

Studiën over Lunasia amara (Blanco) var. costulata (Hoch.). By DR. E. H. WIRTH. Dissertation, Leiden. 130 pages, 33 illustrations.

Lunasia amara is a small tree indigenous to the Malay and Philippine archipelagoes, purported to have been employed in the manufacture of an arrow poison by the natives of these islands. Considerable discrepancy appears in the literature due to the shipment of one or more lots of *Lophopetalum toxicum*, erroneously labeled *Lunasia amara* to various European laboratories some thirty years ago. For this reason care must be exercised in reviewing the past work as considerable of the work published upon *Lunasia* was in reality done upon *Lophopetalum*. Following a very complete historical introduction and a detailed botanical discussion, the original work is divided into three parts: (1) Pharmacognostical, (2) Phytochemical and (3) Pharmacological. The pharmacognostical part embodies macroscopical and microscopical studies of the bark, wood and leaves. Of especial histological interest are the fibres which are found in all of the parts studied. These fibres are very thick walled and exhibit the peculiar phenomenon of polarizing light only in the middle lamella. The bark shows an abundance of calcium oxalate prisms as well as a distinct endodermis. The wood, being very hard (so hard, in fact, that it has been used by the natives of Luzon to replace iron in the manufacture of their arrow heads) consists primarily of a mass of closely adjacent, very thick-walled fibres, accompanied by very little wood parenchyma, small tracheæ and rather small medullary rays. The leaves exhibit characteristic lignified cluster hairs, a few glandular hairs, considerable calcium oxalate and the usual secretion cells found in the Rutaceæ. Careful measurements are given of the histological elements as well as complete descriptions. The pharmacognostical part is illustrated with four photographs and thirteen drawings. The author has isolated two alkaloids from the bark and wood, (1) lunasin, $C_{16}H_{21}N_2O_6$, m. p. 188°, which is very bitter, soluble in water and rather unstable toward even mild alkalis, and, (2) lunacrin,

$C_{16}H_{20}NO_2$, m. p. 116°, which is slightly acrid and pungent, insoluble in cold water and very feebly basic forming salts with mineral acids. Both lunasin and lunacrin are quinolin bases, having methoxy-methyl-quinolin as one nucleus. Both alkaloids show interesting chemical peculiarities among which is their approximate neutrality. The author has studied the pharmacological action of lunasin and lunacrin upon both intact animals and isolated organs. Both alkaloids exhibit a similar physiological action, lunasin, however, being considerably more toxic. They exert no anæsthetic action on sensory or motor nerves and there is no action on the sympathetic ganglion. The alkaloids, however, show a distinct action on muscle evidenced in a continually increasing of tone and a rapid diminution of the power of response of the muscle to stimulation. This action on muscular tissue is seen not only upon isolated voluntary and smooth muscle, but also upon the blood vessel walls where a distinct contraction of the vessel occurs and upon the heart where a distinct diminution in the heart contractions was found. The lethal effect of both alkaloids is due to a stop in the respiration simultaneously with a stop in the circulation. Blood pressure experiments upon anæsthetized, decerebrated and decapitated preparations show principally a drop due to the action on the heart muscle. Lunasin, however, gives a rise in the decapitated preparation showing considerable action on the vasomotor center not shown by lunacrin. Both alkaloids also exhibit a positive toxic action on protozoal organisms. The pharmacological part is illustrated by two graphs and fourteen kymographion tracings. The work has done considerable to clarify the complicated *Lunasia* problem. The pharmacognostical and pharmacological parts are very detailed and complete, exhibiting a keen sense of observation and the careful recording of these observations. The phytochemical part contains important contributions to the knowledge of the *Lunasia* alkaloids. The difficulty of their isolation has been overcome and the author has carried the problem of their structure well along toward its solution.

"The ideal pharmacist is the one who has retained his professional standing and used it to aid him in achieving commercial success. There is no incompatibility between professionalism and commercialism in pharmacy if they are developed side by side; each in its own proportion and not at the expense of the other. It is quite obvious that one cannot become a successful pharmacist unless he is a good business man, but neither can he become a successful pharmacist unless he is a pharmacist."—PROF. C. F. HEBBNER, Toronto.