

crystallized on evaporation of the aqueous solution in the form shown in the photograph above.

We are convinced that this principle differs from any one that has heretofore been reported and, since we have obtained the same alkaloid from both the fluid extract and from the drug, we cannot believe that it is due to any foreign admixture in the drug. But, in order to assure ourselves that this is not the case, we are having ground, at the present time, a specially selected gelsemium for the purpose and will go over the same work repeatedly in order to reassure ourselves that no error could have crept in from such a source.

Referring to a letter from J. U. Lloyd, with whom one of us (Sayre) has had some correspondence in connection with this subject, he says: "I take it you have surely taken the pains to see that your new alkaloid is not a chemical product, in which some reaction on another of the alkaloids has produced the new one as a split off?" He further states,—“Please bear in mind the fact that drugs at different seasons of the year contain different constituents or varying amounts of the usual constituents, and that possibly you will find variations in gelsemium, in more directions than one.”

It would be of interest to us to continue this investigation to see whether there are gelsemiums of different collections in which this alkaloid is absent.

THE STRUCTURAL VARIATION OF ALLSPICE.

WILLIAM MANSFIELD, M. D.

Allspice, *Pimenta officinalis*, is a New World spice. It was not known in Europe until after the discovery of America. The exact history of its discovery, and its subsequent introduction into commerce, is obscured in the haze of passing years. It is definitely known, though, that in the seventeenth century it was imported into England, where it was known by a variety of names. About the close of the seventeenth century, it was in wide use in England as a condiment, and was sold as Jamaica Pepper or allspice. The latter name is in common use to-day, but we do not hyphenate the word as they did formerly. At the beginning of the eighteenth century, allspice was used in medicine. It was not until 1721, however, that allspice was made official in the British Pharmacopœia; and not until 1816, was it made official in the United States Pharmacopœia. In the 1816, U. S. P., allspice was recognized under the name of Pimento; the common name was given as Jamaica Pepper, and its botanical origin as *Myrtus Pimento*. In the 1820 and 1828, Pharmacopœia the oil was official under the title of *Oleum Pimentæ*. In the 1830, U. S. P., its title was Oil of Pimento, from Pimento. In the 1831, U. S. P., both the fruit and the oil were official. The title of the fruit was *Pimenta—Myrtus pimenta*, the berries. The title of the oil was *Oleum Pimentæ*. In the 1842, U. S. P., the title of the fruit was *Pimenta*, Pimento. The unripe berries of *Myrtus Pimenta*. The title of the oil was *Oleum Pimentæ*, Oil of Pimento, from Pimento. In the 1857, U. S. P., the title of the fruit was *Pimenta*, Pimento,—the unripe berries of *Myrtus Pimenta*. The title of the oil

was *Oleum Pimentæ*, Oil of Pimento, from Pimento. In the 1868, U. S. P., the title of the fruit was *Pimenta*, Pimento,—“the unripe berries of *Eugenia Pimenta* (*De Candolle*).” The title of the oil was *Oleum Pimentæ*, oil of Pimento. It was not until 1873 that the name Allspice was applied to this drug. In the 1873, U. S. P., the title of the fruit was *Pimenta*, Pimento, *Syn.* Allspice,—“the unripe berries of *Eugenia Pimenta* (*De Candolle*).” The title of the oil was *Oleum Pimentæ*, Oil of Pimento. In the 1880, U. S. P., the title of the fruit was *Pimenta*, Pimento, *Syn.* Allspice. “The nearly ripe fruit of *Eugenia Pimenta* (*De Candolle*), (*Nat. Ord., Myrtaceæ*).” The oil was official as *Oleum Pimentæ*, Oil of Pimenta, Oil of Allspice. “A volatile oil distilled from Pimenta. Prep. *Spiritus Myrciæ*.” This oil was described, the specific gravity given, etc. The 1883, U. S. P., was similar to that of the Pharmacopœia of 1880. In the 1890, Pharmacopœia, its title was *Pimenta*, and its common name Pimenta. Its botanical origin was given as *Pimenta officinalis*, (*Lindley*), (*Nat. Ord. Myrtaceæ*). The oil was of-



Allspice with Male Flowers



Allspice with Perfect Flowers

ficial as *Oleum Pimentæ*, Oil of Pimenta, and it was directed that the oil yield 65 *per cent.* by volume of Eugenol, and a method was given for its assay.

Its first use as a condiment, is the predominating use of allspice to-day.

Allspice is a native of the West Indies. It is also found growing in Central America, Mexico, Costa Rica, Venezuela, and in Cuba. In the latter place, Dr. Britton, the well-known author of the Flora of Northern United States and Canada, has frequently observed it while exploring the wilds of the island. It is cultivated to a limited extent in most tropical countries. The climate and soil-conditions of Porto Rico are well-suited to the growth, and there is little reason why it should not be grown on a commercial scale on the island.

Most of the allspice in the market is collected on the Island of Jamaica. The allspice tree, which is common to all parts of the island, is usually propagated by birds, which are very fond of the ripe fruit. In their flight about the island, the seeds are dropped on the ground. So many seeds are distributed in this manner, that it is not necessary to cultivate the seed and transplant the young trees. In fact, until recent years, the people believed that only bird-distributed

seed would grow. This belief has been disproved by experiments which have shown that if the pulp is removed from the seeds, they will renew their growth and develop into fruit-bearing trees within a period of five years.

