

THE BOTANICAL ORIGIN OF AMERICAN PEPPERMINT—*MENTHA PIPERITA* L.*

BY F. J. BACON.**

The botanical origin of the peppermint plant and its relation to other species of the genus *Mentha* is an exceedingly complicated problem. As late as 1891 Flueckiger designated as peppermint plant a representative of the genus *Mentha* which has the capacity to a high degree to produce a menthol.¹

Because of the extreme complexity of the synonymy of the mint plant from a botanical standpoint, an effort is being made to secure the original descriptions of the older authors on the subject of mints for comparison and further study.

Several species of mints, the botanical description of which were not recorded, were used during antiquity.² In the oldest German treatise on distillation *Liber de arte distillandi*³ of the year 1500, the following mints are mentioned as being used in the preparation of distilled waters, *Mentha rubra*, *M. balsamica*, *M. sarracenia* and *M. crispa*, but no distinguishing characteristics are given. It is not known whether the kinds of mint used formerly agree with those now in use.⁴

The peppermint oils of commerce from different parts of the globe are derived from several species, varieties or forms of the genus *Mentha*. Thus the several oils differ greatly in their properties and composition.⁵

In the mints grown in America *M. viridis* L. always has a spicate inflorescence with sessile leaves. *Mentha aquatica* L. and *M. citrata* Ehrh. have capitate inflorescence with petioled leaves, differing from each other by the absence of hairs on the *M. citrata* Ehrh. A study of the wild and cultivated mints yielding the peppermint oil of commerce shows all gradations of form, from the capitate to the spicate inflorescence, or a combination of the two forms on the same plant; the terminal inflorescence capitate and the lateral inflorescence spicate.

The earliest description of peppermint was found in the work of John Ray, 1696, "Synopsis Methodica Stirpium Britannicarum," 234, in which it is described as *Mentha spicis brevioribus et habitioribus, folius Menthae fuscae sapore fervido Piperis*, giving a description of the plant which corresponds to our peppermint. In his *Historia Plantarum* in 1704, 284, Ray describes the plant and calls it *Mentha Palustris*, Peppermint. Specimens of the plant are found in the herbarium of the British Museum in London. They were collected in 1696 in Southern England and agree in botanical characteristics with our peppermint of to-day. Linnaeus lists the peppermint of Ray as *Mentha piperita* in his "Species Plantarum," 1st Edition, 1753, 576.

William Hudson 1798, *Flora Anglica*, 251, lists the peppermint of Ray as *Mentha piperita* L.

* Plant Science Seminar, Boston, 1928.

** Todd Fellowship, Univ. Wis., Dept. Pharm., 1922.

¹ F. A. Flueckiger, "Pharmakognosie des Pflanzenreichs," 3rd Edition (1891), 723.

² Gildemeister and Hoffmann, "The Volatile Oils," transl. by E. Kremers, 2nd Edition, 1 (1922), 190.

³ Brunschwig, "Liber de arte distillandi. De Simplicibus," 1500.

⁴ Gildemeister and Hoffmann, "The Volatile Oils," transl. by E. Kremers, 2nd Edition, 1 (1913), 191.

⁵ *Ibid.*, 3 (1922), 515.

The varying forms of *M. piperita* L. were first noted by William Sole, *Mentha Britannica*, 1798, 15, in which he describes two peppermint plants, *Mentha piperita officinalis* in the spicate group, and *Mentha piperita vulgaris* (*M. piperita* Huds.), in the capitate group.

Bentham 1832 *Labiatarum Genera et Species*, names *M. piperita* L. as synonymous with *M. piperita officinalis* Sole and *M. piperita vulgaris* Sole.

The name *Mentha piperita* Huds. seems to be the most generally used by the older authorities on mints. However, the name *Mentha piperita* L. is in general use and appears to be the same plant.

The hybrid nature of the plant was suggested by F. Schultz, 1852, *Jahresbericht der Pollishia*, 12, 27, in which he uses the combined words *Mentha viride-aquatica* for *Mentha piperita* L.

It appears that Schultz using the combined words *viride aquatica* recognized in peppermint characteristics common to the two species of mints, *Mentha aquatica* L. and *Mentha viridis* L.

John Briquet,¹ 1891, describes the hybrid peppermint as X *Mentha piperita* L. p. p., Huds. *M. aquatica* X *viridis* F. S. The leaves of this plant are always petioled. Inflorescence very variable, forming a spike or a head with all intermediate forms.

