

Figure 1. Experimental versus computed wet front depth, X_f , and maximum nitrate concentration depth, X_m , (X^2 at 99% probability for observed value of X_f is 1.452 and for X_m is 2.088. Table value = 2.558 for $n = 10$)

peak nitrate concentration would be reduced depending upon the extent of denitrification or other losses.

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TRITERPENOIDS OF *CORIANDRUM SATIVUM* SEEDS

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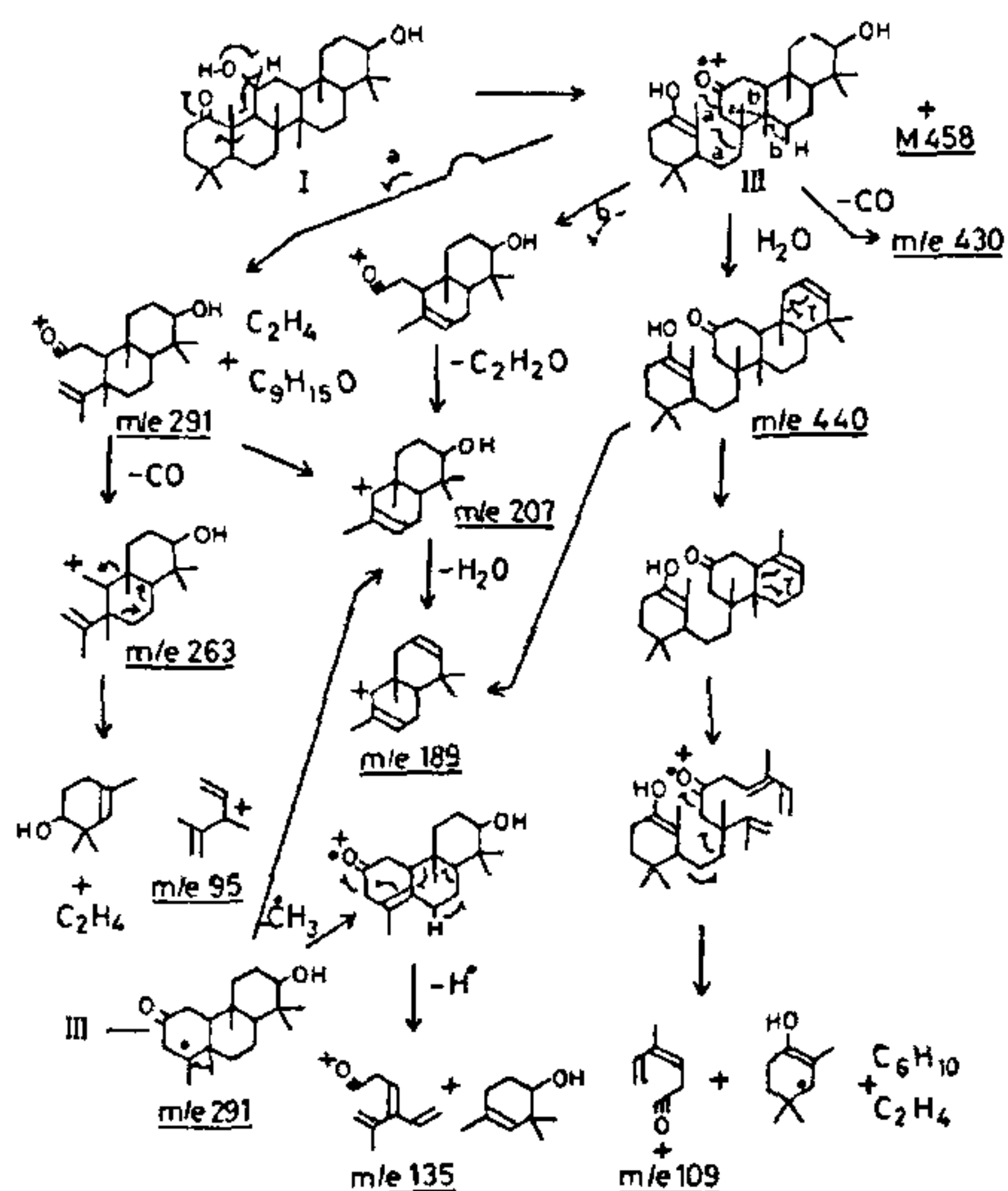
FROM the seeds of *Coriandrum sativum* Linn. an Indian medicinal plant, a number of substances have been isolated including volatile oils¹. It was found that the locally available seeds are of two varieties, the Indore variety and the Bombay variety. From the first we have isolated an aliphatic alcohol, m.p. 80–81°, and an aliphatic ketone, m.p. 68–70°, in addition to β -sistosterol and β -sistosterol-D-glucoside, which was wrongly assumed to be a new triterpenoid designated as 'Coriandrinol' by previous authors². The present paper deals with the structure of a new triterpenoid, coriandrinone-diol (I), isolated from the cold alcoholic extract of the Bombay variety of dried seeds after saponification with alcoholic alkali and column chromatography on neutral alumina (benzene-ether 3:1) in 0.006% yield.

