

Even when gloss oil is present up to fifty percent. the above reaction is negligible.

The simple test of adding nitric acid to the suspected oil furnishes a more positive index of purity. In applying acid, four or five drops of the oil should be dropped into the cavity of a porcelain plate and one drop of concentrated nitric acid allowed to run down the side of the cavity without agitation. This test was applied to gloss oil also to 5, 10, 25, and 50 percent. gloss oil and the balance linseed oil.

Gloss oil will give a fugitive violet-red,³ tint 2, changing to a red-violet tint 2.

Fifty percent. gloss oil with 50 percent. linseed oil, the color produced is as pronounced as in pure gloss oil.

With 25 percent gloss oil and 75 percent linseed oil the color is green-yellow, medium, after standing four or five seconds. Permanent for some time.

With mixtures of 10 percent. gloss oil and 90 percent. linseed oil and 5 percent. gloss oil and 95 percent. linseed oil the color produced with concentrated nitric acid is yellow, tint 2. Color not fully developed until after several seconds.

The U. S. P. saponification test for rosin products in linseed oil is too indefinite in case of adulteration with small quantities of rosin products which are more or less saponifiable.

It appears it would be desirable to have an official quantitative method for determining mineral oil in linseed oil. Allen's⁴ method of saponification and extraction with ether appears practicable.

Linseed oil, mineral oil and rosin products, in many cases have so near the same specific gravity and refractive index that these constants are of no value in the detection of mixtures of the above oils.

THE RELATION OF PHARMACOGNOSY TO THE PRACTICE OF PHARMACY.

HEBER W. YOUNGKEN, A. M., PH. G., PHILADELPHIA.

How often students and practitioners of pharmacy ask the question, "What bearing does pharmacognosy have upon the general drug business?" How often do they sneeringly remark, "Why should I study the methods of cultivating, collecting, preserving, and valuing crude drugs!" It is the writer's object to point out that pharmacognosy considered as a major division of the science of pharmacology does have an important bearing upon the Practice of Pharmacy.

To Professor Alexander Tschirch, of Bern, Switzerland, is due much of the credit for developing pharmacognosy into a distinct science. Tschirch calls attention to the great departments and sub-divisions into which pharmacognosy may be divided, namely pharmacobotany,—including pharmacology, pharmacophysiology, and pharmacoagriculture,—pharmacology, pharmacogeography, pharmacoe ethnography, and the history of pharmacognosy.

³See Color Standards—Mulliken's Identification of Pure Organic Compounds.

⁴Commercial Organic Analysis, Vol. 11, Part 1, page 112.

Thus the science of pharmacognosy encompasses a wide range of related subjects. Taking up its scope we find pharmacobotany dealing with the inquiry into medicinal plants and their products. Pharmacoanatomy inquires into the structure or form of plants, their organs, tissues, and cells. Through its study we learn how to ascertain the identity and purity of drugs both macroscopically and microscopically. Pharmacophysiology is that department of pharmacobotany which treats of the life processes of medicinal plants. Through its study we learn how to cultivate medicinal plants with a view to increasing their active principle content. No less important a department of pharmacobotany is pharmacoaiculture, dealing with the effects of soil, climate conditions, hybridizing, grafting and budding upon medicinal plants, a comparatively new field of endeavor, which, though but little exploited, promises a future of wondrous revelation, potent in its significance to the profession.

Pharmacochemistry deals with the constituents of plants of medicinal value. In the pursuance of pharmacochemistry we isolate and estimate the active principles of drugs. We value many drugs accordingly.

Pharmacogeography treats of the distribution of medicinal plants over the surface of the earth. By inquiring into the environment of drug plants in their native habitats, valuable information may be gained regarding proper methods of cultivation.

Pharmacoethnography deals with the descriptive characteristics of medicinal plants and their parts. The study of this branch enables us to identify and select crude drugs.

The history of pharmacognosy inquires into the facts and events occurring in the domain of the science since its beginning.

After viewing the vast extent of ground covered by this branch of pharmacologic science, it is evidently impossible for an individual to practice with thoroughness all the arts upon which it depends. A general division would be, pharmacophysiology, pharmacochemistry, pharmacodynamics, pharmacotherapeutics and pharmacy, each providing its own specialty. However, workers in any department of a science should have a thorough knowledge of the basic principles underlying the whole structure.

The profession of pharmacy has arrived at a critical period in its history. Its future depends upon the adoption of straightforward methods by its membership. The vocation will not survive as a profession if pharmacists refuse to realize their duty in conducting their own particular branch of the work.

What then is "The relation of pharmacognosy to the practice of pharmacy?" In the light of the above facts regarding pharmacognosy as a branch of the science of materia medica, the practice of pharmacy is absolutely dependent upon pharmacognosy. The pharmacist must be prepared for the identification, estimation and selection of drugs, that he may be fitted to practice pharmacy, or the art of preparing, preserving, compounding and dispensing of drugs and medicines.

DEPARTMENT OF BOTANY AND PHARMACOGNOSY, MEDICO-CHIRURGICAL COLLEGE, Philadelphia.