools of pharmacy maintain medicinal plant gardens, and we have cooperated with them in the introduction of certain species into various sections of the country. We are also cooperating with the United States Department of Agriculture in introducing certain drug plants from abroad. The department supplies seeds and bulbs and they are tried out to determine their adaptiveness to our soil and climate.

The following is a list of the drugs which we have now growing in our garden: Althaea, Hepatica, American Spikenard, Lappa, Wild Ginger, Asclepias, Belladonna, Calendula, Cannabis, Caulophyllum, Chicory, Coriander, Cypripedium, Stramonium, Digitalis Boneset, Fennel, Wild geranium, Hydrastis, Hyoscyamus, Inula, Flaxseed, Hoarhound, Matricaria, Mentha citrata, Peppermint, Japanese Peppermint, *Monarda fistulosa*, Opium Poppy, Anise, Podophyllum, Cascara, Castor bean, Sage, Bloodroot, Sassafras, Mustard, Tansy, Taraxacum, Trillium, Malefern, Insect Flowers, Grindelia and three species of Iris.