NOTE ON THE SYNONYMY AND HISTOLOGICAL
CHARACTERS OF EAST LONDON BOXWOOD
(*GONIOMA KAMASSI*, E. MEY.)

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In this Journal¹ some observations were published on the physiological properties of a timber used in the manufacture of shuttles in Lancashire and Yorkshire, and believed to have an injurious effect on the health of the workmen employed. The piece of wood then submitted to me was described as 'West African Boxwood.' I was at first led to regard it as the wood of a plant described by De Wildeman as *Sarcocephalus diderrichii*, but on further examination I found that the wood was exported, not from West Africa, but from South Africa, and also went by the name of 'Knysna Wood' or 'East London Boxwood.'

I obtained a large quantity of the sawdust produced in the process of shuttle manufacture when 'East London Boxwood' was employed for that purpose, and Dr. A. W. Titherley, Lecturer on Organic Chemistry in the University, was kind enough to make an extract of this sawdust, obtaining from it an alkaloid or mixture of alkaloids, prepared in accordance with the method described in detail in the paper above referred to.

I then asked Miss S. C. M. Sowton, a research worker in the Physiological Laboratories to determine, if possible, whether the alkaloid extracted had any effect on the mammalian heart, as I was informed that the injurious effect on the health of those employed took the form of so-called 'cardiac asthma.' The experiments made, and the results arrived at, all pointed to the fact that the alkaloid was a marked cardiac depressant.

I had occasion recently to re-investigate the whole question, and as there seemed to be some doubt as to the exact botanical nature of the wood I thought it worth while, in view of the economic importance of the subject, to attempt to settle this problem of botanical identity. The present note, therefore, may be taken as supplementing the work already carried out in 1905.

1. Vol. I, No. 1, 1905.

Gonioma kamassi is generally spoken of as 'Knysna wood' or 'Knysna Boxwood.' In Stone's 'Timbers of Commerce' Knysna Boxwood is given as the trade name of *Gonioma kamassi* and synonymous with 'Cape Boxwood,' 'Kamassihout,' and 'East London Boxwood.' *Gonioma* is a genus of Apocynaceae and native of South Africa. Unfortunately, *Burus macowani*, a member of the Euphorbiaceae, and also a South African plant, is known as well in commerce as 'Cape Boxwood' or 'East London Boxwood.' I submitted the questions of synonyms to the Director of the Royal Gardens, Kew, and was informed by him that *Gonioma kamassi* was only partly synonymous with 'East London Boxwood,' because the latter name also included *Burus macowani*. The problem to be solved, therefore, was which of these two timbers was the one used in shuttle manufacture, whose deleterious effects on the workmen had been the subject of physiological investigation. To settle this question I examined, microscopically, preparations of the wood used in shuttle manufacture, and described as 'Knysna wood' and compared them with sections prepared from an authentic specimen of *Gonioma kamassi*, obtained from the Conservator of Forests, Knysna, and with sections prepared from a specimen of the timber of *Burus macowani*, for which I am indebted to the Director of the Royal Gardens, Kew.

The wood of *Gonioma* is considerably lighter than that of *Buxus*, a cubic foot of the former, when dry, weighing (according to Stone) 58 lbs., while a cubic foot of *Buxus* weighs 74 lbs. *Gonioma* yields a pale yellow solution in water, while *Buxus* gives no coloration. When transverse sections are compared certain marked differences make their appearance.

In *Gonioma* the main mass of the xylem is composed of lignified fibres, whose walls are channelled by narrow canals and whose lumina are almost occluded. These fibres vary from 12μ to 15μ in diameter, while those of *Burus macowani* rarely exceed 10μ . The fibres of *Gonioma* are irregularly arranged while those of *Buxus* are in fairly regular radial rows, not unlike those of a Gymnosperm. Mixed with these fibres are tracheae which in *Gonioma* average 35μ in diameter; the tracheae of *Buxus* seldom exceed 25μ in diameter. The medullary rays of *Buxus* are very narrow, seldom being more than two cells in breadth, and composed of thin, radially extended, pitted plates. The cells of the medullary rays of *Gonioma* are much larger and broader, and the rays

themselves may be from one to four cells broad. The wood of *Burus macowani* is said by Stone¹ to be 'nearly identical' in anatomical characters with *Burus sempervirens*, the European Boxwood. This is not so. The fibres as seen in transverse section are much more irregularly arranged than in *B. macowani*, and the tracheae are much larger, being seldom less than 35μ in diameter. An examination of many sections shows that the histological characters afford a reliable means of diagnosis of these three woods. Certainly, with the aid of an eye-piece micrometer, there is no difficulty in distinguishing 'East London Boxwood' derived from *Gonioma kamassi*, from 'East London Boxwood' derived from *Burus macowani*. A histological comparison of the wood used in shuttle manufacture, and called 'East London Boxwood,' leaves no doubt that that timber is to be referred to *Gonioma kamassi* and not to *Burus macowani*.

1. *Loc. cit.*, p. 194.