The following subspecies and their varieties are described: I. Subspecies *piperita* Briq. (*M. aquatica*) X (*viridis* and *aquatica*) X (*viridis-citrata* F. S.).

Var. 1.—*Officinalis* Sole.

Var. 2.—*Durandoana*.

Var. 3.—*Inarimensis* Braun.

Var. 4.—*Globosiceps*.

II. Subspecies *citrata* Briq. (= *M. aquatica* X *viridis*); = *M. citrata* Ehrh. = *M. odorata* Sole = *M. aquatica* var. *citriodora* Meyer. = *M. aquatica* var. *glabrata* Benth.

In 1911 A. and E. G. Camus² reviewed the genus in the Bulletin of the Roure-Bertrand Fils and give detailed description of the hybrid plant X *Mentha piperita* Huds., and state that the hybrid origin appears to have been fixed in the cultivation and presents several varieties which are classed into the groups outlined by Briquet, with the variety *officinalis* Sole divided into two forms. *Mentha piperita* Huds. var. *officinalis* Sole form *Rubescens* Camus, and *Mentha piperita* Huds. var. *officinalis* Sole form *Pallescens* Camus. The form *rubescens* of Camus is known as the English Mint and the form *pallescens* is known as the English White Mint.

Most recent authors are in accord with the present hybrid origin of peppermint because of the varying types of plants yielding peppermint oil and the fact that the plant is sterile.

It is known that hybrid plants in general have characteristics between those of the parents but are not necessarily all alike, explaining the great variations in pubescence and types of inflorescences which are present in the forms of *Mentha piperita* L. In general hybrid plants are sterile. Individuals from the same cross may possess characters approaching either parent, thus accounting for the French

¹ Les Labiees des Alpes Maritimes, Part 1 (1891), 18.

² Bull. Roure-Bertrand Fils (1911), 3.

peppermint approaching the *M. viridis* L. parentage and the English peppermint approaching the *M. aquatica* L. parentage.

The American cultivated mint for the distillation of the oil approaches the English type.

The hybrid nature of *M. piperita* L. has been determined by a comparison of morphological characteristics, and not by experimental hybridization. In order to establish the origin of the American peppermint plant it will be necessary to make experimental crosses of the parent plants and produce sufficient oil for phytochemical study.

OENANTHE SARMENTOSA.

BY F. J. GOODRICH AND E. V. LYNN.

The poisonous character of other members of the genus *Oenanthe* has elicited unestablished local statements that the Pacific variety, *sarmentosa*, shows this toxic property. Just how such rumors started and from where they emanated is unknown, but cattle raisers in Washington at least appear sure in their own minds that many fatalities among cattle are due to the plant. Cattle, grazing in the vicinity of the habitat of *Oenanthe sarmentosa*, have been observed eating the tops of the plant growing in and under water, and with no apparent ill effects. This has led to the supposition that a poisonous principle might be present only in the rhizome and roots. Its similarity to wild parsnip may in part account for this view, but the greater share is undoubtedly to be traced to reports regarding the toxic nature of some of the other *Oenanthe*.

Authentic investigations of *Oenanthe sarmentosa* seem to be almost entirely lacking. There are several printed statements to the effect that it is toxic, but no one seems to have taken the trouble to investigate the plant scientifically. As far as could be learned, there has also been no chemical examination of any kind on this particular species. This is rather remarkable because at least one other member of the genus has been quite thoroughly studied. An extensive search of the literature has shown that all of the work on *sarmentosa* has been strictly of a botanical nature, and this has not been of great amount.

It seemed of particular importance, therefore, to subject the plant to minute investigation. Because of its close relationship to other members of the same family and genus, it would appear of great interest to study its distinguishing characteristics. The chemical composition, too, might throw some light upon these and upon the reputed toxicity. With a view to ascertaining whether the plant is poisonous or not, it is also desirable to carry out experiments on animals, using freshly gathered materials and extracts prepared from them.

Another interesting problem in this connection is the question of submergence and its effect upon the botanical structure. It is found growing in, under and out of water. Since some members of this genus apparently are not capable of growing entirely immersed, the possible differences in morphology under such circumstances should undoubtedly be determined. This can only be accomplished by a careful study of the amphibious nature of the plant under different growing conditions.

We have attempted, therefore, (*a*) to study the effects of submergence, (*b*) to