The allspice plantations of Jamaica are made up of wild trees, standing twenty to thirty feet apart. The land between them is kept clean of trees and shrubs.

The allspice tree grows to a height of twenty to thirty feet. The bark of the tree is smooth, shiny, and of a greenish-gray color. The leaves, which are arranged opposite on the stem, vary in length from two to seven inches. They are dark-green, shining above, lighter and pellucid-punctate on the under surface. When held between the eye and the source of light, the leaf appears full of small, rounded, translucent bodies. These are the oil-cavities, in which the oil is stored. When the leaf is crushed, the oil-cavities are broken, and the characteristic odor of the oil of allspice is obtained. The oil does not evaporate readily from the dried leaf. Herbarium specimens, collected years ago, still smell aromatic when crushed. It is indeed, surprising to me that the oil is not extracted from the leaves on a commercial scale.

The flowers are of two kinds, and are borne on different trees. The fleshy, perfect flowers, which are the most abundant, grow in clusters. The calyx-tube is ovoid, and divided above into four small, rounded, spreading, persistent sepals. The four white petals are rounded, and in the mature flower are bent back. After fertilization, the petals fall from the developing fruit. The stamens, which are indefinite in number, stand erect from the throat of the calyx. The pistil has a short, erect style, and a two- or three-celled ovary.

The other type of flowers common to allspice, is the so-called "male flowers," (staminate flowers), which are similar in structure to the above, with the exception that the stamens are more numerous, the pistil is abortive, and the ovules are not fertile. It is claimed by many planters, that larger yields of fruit are produced, if a few of the trees bearing staminate flowers are allowed to grow among the trees bearing perfect flowers. This is quite believable, for the reason that this would bring about cross-fertilization, which many plants secure by reason of their floral structure, or by having fertile flowers of one kind only growing on a plant, just as we have in staminate flowers of allspice.

The fruit, which begins to develop as soon as fertilized, matures in August. When fully developed, the fruit is a fleshy berry, about the size of a pea. The outer part of the fruit, is fleshy and of sweet, aromatic taste. When such a fruit is dried, it retains little of the aromatic properties of the slight, immature fruit. The full-grown, but immature fruits, are gathered for market. The gathering is usually done by children, who snap off the fruiting branches by the aid of a forked stick. Later, the branches with fruits, are collected in piles under the tree, and the fruits separated from the stalks and leaves. The green fruits are then taken to paved courts, where the berries are spread out on the pavements, or on specially-constructed frames. The berries are frequently turned during the day by a workman who uses a wooden rake for the purpose. At night, they are covered, in order to protect them from rain and dew. Under favorable conditions, allspice is dried at the end of seven to ten days. The variation in time required for drying allspice, is due to possible rainy days.

Allspice is sometimes dried by placing the berries on drying-frames over heat. When thoroughly dried, they are placed in bags and sent to market.

Allspice of commerce is a fruit, varying in color from brownish-gray to grayish-brown, to reddish-brown, to reddish-black. All the fruits, with the exception of the reddish-black ones, which are at first sweet, then sweet-aromatic, and finally slightly astringent, are first aromatic and then aromatic-astringent. The surface is granular in appearance and rough to the touch. The outline of the fruit varies from indistinctly four- to indistinctly three-sided. The upper part of the fruit is crowned either with the four-parted calyx or its fragments, or by the remains of the cohering calyx-tube, which appears as a gray ring around the rim of the tube. In the center of the small depression, there is a persistent style of variable length. The base of the fruit is either marked by a slightly depressed scar, or attached (rarely) to a short stalk.

On cross-sections the pericarp is about 1 m.m. in thickness. The septa is thin and membranous. The fruit is two to three-celled, and from one to three-seeded. In the one-seeded form, fragments of the septa are visible. In each cell there is a solitary seed. In the two-celled fruits, the seed is slightly reniform, two-sided, concave on the inner face, and indistinctly beaked. The seeds of the three-celled fruits, are indistinctly three-sided, and slightly angled. The seeds of the two and three-celled forms vary from astringent to astringent-aromatic. Most of the tannic acid is contained in the seed,—at least judging from the taste, one is led to believe that.

The structural variation of allspice is not of recent origin, for I found a similar variation when I examined a sample of allspice which had been placed in our museum many years ago.

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THE PHARMACOGNOSY OF THE MEDICINAL RHAMNUS BARKS.

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INTRODUCTION.

The European Group of Rhamni:—For centuries the bark of a wild shrub, known in England as Alder Buckthorn or Berry Alder, has been used in Europe as a purgative. This bark is now recognized in most of the leading pharmacopœias of the world, under the name of FRANGULA or FRANGULÆ CORTEX. The plant yielding the drug, RHAMNUS FRANGULA, (*Linnaeus*), ranges along roadsides and in thickets over all of Europe, except the very northernmost parts and east over northern Asia.



Associated with RHAMNUS FRANGULA is RHAMNUS CATHARTICUS, (*Linnaeus*), a thorny shrub, named in England, Buckthorn or Waythorn. This plant is also found in northern Africa, India and eastern United States. The fruit, especially, has been employed for many centuries in Europe as a cathartic. It is now official in a few of the European pharmacopœias. As a medicine the fresh, ripe berries are made into a decoction or the abundant juice is expressed and made into a syrup. The juice of the partially-ripe Buckthorn Berries is yellow and