Compound I, $C_{30}H_{50}O_3$ (M^+ 458), $[\alpha]_D^{23} + 38.3^\circ$ ($CHCl_3$) isolated as colourless crystalline needles (MeOH-ether), m.p. 285–90° showed UV: λ_{max}^{MeOH} 270 nm (log ϵ 3.19) for a saturated carbonyl function. Its IR (KBr), revealed absorption bands at 3405 (br) and 3505 cm^{-1} , characteristic of a bonded and a free hydroxyl group respectively, in addition to the band at 1695 cm^{-1} for a six-membered ring ketone. However, the PMR spectrum of the substance was not available due to its insolubility in common organic solvents. The compound failed to give a 2,4-dinitrophenylhydrazone derivative indicating that the ketone group was probably highly hindered. It gave positive Liebermann-Burchard, Salkowski and Noller tests for a pentacyclic triterpenoid.

On acetylation it gave only a monoacetate $C_{32}H_{52}O_4$ (M^+ 500), m.p. 299–300°. IR $^{KBr}_{max}$ showed absorption bands at 3405, 1720 and 1699 cm^{-1} characteristic of a hydroxyl, an acetyl carbonyl and a six-membered ring ketone. The formation of a monoacetate reveals that the triterpenoid is a keto-diol, in which one of the hydroxyl groups is either tertiary or is a highly hindered one.

