3260, 1025 (OH), 1595 (Ar–C=C). Oxidation of suchilactone with alkaline $KMnO_4$ furnished piperonylic and veratric acids. This is the first demonstration of the natural occurrence of this lactonic lignan.

*Chisulactone*. The second lignan, obtained as a minor entity (57 mg) from the preparative TLC, had m.p. 108–110°, $C_{21}H_{22}O_6$ (two OMe, one methylenedioxy, no C–CMe or active H); $[\alpha]^{52}_{D}-72\cdot6^\circ$ (*c* 0·58, $CHCl_3$); it showed colour reactions, UV, IR and PMR spectra similar to those of suchilactone; significant difference was observed in the MS: *m/e* 368 ($M^+$, 4%), fragment ion peaks at *m/e* 233 (9%, from the loss of piperonyl moiety from the molecular ion), 203 (12%, loss of $CH_2O$ from the fragment ion *m/e* 233), *m/e* 174 (17%), and the dominant peak at *m/e* 135 (100%). The compound seems to be a new lactonic lignan and the structure will be the subject of a later communication.

EtOH *extract*. The EtOH extract was concentrated to a small volume and then worked up following a method described[5] for oxygenated xanthones. The product obtained from the $CHCl_3$-soluble acetates was chromatographed over neutral alumina (activity *ca.* III) and eluted with $C_6H_6$, $C_6H_6$–$CHCl_3$ (1 : 1), and $CHCl_3$. Evaporation of the $C_6H_6$–$CHCl_3$ eluates followed by crystallization from MeOH–$CHCl_3$ afforded yellow needles (32 mg.) identified as *helioxanthin*[4] (m.p., colour reactions, UV, IR, PMR, MS). The co-occurrence of the unsaturated acyclic lignans suchilactone and chisulactone with their cyclic analogue, helioxanthin, in *P. chinensis* is biogenetically significant since acyclic unsaturated lignans are regarded as the precursors of aryltetralins and arylnaphthalenes.

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# LYONISIDE AND AUCUPARINS FROM WOOD OF NORTH AMERICAN *SORBUS* SPECIES*

NEDATHUR NARASIMHACHARI and ERNST VON RUDLOFF
Prairie Regional Laboratory, National Research Council, Saskatoon, Saskatchewan, Canada S7N OW9

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**Key Word Index**—*Sorbus scopulina*; *S. americana*; Rosaceae; lyoniside; dimethoxy isolariciresinol; aucuparin; methoxyaucuparin.

Lyoniside ((+)-dimethoxy isolariciresinol xyloside), aucuparin, and methoxyaucuparin isolated previously from the wood of the showy mountain ash, *Sorbus decora* (Sarg.)

* NRCC No. 13384.

Schneid[1] were also isolated from the wood of western and American mountain ash, *S. scopulina* Greene, and *S. americana* Marsh. Sitosterol and its esters with palmitic, oleic, linoleic and linolenic acids were also isolated. The presence of a leucoanthocyanidin was indicated. The aucuparins appear to be characteristic wood constituents of the genus *Sorbus.*[2]

## EXPERIMENTAL

*Plants. Sorbus scopulina* Green, from the Dominion Experimental Station, Morden, Manitoba and *Sorbus americana* Marsh. from the Forest Nursery Station, Indian Head, Saskatchewan.

*Wood.* Free from bark, milled and acetone extracted (24 hr). Divided into neutrals, acids and water-solubles.[1] Neutral fraction gave sitosterol, m.p. 138–139° and its fatty acid esters; GLC analysis after saponification and methylation: palmitic, oleic, linoleic and linolenic acids in ratio 2:1:5:2. From acidic fraction aucuparin, m.p. 101°, and methoxyaucuparin, m.p. 122°, were isolated; acetates m.p. 148–149° and 119° resp.; from water-soluble fraction lyoniside, m.p. 164–165°, $[\alpha]_D^{25}$ +41·5°. In one experiment with wood extract of *S. decora*[1] the lower melting form,[3] m.p. 121–122°, $[\alpha]_D^{25}$ +41·2°, was obtained. Recrystallization and seeding the latter with the high melting form gave the xyloside m.p. 164–165°; thus the latter is the more stabile crystalline form. The residues from the aucuparin fractions gave a positive leucoanthocyanidin test.

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# *O*-METHYLPTELEFOLONIUM ALS *PTELEA*-'LEITALKALOID'*

JOHANNES REISCH und YOUSSEF WISSA MIRHOM†
Institut für pharmazeutische Chemie der Westfälischen Wilhelms-Universität Münster, BRD
und
JAAHOS KÖRÖSI, KĀLMÃN SZENDREI und ISTVAH NOVÁK
Pharmakognostisches Institut der Medizinischen Universität Szeged, Ungarn

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**Key Word Index**—*Ptelea trifoliata*; Rutaceae; new quaternary quinoline alkaloide; *O*-methylptelefolonium ion.

Die Species *Ptelea trifoliata* ist sowohl morphologisch als auch hinsichtlich ihres Alkaloid- und Cumarin-spektrums sehr heterogen.[1–3] Bei den fluoreszierenden polaren Inhaltsstoffen

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