Dipterocarpol (IIIa) and *28-hydroxy-β-amyrone* (IId). The oily fractions 14–18 (0·7 g) were a mixture (TLC) of two substances. Their acetylation (acetic anhydride–pyridine at R_t) and chromatography (silica-gel; hexane–Et_2O, 9:1) of the crude product gave a ketoacetate (400 mg) and a ketoalcohol (230 mg). The latter was shown to be dipterocarpol (IIIa) m.p. 135–136°, $[\alpha]_D$ +67° (*c* 1·1) whose reduction by $NaBH_4$ gave dammarenediol (IIIb) m.p. 142–144° compared with an authentic sample. The oily ketoacetate, hydrolysed with methanolic KOH (10%), gave 28-hydroxy-β-amyrone (IId) m.p. 189–192° (from MeOH): $[\alpha]_D$ +85° (*c* 1); MW 440 (MS); ν_{max} 3600, 1710 cm^{-1}. (Found: C, 81·78; H, 10·79. $C_{30}H_{48}O_2$ requires: C, 81·76; H, 10·98%); δ 5·15 (1H, *m*, =C=CH–), 3·35 (2H, *q*, *J* 11 Hz, ≡C–CH_2OH). The $NaBH_4$ reduction of (IId) gave erythrodiol (IIb) m.p. 229–234°. Furthermore, (IId) was prepared by refluxing oleanonic aldehyde (IIa) in isopropanolic KOH (10%) for 2 hr. After additional 8 hr only erythrodiol (IIb) from (IIa) is obtained.

26-Hydroxy-tirucallone (Ic). Fractions 19–21 (0·4 g), after chromatography (alumina; hexane–Et_2O 17:3), gave 300 mg of oily 26-hydroxy-tirucallone (Ic) $[\alpha]_D$ +14° (*c* 1); MW 440 (MS); ν_{max} 1710, 3600 cm^{-1}. (Found: C, 81·82; H, 10·85. $C_{30}H_{48}O_2$ requires: C, 81·76; H, 10·98%); δ 4·08 (2H, *s*, ≡C–CH_2OH). $LiAlH_4$ reduction of (Ic) afforded isomasticadienediol (Id) m.p. and m.m.p. 152–154°.

Dammarenediol (IIIb) *and erythrodiol* (IIb). Fractions 22–26 (1·2 g) were a mixture (TLC) of two substances. After acetylation (acetic anhydride–pyridine at R_t), chromatography (silica-gel; C_6H_6–Et_2O, 4:1) of the crude product gave both oily monoacetate (480 mg) and diacetate (630 mg). The former, after hydrolysis by methanolic KOH (10%), gave dammarenediol (IIIb) m.p. 142–144°, $[\alpha]_D$ +27° (*c* 1·4) compared with authentic material. The diacetate, hydrolysed in the same way, gave erythrodiol (IIb) m.p. 230–235°, $[\alpha]_D$ +79° (*c* 1).

Isomasticadienediol (Id). Fractions 27–32 (0·9 g) gave, after recrystallization from hexane–Et_2O (7:3), isomasticadienediol (Id) m.p. 152–154°, $[\alpha]_D$ −7°; MW 442 (MS); ν_{max} 3600 cm^{-1}. (Found: C, 81·34; H, 11·38. $C_{30}H_{50}O_2$ requires: C, 81·39; H, 11·38%); δ 5·22 (1H, *m*, =C=CH–), 4·08 (2H, *s*, ≡C–CH_2OH) identical with a synthetic sample obtained by $LiAlH_4$ reduction of methyl isomasticadienonate (Ie).

Oleanonic acid (IIe) *and oleanolic acid* (IIf). Acidic extract[1] (10 g) was adsorbed on silica-gel (300 g; HCl washed). Elution with C_6H_6–Et_2O (19:1) gave 580 mg of crude oleanonic acid (IIe) converted by CH_2N_2 into the corresponding methylester m.p. 181–182°, $[\alpha]_D$ +76° (*c* 1) compared with an authentic sample. The subsequent elution with C_6H_6–Et_2O (4:1) then afforded 200 mg of crude oleanolic acid (IIf) which, treated with CH_2N_2, gave the corresponding methylester m.p. 195–197°, $[\alpha]_D$ +82° (*c* 1·3) also compared with an authentic sample.