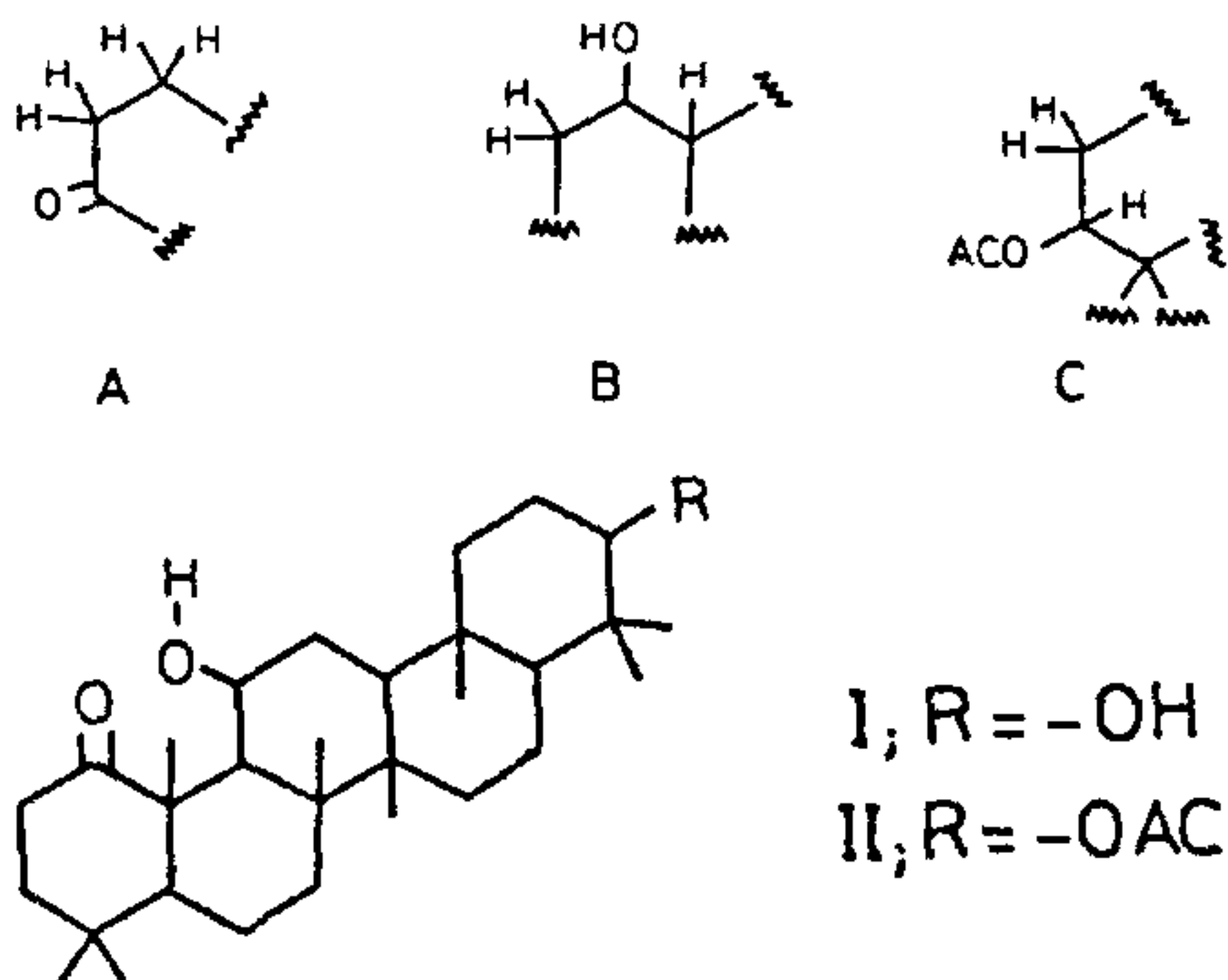
The PMR ($CDCl_3$) spectrum of the monoacetate showed signals for eight tertiary methyls at δ 0.71 (3H, s), 0.76 (3H, s), 0.80 (9H, s), 0.89 (6H, s) and 1.40 (3H, s) ppm in addition to the signal at δ 1.96 ppm (3H, s, $CH_3-CO-O-$) indicating that all the methyls of the squalene precursor are intact. The signals at 2.67 (2H, t, $J=13.5Hz$), 3.47 (1H, dd, $J=12.3$ and 4.0 Hz) and

Scheme - I



4.45 ppm (1 H, t, $J=8.0\text{Hz}$) corresponded to the part structures A, B and C respectively.

Considering the foregoing evidence and biogenetic implications the structures I and II are assigned for the triterpenoid and its monoacetate respectively, although it must be stated that no definite evidence is adduced for the placement of the oxygen functions.



The mass spectral fragmentation pattern of coriandinediol (I) gave additional information regarding its structural features. Besides, the molecular ion at m/e 458, the compound exhibited the characteristic peaks at m/e 440 (11.97), 430 (27.36), 291 (9.41), 263 (10.25), 207 (100), 189 (41.04), 135 (42.21), 109 (32.56)

and m/e 95 (43.41), which may be rationalised as shown in Scheme I. It is interesting to note that the compound undergoes a thermal rearrangement I→III, before undergoing actual fragmentation. This further supports the close proximity of the hydroxyl and the carbonyl groups in the molecule.

