

SOURCES OF MEDICINAL PLANTS AND SEEDS.

BY E. L. NEWCOMB.

The publication of the list of plants now growing in the different medicinal plant gardens throughout the United States by Dr. W. W. Stockberger of the U. S. Bureau of Plant Industry has apparently given an impetus to drug plant cultivation. The College of Pharmacy of the University of Minnesota has had numerous inquiries for medicinal plants and seeds. A word on the source of supplies seems, therefore, to be in order.

The nature of many of the inquiries indicates that some who are attempting to develop medicinal plant gardens have little conception of the seed, plant and nursery business of this country and Europe. Collectively this is a very large industry. A number of the firms began their activities about one hundred years ago. The chief aim of these firms is to supply seeds and plants for the production of vegetables and fruits or for the development of flowering and ornamental plants, shrubs and trees.

The writer was brought up in the seed and plant business and has kept more or less closely in touch with it for some thirty years. So far as is known none of the larger firms devote attention primarily to medicinal plant seeds or stock, but many give separate lists of the more common garden herbs. Some specialize along certain lines, as for example: evergreen stock, bulbs, small fruit stock, rose stock, native perennial plants of given localities, tropical plants, cactus, etc.

The history of drugs reveals the fact that practically every plant has at one time or another been used experimentally or otherwise in medicine. The collections of the florist, the seed dealer or the nurseryman, therefore, contain many of our more or less well known medicinal plants. As a matter of fact one of the largest seed and plant houses in the world lists practically everything in the recent compilation issued by Dr. Stockberger.

It should be borne in mind that the efforts of those engaged in the seed and plant business have not been directed toward the production of plants to be used for the preparation of drugs. Their aim has been to produce plants with the most beautiful flowers or the finest fruit, or the most nutritious and valuable vegetables and grain. They have, with the exception of the cereals and a few extensively grown fruits and vegetables, paid practically no attention to plant constituents.

Hybridization and selection has been extensively practiced by the seed and plant growers. Innumerable garden varieties have been produced. A few good botanical varieties have been discovered and a still lesser number of mutants representing good species. Trade names have been given galore to strains of varieties and species possessing but slight differences. It may be said that for the most part scientific botanical names have been eliminated by those who grow seed or plants for commercial purposes. It is no doubt quite impossible to determine the botanical origin of some of the garden varieties and hybrids now offered.

On the other hand some firms endeavor to supply true type botanical species in addition to the various strains and selections. As a rule seed and plant dealers supply material true to label. Occasionally errors are made. *Delphinium ajacis* continues to be sold for *Delphinium consolida*. Some offer the so-called *Valeriana rubra* for *Valeriana officinalis*, etc. Continued cultivation may cause slight va-

riation in the characteristics of the native plant. Conditions of soil, climate, etc., all have their effect. These, however, are some of the problems of the pharmacognocist which must be solved with the medicinal plant garden.

In the light of recent discoveries which show the importance of such substances as the vitamins, thyroxin and insulin in animal metabolism it becomes evident that our entire vegetable materia medica must be re-studied. The strains and garden varieties of medicinal plants may or may not yield the desired results. The fact that we have them does not mitigate against the development of the medicinal plant garden, it rather facilitates our work. We may find the desired qualities in some of these garden forms, or we may find that the type species is most valuable. Enough work has been done to show that plant breeding often has a direct relation to medicinal constituents. In other cases this appears not to be true. With the leaves of the different varieties of *Digitalis purpurea* we find about the same amount of therapeutic activity.

A source of supply in getting the medicinal plant garden started, which is often overlooked, is the drug itself. It is surprising what a large number of our whole vegetable drugs contain seed of the plants yielding the drug. A few seed will not retain their germiable qualities more than a year. The majority will germinate in fairly large percentage even after several years of storage. At the present time, June 1923, we have seed of the plants yielding Colocynth, Poppy Capsules, Belladonna, Capsicum, Lobelia and many other drugs, germinating and growing nicely, and all were separated from drug stock. We have grown a very large number of medicinal plants in this way. It is interesting to note that the botanical identity of plants produced in this manner is not always in accordance with official definitions. Varieties and strains which for the most part are not mentioned in our definitions are also to be met with. Some of these seed from the drug stock germinate slowly and one must not become impatient and discard the planting too soon.

Such products as mustard seed or the umbelliferous fruits may be obtained in the retail drug store. These if fairly fresh will usually grow. Recently we had the unique experience of spending the time and energy necessary to wrap up and ship halfway across the United States two ounces of flaxseed in order that one of our medicinal plant gardens might have growing the plant yielding this drug. We were glad to render the service but hope that the near future will see more enlightenment on sources of supply.

It is very fortunate that through the compilation by Dr. Stockberger directors of medicinal plant gardens are now able to coöperate more effectively with each other in exchanging plant material. This will be especially helpful in the exchange of plant material which is native of given localities. This school is always glad to coöperate along these lines.

Our sources of supply may then be summarized under the following general heads:

1. The seed, plant and nursery dealers.
2. The vegetable drug stock of the retail pharmacist, the wholesale druggist or the college of pharmacy collections.
3. The fields and woods where our native American drug plants may be collected.
4. The exchange between our different medicinal plant gardens.

The question of correct botanical identity is one which must be established in the garden or at the institution where the plants are grown, and this for the most part regardless of the source of the material.

