Kurth and Hubbard\cite{1} isolated from Ponderosa pine bark a bright yellow colouring matter, to which we propose to assign the name ponderosin. It was soluble in acetone and alcohol, slightly soluble in water and insoluble in benzene, hexane and ethyl acetate; crystallization from acetone, ether and alcohol gave a material melting at 305-07° with decomposition. Reduction with magnesium and hydrochloric acid gave a pink colour and the test with Wilson’s boric acid reagent\cite{2} was positive. Molecular weight determination by the ebullioscopic method in ethyl alcohol gave values of 305 and 314, and the elementary analysis corresponded to C_{15}H_{10}O_{7}. A pentacetate with a m.p. of 237-39° was obtained on treatment with acetic anhydride and sodium acetate. The pentamethyl ether, m.p. 198-99°, was prepared by methylation with diazomethane in dry ether containing a trace of methanol till the methoxyl content did not increase; the product was insoluble in aqueous caustic soda and gave no colour with ferric chloride. Oxidation of the pentamethyl ether with hot alkaline potassium permanganate gave veratric acid. Fusion of ponderosin with caustic potash and methylation of the products with dimethyl sulphate gave veratrole and 1:2:4-trimethoxybenzene. Ponderosin thus appeared to be one of three pentahydroxyflavones: 3:5:6:3':4' (I), 3:6:7:2':4' (II), or 3:5:8:3':4' (III).

\[
\text{\includegraphics[width=0.8\textwidth]{structure.png}}
\]

The structure (III) was then assigned, since (I) and (II) synthesized by Row and Seshadri\cite{3} had properties different from those of ponderosin; (II) was 90
also ruled out because a positive Wilson's boric acid test indicates a 5-hydroxyl group in a flavone.

3: 5: 8: 3': 4'-Pentahydroxyflavone (III) has now been synthesized and found to be different from ponderosin by a direct comparison. The properties of the pentahydroxyflavones (I), (II), (III) and ponderosin are shown in Table I.

In the course of our studies in Raney nickel reductions a method was developed for reducing 5: 7-dihydroxyflavones to 5-hydroxyflavones by the action of Raney nickel and hydrogen on the 7-tosyl ester (cf. Kenner and Murray). This reaction has many interesting synthetic possibilities and has now been used for the synthesis of the flavone (III). 5: 7-Dihydroxy-3: 3': 4'-trimethoxyflavone (IV) readily gave the 7-tosyl ester (V) on treatment with a molar proportion of p-toluenesulphonyl chloride and anhydrous potassium carbonate in boiling acetone. The hydrogenolysis of this derivative (V) with Raney nickel and hydrogen was carried out under controlled conditions leaving a part of the tosyl derivative unreacted in order to avoid reduction beyond the desired stage. The crude reaction product was