

We believe this crystalline Kombe strophanthin as the definite active constituent contained in *Strophanthus Kombe* Seed, U. S. P., should be adopted as the standard by which the value of the various preparations of the drug should be measured.

RESEARCH LABORATORY OF PARKE, DAVIS & CO., DETROIT, MICH.

LITERATURE.

1873.
Fraser: *Phar. Jour. and Trans.*, 3, p. 523.
1877.
Hardy and Gallois: *Jour. de Pharm.*, 25, p. 177, *Comptes Rendus*, 84, p. 261.
1887.
Elborne: *Pharm. Jour. and Trans.*, 17, p. 743.
Helbing: *Pharm. Jour. and Trans.*, 17, p. 747 and p. 924 (React. with H_2SO_4).
Gerrard: *Pharm. Jour. and Trans.*, 17, p. 923.
Fraser: *Pharm. Jour. and Trans.*, 18, p. 69.
1888.
Bordet et Adrian: *Jour. de Pharm.*, 17, p. 220.
Blondel: *Jour. de Pharm.*, 17, p. 249, p. 283, p. 297, p. 554.
Catillon: *Jour. de Pharm.*, 17, p. 281, p. 534.
Buchanan: *Jour. de Pharm.*, 17, p. 571.
Arnaud: *Comptes rendus*, 106, p. 1011 (ouabain).
Arnaud: *Comptes rendus*, 107, p. 179 (Kombe-strophanthin).
Arnaud: *Comptes rendus*, 107, p. 1162 (glaber-strophanthin).
Gley: *Comptes rendus*, 107, p. 348 (physiol. act. Kombe stroph. and ouabain).
1889.
Fraser: *Pharm. Jour. and Trans.*, 20, p. 208, and 328.
1892.
Hartwich: *Archiv. der Pharm.*, 230, p. 401.
1893.
Holmes: *Pharm. Jour. and Trans.*, 23, p. 868 and p. 927.
1898.
Myoen—*Archiv. der Pharm.*, 234, p. 278.
Thoms: *Berichte*, 31, p. 271, and 404 (hispidus).
Kohn and Kullisch: *Berichte*, 31, p. 514, *Monatshefte*, 19, p. 385.
Feist: *Berichte*, 31, p. 534.
Arnaud: *Comptes rendus*, 126, p. 346, 451, 1208, 1280, 1654, 1874 (ouabain).
1900.
Feist: *Berichte*, 33, p. 2063 and p. 2069.
1902.
Karsten-Helsingfors: *Berichte d. d. pharm. Gesel.*, 12, 241 (hispidus).
1904.
Thoms: *Ber. d. d. pharm. Gesel.*, p. 104 (gratus).
1906.
Mann: *Pharm. Jour.*, 23, p. 93.
1907.
Meyer: *Archiv. d. Pharm.*, 245, p. 361. (What kind of Str. for P. C.?)
Thoms: *Pharm. Zeit.*, 52, p. 699.
1908.
Hartwich: *Apoth. Zeit.*, 22, p. 1017. (What kind of Str. for P. C.?)
Gllg: *Ber. d. d. pharm. Ges.*, 18, p. 284. (What kind of St. for P. C.?)
Meyer: *Archiv. d. Pharm.*, 246, p. 541. (What kind of Str. for P. C.?)
Hatcher: *Americ. Jour. of Physiol.*, 23, p. 303.
1909.
Schaub: *Apoth. Zeit.*, 23, p. 920 (react. with H_2SO_4).
Pedevidou: *Comptes rendus*, p. 308 (Physiol. act.).
Mackenzie: *Chem. and Drugg.*, 74, p. 700 (Str. sarmentosus).
Laidlow: *Jour. of Physiol.*, 39, p. 354.
1912.
Gardner: *Druggist circular* 55, p. 403, Assay of *Strophanthus* and Tincture of *Strophanthus*.
Heftter and Sachs: *Biochem. Zeitschr.*, 40, p. 83, Vergleich. Unters über *Strophanthus glucoside*.

DRUG PLANT CULTURE IN THE UNITED STATES.*

Within recent years considerable public interest has been manifest in the possible commercial growing of medicinal plants within the boundaries of the United States. This public interest usually expresses itself in the form of inquiries, verbal and in writing, directed to the U. S. Department of Agriculture, State Experiment Stations, Colleges of Agriculture, and to teachers of pharmacognosy in Colleges of Pharmacy, as to how to grow medicinal plants profitably. The more

*Reprinted from the *Pacific Pharmacist*.

purely experimental efforts intended to determine how to grow certain medicinal plants may be arranged under the following heads:

1. Test plantings by the Drug Plant Division of the Bureau of Plant Industry of the U. S. Department of Agriculture, under the direction of Dr. Rodney H. True.
2. Demonstration Gardens of medicinal plants associated with a few of the American Colleges of Pharmacy.
3. Experimental work by a few American pharmacognosists.
4. Exhibition plantings by a few of the wholesale drug houses.
5. Incidental tests carried on in general botanical gardens and in parks.
6. Commercial demonstrations.