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QUINONES AND OTHER CONSTITUENTS FROM *TABEBUIA ROSEA*

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Key Word Index—*Tabebuia rosea*; Bignoniaceae; quinones; lapachol; dehydrotectol; dehydro-α-lapachone and isolapachone.

Plant. Tabebuia rosea DC. Voucher specimen No. 11334 deposited in the R.U.B.L. Herbarium. *Previous work.* No work has been reported on this species. On sister species[1,2] *T. flavescens*,[3,4] *T. ipe*,[4] *T. avellanedae*,[5–8] *T. chrysantha* Nichols[9] and *T. doennell* Smittii.[9]

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Present work. The finely grounded heartwood (2 kg) was exhaustively extracted with hot light petrol. (60–80°). The extract was concentrated to dryness, taken in Et_2O, extracted with 2 N Na_2CO_3 and acidified with 2 N HCl.

Acidic component. The acidic fraction was chromatographed over silica gel. C_6H_6 (100%) gave compound I, fine yellow needles, m.p. 139–140° (50% C_6H_6 and light petrol.). (Found: C, 74·34; H, 5·71. Calc. for $C_{15}H_{14}O_3$: C, 74·38; H, 5·78%); ν_{max} (Nujol) 3350, 1660, 1630, 1580 cm^{-1}. These data indicated that compound I was lapachol and this was confirmed by comparison with an authentic specimen (co-TLC, IR and m.m.p.).

Neutral components. The neutral fraction was chromatographed over deactivated alumina and afforded compounds II, III, IV, V and VI.

Compound II. From light petrol.–C_6H_6 (9:1), first crop blue green crystals, m.p. 194–195° (MeOH). (Found: C, 80·00; H, 5·88, Calc. for $C_{30}H_{24}O_4$: C, 80·35; H, 5·35%); ν_{max} (Nujol) 1645 (C=O) cm^{-1}; λ_{max}(EtOH) 271, 340 nm (log ϵ 4·53, 3·09). From the above data, compound II appeared to be dehydrotectol and this was confirmed (co-TLC, IR and m.m.p.).

Compound III. From light petrol.–C_6H_6 (9:1), second crop orange needles, m.p. 143–144° (50% benzene and light petrol.); $C_{15}H_{12}O_3$; ν_{max} (Nujol) 1680, 1640, 1580, 1560 cm^{-1}; M^+ 240; NMR ($CDCl_3$): δ 1·54 (6H, *s*) indicated two methyl groups, 5·76 (1H, *d*) and 6·73 (1H, *d*, $J_{11,12}$ 9 Hz) correspond to H-11 and H-12 which are olefinic protons, 7·72 (2H, *m*) assigned to H-6 and H-7, 8·13 (2H, *m*) assigned to H-5, H-8 aromatic protons respectively. These data suggested that compound III was dehydro-α-lapachone (co-TLC, IR and m.m.p.).

Compound IV. From light petrol.–C_6H_6 (1:1), golden yellow leaflets m.p., 108–109° (100% light petrol.). (Found: C, 74·99; H, 5·03. Calc. for $C_{15}H_{12}O_3$: C, 75·00; H, 5·00%); ν_{max} (Nujol) 1667, 1637, 1621, 1587, 1562 cm^{-1}. λ_{max} (EtOH) 253, 295, 342 nm (log ϵ 4·45, 3·86, 3·18); M^+ 240; NMR ($CDCl_3$): δ 1·80 (3H, *s*) indicated Me–C=, 3·07 (1H, *q*) and 3·23 (1H, *q*) assigned to ring methylene protons, 5·08 (2H, *d*) correspond to vinyl protons, 5·40 (1H, *t*) assigned to tertiary proton and 7·60 (2H, *m*) of H-6 and H-7, 7·93 (2H, *m*) of H-5 and H-8 aromatic protons. From the above data compound IV was dehydro-*iso*-α-lapachone (co-TLC, IR and m.m.p.).

Compound V. From C_6H_6–light petrol. (9:1), fine colourless needles, m.p. 94–95° (MeOH). (Found: C, 82·81; H, 11·46. Calc. for $C_{29}H_{48}O$: C, 84·40; H, 11·11%); ν_{max} (Nujol) 1666 (C=O) cm^{-1}; M^+ 412. These data suggested that compound V was sitostenone.

Compound VI. From C_6H_6 (100%), colourless flakes, m.p. 136–137° (MeOH); $C_{29}H_{50}O$; ν_{max} (Nujol) 3400 (OH) cm^{-1}. From the above data compound VI was sitosterol.

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