the vagus belongs to the sympathetic in the broader sense.

The figures used in the book are largely new and in all cases well adapted to illustrate the descriptions in the text. P. G. STILES

SPECIAL ARTICLES

THE BOTANICAL IDENTITY OF LIGNUM NEPHRITICUM

THE attention of the writer has just been called to the following criticism of his recent preliminary paper on *lignum nephriticum*, which appeared in *Nature*, Vol. 96, page 93, 1915.

> The most recent contribution to the history of *lignum nephriticum* is published in the *Journal of the Washington Academy of Sciences* (Vol. V., No. 14, August 19, 1915) by Mr. W. E. Safford. He gives the name *Eysenhardtia polystachya* (Ortega) Sargent, to the tree, and states that its botanical identity has remained uncertain until the present time. This statement, however, is scarcely correct, since the tree was referred to the genus *Viborquia* by Ortega, a name superseded by the later name of *Eysenhardtia* of Humboldt, Bonpland and Kunth. These authors correctly named the plant *E. amorphoides* in 1823, and Mr. Safford, following Sargent, merely restores Ortega's old specific name, *Viborquia polystachya*, making *Eysenhardtia amorphoides* a synonym of *E. polystachya*.

The above criticism is quite misleading. It is true that the species in question was described by Ortega in 1798; but Ortega drew his description from a shrub growing in the Royal Botanical Garden of Madrid, which had been propagated from seed sent to the garden from Mexico. He had no idea that the plant he described had any connection with the classic *lignum nephriticum;* he did not know its Mexican name; indeed he was unaware that it might attain the dimensions of a tree. Humboldt, Bonpland and Kunth were likewise unaware that the plant described by Kunth as *Eysenhardtia amorphoides* was the source of *lignum nephriticum,* or that its wood would yield a fluorescent infusion. That its identity with the latter was unknown is shown by the definite statement of Sargent, when establishing the combination *Eysenhardtia polystachya.* Referring to *Eysenhardtia* he says:

> The wood of some species is hard and close-grained and affords valuable fuel. The genus is not known to possess other useful properties.[1]

If the species described first by Ortega as *Viborquia polystachya* and later by Kunth as *Eysenhardtia amorphoides* was known to be the source of *lignum nephriticum,* a classic wood remarkable for the fluorescence of its infusion and at one time famous throughout Europe, why would not these authors have called attention to its identity?

The first to indicate its botanical identity, as the writer pointed out in his paper cited above, was Dr. Leonardo Oliva, professor of pharmacology in the University of Guadalajara (1854), but his identification was not accepted by subsequent authorities. Oliver and Hanbury, in the "Admiralty Manual of Scientific Inquiry" (page 391, 1871), call attention to the wood as follows:

> *Lignum nephriticum.*—This rare wood, noticed by some of the earliest explorers of America, is a production of Mexico. To what tree is it to be referred? Its infusion is remarkable for having the blue tint seen in a solution of quinine.

In the third edition of the "Nueva Farmacopea Mexicana" (page 153, 1896) the statement is made that *leño nefritico* had been erroneously attributed to *Varennea polystachya,* or *Eysenhardtia amorphoides* H. B. K., but that its classification was not known. Dragendorf in his well-known Heilpflanzen (page 345, 1898) refers it to the genus Guajacum:

> Das Lignum nephriticum der älteren Medicin wird wohl von einer Guajacum-Art stammen.

Dr. Otto Stapf, to whose historical paper on *lignum nephriticum* published in the "Kew Bulletin of Miscellaneous Information" (pages 293–305, 1909) the writer has already referred, experimented with a piece of wood from the Mexican collection in the Paris Exposition, bearing the label "Cuatl." Dr. Stapf referred this wood to *Eysenhardtia*

[1] Sargent, C. S., "The Silva of North America," Vol. 3, p. 30, 1892.

amorphoides, but his specimen was not accompanied by botanical material which would serve to establish its identity with certainty, and a later investigator, Dr. Hans-Jacob Möller, of Copenhagen, who also made an exhaustive study of the wood from historical and pharmacological standpoints, failing to find fluorescence in specimens of *Eysenhardtia* wood sent to him from Mexico ("das Kernholz von einem recht dicken Ast," which yielded "keine Fluoreszenz") arrived at the conclusion that the mother-plant of *lignum nephriticum* must be a Mexican species of *Pterocarpus.*[2]

The conflicting conclusions of Dr. Stapf and Dr. Möller, assigning *lignum nephriticum* to mother-plants of two distinct genera, caused the writer to continue his researches as to the origin of this classic wood, the botanical identity of which he had been seeking to establish for more than twenty years. Specimens of wood accompanied by botanical material sufficient to identify it with *Eysenhardtia polystachya* came into his possession in 1914 and led to the publication of his paper "*Eysenhardtia polystachya,* the source of the true *lignum nephriticum Mexicanum,*" in the *Journal of the Washington Academy of Sciences,* in August, 1915. Certain discrepancies, however, in the early accounts of *lignum nephriticum* caused him to pursue his investigations still farther.

Dr. Stapf assumed that the *Palum Indianum* of which Johannes Bauhin's cup was made, "almost a span in diameter and of unusual beauty," with chips of the same wood of a reddish color, and the "white" wood yielding an infusion like pure colorless spring water, of which Athanasius Kircher's cup was made were both identical with the dark-colored wood used by Robert Boyle in his historical study of fluorescence. A further source of confusion was Hernandez's account of the logs of *lignum nephriticum* carried to Spain, specimens of which he declares he has seen "larger than very large trees." Bauhin's figure of his wood does not in the least suggest the wood of *Eysenhardtia polystachya,* but does resemble the wood of *Pterocarpus indicus* of the Philippine Islands.

We have an authentic account of the manufacture of cups from this Philippine wood and of their medicinal use, exactly as described by Bauhin and Kircher, written by Father Delgado, who, when a boy in Cadiz, was given fluorescent water to drink from one of them, as a remedy for a certain malady, and who afterwards saw the cups in southern Luzon. Delgado identifies the wood of which these cups were made as that of the Philippine *naga* or *narra* (*Pterocarpus indicus*), a tree of great dimensions, yielding logs of large size, many of which were undoubtedly carried to Spain by way of Mexico at a very early date. Of this wood there are two recognized varieties, one pale colored, locally designated as "female," the other of a reddish color, called "male" narra. From the first of these was evidently carved the cup described by Kircher; from the second the cup presented by Dr. Schopff, physician to the Duke of Würtemberg, to Bauhin.

Very distinct in texture and appearance from the wood of the Philippine *Pterocarpus indicus* is that of the Mexican *Eysenhardtia polystachya.* Moreover, the latter species never attains the size of a tree capable of yielding large logs. It must also be noted that there is no record of a single cup made of its wood. A search for such cups in Mexico has been futile, while cups made of *Pterocarpus indicus* were common in the Philippines at the time when Delgado wrote. They could only reach Spain by way of Mexico, and they might easily have been thought to be of Mexican origin. Delgado was a Jesuit and it was from the *Procurador* of the Jesuits in Mexico, that the Jesuit Kircher received the cup described by him.

A full account of the two woods known as *lignum nephriticum,* illustrated by colored plates, will appear in the Smithsonian Report for 1915.

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BUREAU OF PLANT INDUSTRY,
February 2, 1916

[2] *Berichte der deutschen Pharmaz. Gesellsch.,* Vol. 23, pp. 88–154, 1913.