With a few exceptions, these several efforts may be summarized as rather trivial and inconsequential in results. The chief reason why not more has been accomplished is a lack of funds to carry out to a satisfactory conclusion the several problems involved. It is true, a number of individuals, realizing possibilities and not willing to wait for scientific proof or demonstration, proceeding on their own initiative, and after many trials, reverses, financial losses, etc., succeeded in establishing the enterprise. Thus we have successful mint farms in New York, in Michigan, in Indiana and in other States; insect flower culture in California; crocus culture in Pennsylvania; lavender culture in California, to say nothing of the extensive culture of garden herbs having medicinal properties. The Division of Drugs of the U. S. Bureau of Plant Industry, under the able management of Dr. True, has done some very efficient work, but a wider range of activity is made impossible through a lack of funds. Experimental work in drug plant culture very properly falls to the U. S. Department of Agriculture and this Department should be granted the funds necessary to carry on such work.

Not only does the United States not furnish funds to carry on commercial experiments, but she furthermore places vegetable drugs on the free list, thus compelling the American citizen who has the enthusiasm and the courage to try out the commercial growing of one or two drug plants, to compete with the foreign market of often a very inferior and even highly adulterated article. We need only mention the Buhach (pyrethrum insect powder) enterprise of California which is compelled to compete with the foreign imports of insect powder made from pyrethrum stems. It is self-evident that, under such conditions enthusiasm must soon wane.

It is manifestly unreasonable to expect an individual, or even a large corporation, to invest many thousands of dollars in purely experimental work, the successful outcome of which means a marked gain to the United States, when the United States offers no financial aid or other encouragement. To give another concrete example. At a cost of about \$20,000.00 and six years of effort, it has been demonstrated that belladonna of superior quality can be grown successfully in California. The only encouragement and recompense for this sacrifice of money, time and labor, is the permission to compete with the free foreign market of inferior and frequently highly adulterated belladonna. It is furthermore likely that the entire enterprise will have to be abandoned, because of lack of private funds to undertake the growing of belladonna on a scale sufficiently extensive to net any gain whatsoever under the conditions named. A patch of five acres of belladonna is operated at a loss, whereas a patch of 100 to 200 acres could be operated at slight profit.

Manifestly the proper thing for Congress to do would be to fix a tariff of 40 to 60 percent ad valorem on such drugs as could be grown profitably in the United States, with the help that such a tariff would give. It would be a very simple matter to compile a list of drug plants which would come in such a class. It would be foolish to place a tariff on drugs which could not be produced in the United States, nor should a tariff be placed on such drugs which require no protection for successful competition with foreign markets.

It would manifestly be objectionable to place an important tariff on an article of which the adequate home production is in any way doubtful. For example, to fix a tariff of 50 percent ad valorem on belladonna would compel importers to pay out at least \$15,000.00 annually for the sake of encouraging the culture of a few acres of belladonna. It is true the protection afforded would, in the course of from five to ten years, result in a yield sufficiently large to supply most of the American market, which amounts to about 150 tons of roots and leaves annually. The revenue increment resulting from such tariff would no doubt be welcomed by the United States, but the payment of the duty would certainly be objected to by the importer and also by the retailer and the consumer. From the standpoint of the importer and consumer the better plan would be for the United States to fix a bounty, let us say of 50 percent ad valorem, or of 5c per pound, on certain home-grown and home-marketed drug plants. Until the article is produced on a large scale, the cost to the Government would be comparatively slight. As soon as the home production reached large proportions, let us say 50 percent of the entire home demand, the bounty could be discontinued and the import duty substituted, and thus in a very short time the Government would be more than recompensed for the financial outlay in bounties for encouraging the enterprise. This method would overcome the hardships to importer and consumer and would, in time, be a source of revenue to the Government while developing a new and most desirable home industry.

In conclusion we give a list of drugs upon which a U. S. Government bounty or an import duty of 50 percent ad valorem should be fixed in order to encourage home production. The bounty should be paid for five years or longer as may be necessary as above suggested.

1. Aconite.
2. Belladonna.
3. Foxglove.
4. Henbane.
5. Licorice.
6. Marjoram.
7. Scopolia.
8. Stramonium.
9. Valerian.

These drugs are very important therapeutically and a supply of good quality can be grown in the United States provided some inducement is offered. Marjoram is essentially a spice and the chief reason we have added it to the list is because practically no pure marjoram can be found in the American market.

The matter above outlined is of great importance and should be taken up by Congress at once. The United States pays out some \$18,000,000 annually for drugs which should be grown at home.