The mixture of total alkaloids (0·41 %)[11] contained five components with cyclohexane—$CHCl_3$–Et_2NH (5:4:1) on silica gel G (E. Merck) plates. The third spot with 0·69, matched lobeline. A larger extract was separated on alumina (E. Merck) using $CHCl_3$ as eluent. Fractions 26–31 gave lobeline base m.p. 130–131° (HCl–ide m.p. 180°). IR identical. Lobeline was found to be 20 % of the alkaloid fraction.

Plant material. These were procured through Mavji Sunderji & Co., Bombay and authenticated by us.

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CAPPARIDACEAE

ISOLATION OF LUPEOL FROM *CRATAEVA BENTHAMII*

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Key Word Index—*Crataeva benthamii*; Capparidaceae; lupeol.

Plant. Crataeva benthamii Eichler. *Source.* The plant material was collected on 6 May, 1968 at Ushpacona, Itaya River, Peru. A voucher specimen was identified by Dr. J. J. Wurdack, Smithsonian Institution, Washington, D.C., U.S.A. and has been deposited at the Smithsonian Institution Herbarium (specimen No. 2091). The authors are grateful to the Amazon Natural Drug Company for making the plant material available. *Uses.* None, but other species of this genus have shown the following biological activities: *Crataeva tapia* cardiorespiratory and oxytocic activity;[1,2] *C. religiosa*- used for dysentery,[3] inhibitory activity against Gram negative organisms,[3] folklore anticonvulsant remedy in the Philippines;[4] insect moulting activity.[5] *Previous work.* None on *Crataeva benthamii.* From *C. nurvala*: lupeol,[7,8,10] sitosterol[6] and varunol;[6] *C. religiosa*: lupeol,[7,8,10] sito-

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sterol,[9] rutin,[3] isoquercitrin[3] and quercetin;[3] *C. roxburghii*: lupeol,[7] glucocapparin[11] and thiodamine;[12] *C. tapia*: β-amyrin, lupeol and betulinic acid.[8]

Plant part examined. Trunk bark. *Isolation and identification.* The powdered bark was defatted with light petroleum. The petroleum fraction was concentrated *in vacuo* and a white precipitate was obtained in a 0·7% yield. After recrystallization (acetone and EtOH), the compound was identified as lupeol by the following physical methods. It gave a positive Lieberman–Burchard test for triterpenes; m.p. 212–214°; $[\alpha]_D^{25} +26{\cdot}2°$ (conc. 0·67 in $CHCl_3$); a violet chromogenic reaction with 70% H_2SO_4 after spraying TLC chromatograms. TLC on silica gel G gave the following R_f values: benzene (0·25), CH_2Cl_2 (0·40); EtOAc–MeOH (4:1) (0·90). The UV spectrum (MeOH): λ_{max} 200 nm (log 3·81). IR spectrum (KBr) at ν_{max} 3320(s), 1640(w), 1445(m), 1380(m), 1180(w), 1105(w), 1040(w), 1010(w), 980(w), and 940(w) cm^{-1}. The purity of the compound was evaluated by GLC (SE-30 Scot, 50 × 0·02), $T = 230°$; 18 min (solvent $CHCl_3$).

An NMR spectrum in $CDCl_3$, using TMS as internal standard, showed signals at 4·64 δ (*d*, 2 protons), 3·15 δ (*s*, 1 proton), 1·30–1·78 δ ($-CH_2-$ and methine protons, 26), 0·74–1·05 δ (overlapping 7 $C-CH_3$ protons), the MS showed a molecular ion at *m/e* 426, which was also the base peak. Other major ions were $M-CH_3$ (23%) *m/e* 218 (78%), *m/e* 207 (75%) and *m/e* 189 (80%).

Finally, the compound was acetylated (Ac_2O and pyridine), and the acetate had m.p 214–215°. The IR lacked bands at 3340 and 1104 cm^{-1}, which were replaced by bands at 1740 and 1245 cm^{-1}, indicative of the ester function.

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COMPOSITAE

7,24(28)-STIGMASTADIEN-3β-OL FROM *VERNONIA AMYGDALINA*

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Vernonia amygdalina (H) (Ibo name—Onugbu) is a valuable shrub wide spread in Nigeria. It is more commonly known as 'bitter leaf' because the leaves and the stem have a bitter taste when chewed, though there is a report of a 'sweet' variety.[1] The leaves of 'bitter leaf' are eaten after macerating with water to remove the bitter components and are believed to help digestion. It is not certain if other species like *Vernonia anthelmintica* and *Vernonia colorata* which are found elsewhere are eaten, but chemical investigations have been carried out.[2a,b,3]

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