Plants for Special Uses

Dependence of the United States upon foreign sources of Belladonna, Henbane, Stramonium, Digitalis, Ergot, Pyrethrum, Rotenone and numerous other plant products has stimulated attempts to produce the necessary crops domestically.

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Introduction

Men have fought wars, gambled fortunes, roamed the seven seas, and lived and died for possession of a group of plants that many people have never heard of. They are the medicinals and other botanicals of specialized use, a miscellaneous lot and a vital one.

Some are obtained in this country from wild plants. Others are cultivated in a small way. A few are in the experimental stage of cultivation, testing and development. Some are imported most of the time and grown here only when we cannot get them elsewhere.

From belladonna (Atropa Belladonna L.), henbane (Hyoscyamus niger L.), digitalis (Digitalis purpurea L.), stramonium (Datura Stramonium L.), ergot (Claviceps purpurea (Fr.) Tul.) and poppy (Papaver somniferum L.) are obtained crude drugs that yield alkaloids and glucosides that go into many medicinal preparations. They and others like them are highly important to our national welfare and economy—to the health or very existence of many of us. To some people, the preparations mean the difference between living and not living; to others, they are merciful in easing pain. Other plants yield pyrethrins and rotenone for insecticides that help us keep healthy by killing insects without harming man or beast. Red squill (Urginea maritima (L.) Baker) is another; it produces a poison fatal to rats and mice but not injurious to humans, pets and farm animals.

Almost all plants yield some tannin. The dried leaves of sumacs (Rhus copallina L., R. glabra L., R. typhina L.) and the dried roots of canaigre (Rumex hymenosepalus Torr.) often have 20 to 30 percent tannin, seemingly a large enough amount of this complex chemical product to have commercial possibilities. These are of particular importance now that other natural stores, like the tannin-yielding oaks (Quercus montana Willd., Q. velutina Lam., Q. borealis Michx. f., Q. alba L., Lithocarpus densiflora (Hook. & Arn.) Rehder) and chestnut (Castanea dentata (Marsh.) Borkh.), are almost gone.

A wide variety of plants, e.g., celery (Apium graveolens L.), marjoram (Origanum Marjorana L.), thyme (Thymus vulgaris L.), peppermint (Mentha piperita L.), spearmint (Mentha spicata L.), sage (Salvia officinalis L.), caraway (Carum Carvi L.), coriander (Coriandrum sativum L.), mustard (Brassica hirta Moench, B. nigra (L.) Koch), paprika (Capsicum frutescens var.) and other herbs and condiments, yield flavors that whet our appetites and make our foods more palatable. The flavoring substances in them are usually volatile materials commonly called essential oils, or some constituent of such oils. We have become so accustomed to using them that any disruption of supplies creates new problems of production for our farmers.
The seeds of many plants yield oils which have important uses for food and in industry. For example: The oil of the castor-bean (*Ricinus communis* L.) has become a major item for industrial use because of certain specific properties, discussed later. Seed of safflower (*Carthamus tinctorius* L.) and perilla (*Perilla frutescens* (L.) Britton) yield oils with special properties that may be adapted to important industrial uses.

Supplies of medicinals, *e.g.*, mandrake (*Podophyllum peltatum* L.), ginseng (*Panax schinseng* Nees C. A. Mey), goldenseal (*Hydrastis canadensis* L.), bloodroot (*Sanguinaria canadensis* L.), cascara (*Rhamnus Purshiana* DC.) and a host of others of lesser importance are collected mainly from forested regions, mostly in the mountain country of western North Carolina and Virginia and eastern Tennessee. The exceptions are cascara and digitalis, collected in the Northwest. Many of them, or the products from them, are used in this country and are exported.

Usually we import a number of important medicinals. Belladonna, henbane, digitalis and stramonium, or the products from them, are either imported or grown here as war and peace dictate our freedom in commerce. Before 1914 almost our whole supply of them was imported; encouraged by high prices during the First World War, we began to cultivate most of them. After that war they were not grown except in a few special gardens maintained by Federal agencies, State stations or private concerns. Again in 1940 history repeated the flurry of the earlier war to get a stock of supplies; then came sky-rocketing prices when no stocks were available. Also soon came the speculative interest and a rush to obtain seed and instructions on how to grow these new crops. Now there is another decline in domestic production because of the anticipated supplies from countries that previously furnished such products.

The agricultural problem connected with the introduction of these crops or development of a plant that will provide products for special uses is not one of acreage utilization or volume production. The first problem is one of varieties and species suitable for our needs and how to get sufficient seed stocks of them. Next is the question of soil and weather and the adaptation of the particular variety. It is also a question of fitting a new crop into our pattern of agriculture and who is to do the job. With actual production come the problems of handling the crop and methods of seeding, cultivating, harvesting, curing and drying. Disease and insect control must be taken into account. Many of the products obtained from such special crops, in order to bring the highest returns to the grower, must be of the quality expected or demanded by the trade. The Federal Food, Drug, and Cosmetic Act establishes certain standards of purity and quality for products that are used in medicines and foods, and the producer must strive to meet the standards by handling his crops according to approved practices that assure maximum quality and price.

**Plants for Medicines**

**Belladonna.** Belladonna is an important medicinal. Approximately 200,000 pounds of the herb and root were imported annually from central and southern Europe between 1931 and 1940. During that decade there was essentially no cultivation of the plant in the United States. From the time most of Europe became involved in the war, few or no supplies of the drug came in.

Fortunately years of experimental work and previous experience with the crop in various sections of the country provided a store of valuable information. Summarized, this information indicated: That belladonna is best adapted to northeastern, north-central and western Pacific coast climates; the crop requires considerable labor, so that a grower