heudebolin (500 mg) m.p. 148–150°, (Found: C, 65·40; H, 7·19%); M^+ 586. $C_{32}H_{42}O_{10}$ requires: C, 65·51; H, 7·22%).

Hydrolysis of heudebolin. Heudebolin (100 mg) dissolved in 30 ml MeOH and 25 ml 1M NaOH was refluxed for 7 hr, cooled, diluted with H_2O and extracted with Et_2O. Evaporation afforded an oil (55 mg) which could not be crystallized but was homogenous (TLC) and identical with the complete hydrolysis product of an authentic sample of nimbolin-*B* provided by Dr. C. O. Fakunle.

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ALKALOIDS FROM *CORYDALIS AMBIGUA**

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Key Word Index—*Corydalis ambigua*; Papaveraceae; tetrahydroprotoberberine alkaloids; protoberberine alkaloids; protopine alkaloids; (+)-1-methylcorypalline.

Plant. Corydalis ambigua Cham. et Schlecht. (Japanese name: Ezo-engosaku, Voucher specimen No. 18C on deposit in these laboratories) was collected in May 1967 at Sapporo, Japan. *Previous work.* On tubers.[1,2]

Present work. From the MeOH extract of the tubers (air-dried, 820 g), tertiary non-phenolic base fraction (*Fr. A*, 0·32% yield), tertiary phenolic base fraction (*Fr. B*, 0·07%) and quaternary base fraction (*Fr. C*, 0·16%) were obtained by the method described earlier.[3] The following tertiary alkaloids, including one new alkaloid, were isolated by means of preparative chromatography (column and TLC) from Fr. *A* and *B*; (+)-*corybulbine* (0·035%, m.m.p.), (+)-*corydaline* (0·019%, m.m.p.), (+)-*base II* (0·011%, m.p., IR,[2] NMR[2]), *cavidine*[4] ((±)-base II, 0·001%, m.m.p.), (±)-*tetrahydropalmatine* (0·001%, m.m.p.), *protopine* (0·003%, m.m.p.), α-*allocryptopine* (0·001%, m.m.p.) and (+)-1-*methylcorypalline* (0·001%, new alkaloid, m.p. 156–158°, $[\alpha]_D$ 33·5° (*c* 0·23, $CHCl_3$), 1·0° (*c* 0·23, EtOH). Although (±)-1-methylcorypalline was obtained as a synthetic product,[5] this is the first record of the occurrence of (+)-form as a natural product. Its structure was deduced from the spectral data and confirmed by an alternative synthesis.[6] *Fr. C* was purified by column

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* Part XI in the series "Constituents of *Corydalis* Species". For Part X see NARUTO, S. and KANEKO, H. (1972) *Phytochemistry* **11**, 2644.

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chromatography[3] to give *dehydrocorydaline* (as chloride, 0·024%, IR, NMR, reduction with $NaBH_4$ to give (±)-corydaline, m.m.p.) and *dehydrothalictrifoline* (as chloride, 0·007%, NMR, reduction to give *dl*-thalictrifoline, m.m.p.). In conclusion, (+)-1-methylcorypalline, cavidine, α-allocryptopine and dehydrothalictrifoline were isolated for the first time from the title plant.

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TRITERPENOID CONSTITUENTS OF *KAGENECKIA OBLONGA*

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Key Word Index—*Kageneckia oblonga*; Rosaceae; pentacyclic triterpenes; ursolic acid; benthamic acid.

Plant. Kageneckia oblonga Ruiz et Pav., voucher specimen deposited in the Museo Nacional de Historia Natural, Santiago, Chile. *Source.* Southern slope of Manquehue Mountain, Santiago, Chile. *Plant part examined.* Leaves and twigs.

Extraction. 500 g of powdered plant material were extracted (Soxhlet) with $CHCl_3$–AcOEt (1:1). The solvents were partially removed under vacuum, affording a precipitate which was filtered and washed with small portions of the same solvent mixture: 4·5 g.

Esterification and separation of the products. 0·9 g of crude product was methylated with CH_2N_2 in Et_2O, yielding 0·92 g of solid residue. Preparative TLC gave five chromatographically homogeneous fractions: A (400 mg), B (190 mg), C (11 mg), D (33 mg), E (5 mg).

Ursolic acid methyl ester[1] (*Compound A*). Identified by m.p., $[\alpha]_D$, IR, MS. (Found: C, 79·1; H, 10·8. Calc. for $C_{31}H_{50}O_3$; C, 79·09; H, 10·71%). Acetate identified by m.p., m.m.p., $[\alpha]_D$, IR, MS and co-TLC. (Found: C, 77·15; H, 10·0. Calc. for $C_{33}H_{52}O_4$; C, 77·30; H, 10·22%).

Benthamic acid methyl ester[2] (*Compound B*). Identified by m.p. (130–131°, lit. 127–129°), m.m.p., $[\alpha]_D$, IR, MS and co-TLC. (Found: C, 76·3; H, 10·3. Calc. for $C_{31}H_{50}O_4$; C, 76·49; H, 10·35%). Monoacetate identified by m.p. (241–243°, lit. 235–238°), $[\alpha]_D$, IR, NMR and MS. (Found: C, 74·8; H, 9·7. Calc. for $C_{33}H_{52}O_5$; C, 74·96; H, 9·91%).

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