The director of every medicinal plant garden in the country should have available the seed and plant catalogues of a representative list of firms. The following are merely suggested. There are many others, possibly some issuing equally extensive lists.

REPRESENTATIVE AMERICAN SEED AND PLANT DEALERS.

Henry A. Dreer, 714-716 Chestnut Street, Philadelphia, Pa.
 Peter Henderson & Co., 35 and 37 Cortlandt St., New York.
 D. M. Ferry & Co., Detroit, Michigan.
 Northrup, King & Co., Minneapolis, Minn.
 W. Atlee Burpee Co., Seed Growers, Philadelphia, Pa.
 J. M. Thorburn & Co., 53 Barclay St., New York, N. Y.
 The Storrs and Harrison Co., Painesville, Ohio.
 Wm. Henry Maule, Inc., 21st and Arch Sts., Philadelphia, Pa.
 Vaughn's Seed Store, 43 Barclay Street, New York, N. Y.
 Otto Katzenstein & Co., Atlanta, Ga.
 Hopedale Nurseries, Hopedale, Ill.
 Royal Palm Nurseries, Reasoner Brothers, Oneco, Fla.
 Fredk. H. Horsford, Charlotte, Vermont.
 Carl Purdy, Ukiah, California.
 Rose Hill Nursery, P. O. Box 495, Minneapolis, Minnesota.
 Jewell Nursery Co., Lake City, Minnesota.
 L. L. May & Co., Inc., St. Paul, Minnesota.
 D. M. Andrews, Rockmont Nursery, Boulder, Colo.
 The Bay State Nurseries, North Abington, Mass.

FOREIGN SEED AND PLANT DEALERS.

Haage & Schmidt, Erfurt, Germany.
 Henry Mette, Quedlinburg, Germany.
 Vilmorin-Andrieux & Cie, 4 Quai de la Magisserie, Paris, 1 r, France.
 Sutton & Sons, The King's Seedsmen, Reading, England.
 Kelway and Sons, The Royal Horticulturists, Langport, Somerset, Eng.
 James Veitch & Sons, Ltd., Chelsea, England.
 Felix & Dykhuis, Boskoop, Holland.
 C. G. Van Tubergen, Jr., Haarlem, Holland (Zwanenburg Nurseries)
 (E. J. Krug, New York Agent, 110 Broad St., Centennial Bldg.).
 Yokohama Nursery Co., 21-35 Nakamura, Yokohama, Japan.
 C. Starke & Co., Mowbray, Cape Province, South Africa.
 Jardin Correvon, Geneva, Switzerland.

GREENHOUSES AND GREENHOUSE SUPPLIES.

Lord & Burnham Co., St. James Bldg., New York City.
 Pierson U-Bar Co., Metropolitan Bldg., 1 Madison Ave., New York, N. Y.
 John C. Moninger Co., Chicago, Ill.
 E. H. Hunt, Greenhouse Supplies, 129 N. Wabash Ave., Chicago, Ill.
 King Construction Co., North Tonawanda, N. Y.

The addresses furnished above are given simply as information, with the understanding that the list is not complete.

Experiments should be conducted in germinating all seed that may be separated from the drug stock. Some very fine results may be obtained from this source of supply. We have grown from seed separated from the drug stock the plants yielding many drugs. The following we have experimented with, those marked with an asterisk, successfully.

*Adonis	*Coriandrum	*Petroselinum
*Almonds—Bitter and Sweet	Croton	Pimenta
*Anise	Cubeba	*Phytolacca
*Anthemis	Damiana	Physostigma
Areca	*Delphinium	*Poppy
Arnica Flowers	Euphorbia	*Prickly ash berries
*Belladonna	Foenugreek	Pyrethrum—open and closed
Black Hellebore	*Foeniculum	*Rhamnus Cathartica
Buchu	*Galega	*Rhus Glabra
*Buckthorn	Green Coffee	Sabal
*Cannabis, American and Indian	*Grindelia	Santonica
*Capsicum	Helianthemum	*Senecio
Cardamom Seed	*Hyoseyamus	Senna
*Carum	Ignatia	Serphyllum
*Cataria	*Juniperus	*Scoparius
*Cassia Fistula	*Lappa (Seed)	*Scutellaria
*Celery	Laurel Berries	*Siliqua
*Centuary	*Linum	*Sinapis Nigra
*Chenopodium	*Lobelia	*Sinapis Alba
Chirata	*Malva Leaves and Fruit	Star anise
Citrullus	*Melilotus	*Stavesacre
Cocculus	*Millefolia	*Stramonium (Seed)
Coffea (Unroasted)	Nux Vomica	Strophanthus
Colchicum	*Pepo	*Tamarind
*Colocynth	Pepper—Black and White	*Verbena
*Concium		

Finally, field trips in search of native medicinal plants are urged as a regular part of every pharmacy curriculum. Students profit greatly by such excursions. Instruction in the proper method of collecting, transplanting and conserving native medicinal plants give such trips increased value and interest to the student. Great care should always be exercised to see that plant material is not unnecessarily destroyed. Each college of pharmacy maintaining a medicinal plant garden should endeavor to specialize in a degree upon medicinal plants native of the locality. This policy, if followed out for a few years, will greatly improve our facilities for exchanging material and increase our knowledge of our native medicinal plants.

DEPARTMENT OF PHARMACOGNOSY,
COLLEGE OF PHARMACY,
UNIVERSITY OF MINNESOTA,
JUNE 1, 1923.