CONCLUSIONS
C O N C L U S I O N S

The following conclusions can be drawn from the work described in this thesis.

(1) The hypochlorination of petroselinic acid either with a solution of sodium hypochlorite or chlorine water yields a mixture of $6(7):7(6)$-chlorohydroxystearic acids m.p. 59-60\(^\circ\).

(2) The direct hydrohalogenation of cis-$6:7$-epoxy-stearic acid (petroselinic acid epoxide) readily affords a mixture of $6(7):7(6)$-chlorohydroxystearic acids, m.p. 59-60\(^\circ\), identical with the ones obtained by the hypochlorination of petroselinic acid.

(3) The identity of the chlorohydrins obtained from two different routes leads to the conclusion that the opening of the epoxide ring on hydrohalogenation is accompanied by an inversion in the configuration.

(4) The dehydrohalogenation of $6(7):7(6)$-chlorohydroxystearic acids (obtained either by hypohalogenation of the acid or hydrohalogenation of the epoxide) gave the same cis-$6:7$-epoxystearic acid, m.p. 59-60\(^\circ\).
(5) The fact that the epoxy acids from the two sources are identical leads to suggest that the change in the configuration occurs during the closing of the epoxide ring through dehydrohalogenation.

(6) That trans-petroselaidic acid on hypochlorination by either with hypochlorous acid or chlorine water yields a mixture of 6(7):7(6)-chlorohydroxystearic acids m.p.55-58°. These chlorohydrins behave in an analogous manner to those from petroselinic acid.

(7) Erythro-6:7-dihydroxystearic acid, m.p.122° and its threo-isomer m.p.115-116° have been successfully converted into each other through hydrohalogenation and subsequent dehydrohalogenation followed by hydrolysis.

(8) The above interconversions lead to the conclusion that the change in configuration also occurs during the replacement of one of the hydroxyl groups by a chlorine atom.

(9) That 6(7):7(6)-bromohydroxystearic acids, m.p. 36-37° are obtained both by hypobromination of petroselinic acid and by the hydrobromination of petroselinic acid
epoxide. The bromohydrins obtained by both the routes on dehydrohalogenation yield the same petroselinic acid epoxide.

(10) The hypobromination of petroselaic acid or the hydrobromination of its epoxide gives the same mixture of 6(7):7(6)-bromohydroxystearic acids, m.p. 55-56°.

(11) Petroselinic acid and its epoxide on treatment with hypoiiodous acid and hydroiodic acid respectively yield the same 6(7):7(6)-iodohydroxystearic acids, m.p. 69-70°. These on dehydrohalogenation give the original epoxide.

(12) 6(7):7(6)-Iodohydroxystearic acids, m.p. 56-57° were readily isolable by hypohalogenation and hydrohalogenation of petroselaic acid and its epoxide respectively. The acids on treatment with alkali regenerate the original epoxide.

(13) The analogous behaviour of bromohydrins and iodohydrins confirm the earlier observations of the changes in configuration (three fold inversions) as described in the case of chlorohydrins.
(14) Hydrogen peroxide hydroxylation of petroselinic and petroselaidic acids in glacial acetic acid yield the monoacetyl derivatives, \(6(7):7(6)\)-hydroxyacetoxy-stearic acids m.p. 53-54\(^\circ\) and m.p. 65-66\(^\circ\) respectively.

(15) These \(6(7):7(6)\)-hydroxyacetoxystearic acids, m.p. 53-54\(^\circ\) and m.p. 65-66\(^\circ\) have also been obtained by the action of glacial acetic acid on the epoxides of petroselinic and petroselaidic acids respectively.

(16) The fact that the hydroxyacetoxystearic acids are readily isolable from the product formed by the action of acetic acid on the epoxides suggests that these compounds are the intermediates in the conversion of the epoxides to the corresponding glycols (dihydroxy acids).

(17) The work on Anethum trifoliatum confirms all the findings already arrived at on the seed fats of the members of the family Umbelliferae, and the fatty acid composition has been found to be palmitic 9.37\%, petroselinic 48.85\%, olaic 33.90\% and linoleic acid 7.88\%.