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SODA LAKE STROMATOLITES FROM GREGORY RIFT, EAST AFRICA

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WHILE there is considerable body of knowledge regarding marine stromatolites¹, there is a paucity of data in respect of lacustrine stromatolites. This note describes the stromatolites from the lacustrine littoral sediments of Lake Manyara (3° 30' S: 35° 50' E) (figure 1), a soda lake presently having a spread of about 400 sq. km. This lake is the southernmost lake in the Gregory Rift Valley and is surrounded by Holocene

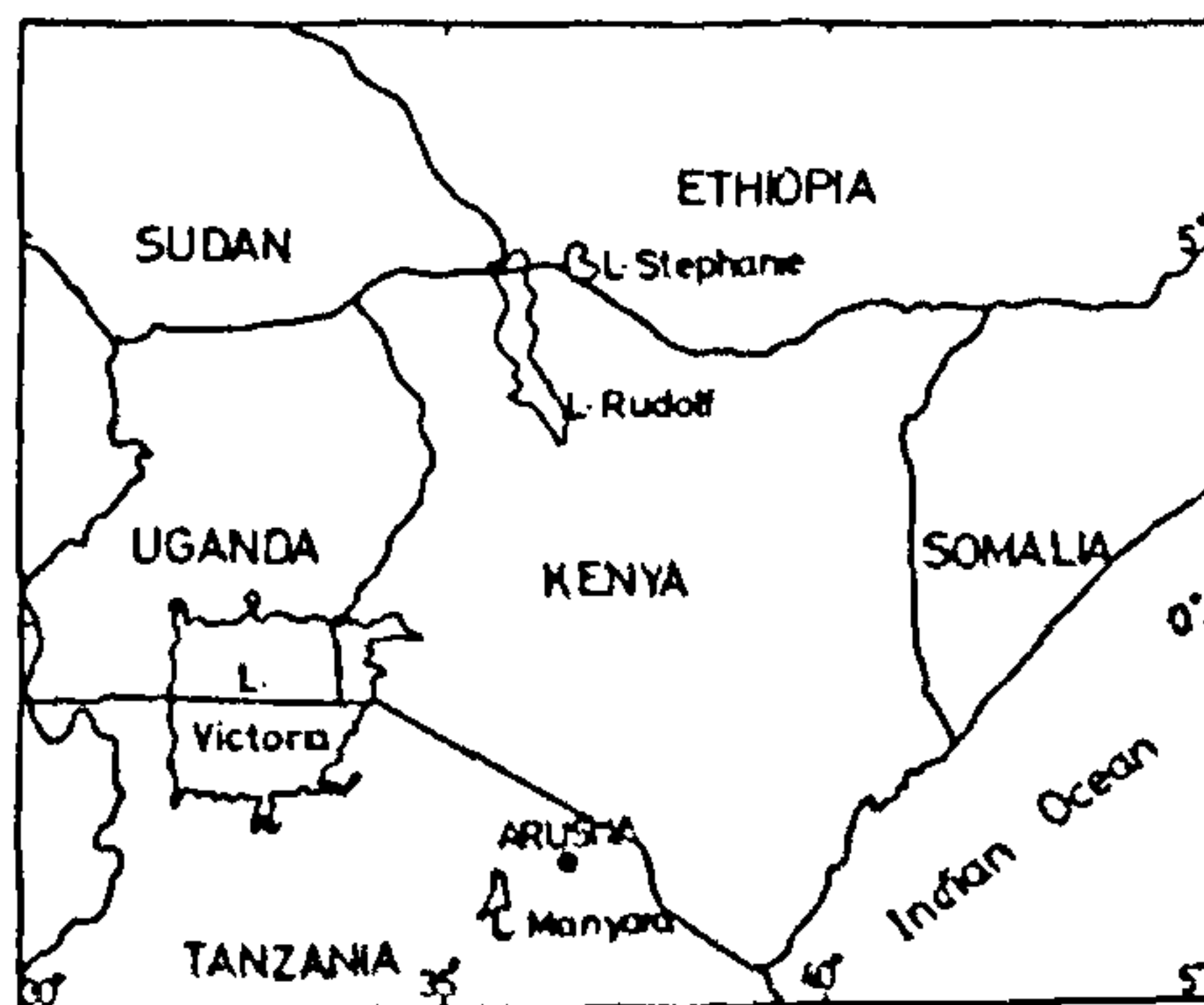


Figure 1. Location map of Lake Manyara in East Africa.