the molecule is ketonic in nature. Lithium aluminium hydride reduces the orange solution of pristimerin in ether to a colourless solution which on acidification and aeration becomes orange in colour. Furthermore, two compounds (melting points 165°C . (dec.) and 205°C . (dec.)) without the methoxy group originally present in the molecule are obtained. The physical and chemical properties of these show that they still have β -quinone structure and are keto-enol isomers. Ultra-violet absorption curves of these compounds show that the third $-\text{CO}-$ group, which is reduced to $-\text{CHOH}-$ by lithium aluminium hydride, is probably conjugated with the β -quinone system. The fact that pristimerin does not form derivatives with ketonic reagents or orthophenylene diamine and gives a positive test with boroacetic anhydride and tin tetrachloride suggests that the third keto group is sterically hindered and is probably in the peri-position to the β -quinone grouping. The labile character² of the $-\text{OMe}$ group towards lithium aluminium hydride, acids or alkalis indicates its presence in the quinone part of the molecule, probably in a grouping $\text{OMe}-\text{C}=\text{C}=\text{C}=\text{O}$. Thus the chemical and physical data so far obtained can well be interpreted by the following tentative partial structure (I).

Preliminary selenium dehydrogenation experiments indicate that the molecule may be a steroid or triterpenoid. In view of this and of the fact that triterpenes have been isolated from this species of the plant, the partial structure (I) may possibly be further elaborated to (II).

Celastrol³, a quinone isolated from *Celastrus scandens* L., was assigned a molecular formula $\text{C}_{22}\text{H}_{20}\text{O}_3$. It appeared more than a coincidence that the melting points of pristimerin and the methyl ether of celastrol are the same. Ultra-violet absorption curves of pristimerin and celastrol are very similar, and both the compounds were isolated from the same family of the plant; hence a mixed melting point of pristimerin with methyl celastrol was taken. No depression was observed, showing that pristimerin and methyl celastrol are probably identical.

A complete account of this investigation will be published elsewhere. We are grateful to Col. S. S. Bhatnagar for suggesting this work and supplying pristimerin, to Prof. J. D. Bernal for determining molecular weight by the X-ray method, to Prof. O. Gisvold for sending a sample of methyl celastrol, and to Dr. V. M. Thakore for his collaboration in the initial stages of this work. We thank Dr. Bholanath for the preliminary experiments on selenium dehydrogenation.

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Half-life of Curium-242

THE most recently published value for the half-life of curium-242 is that of Hanna, Harvey and Moss¹, namely, 162.5 ± 2 days. This was determined by observing the proportions of americium-241 and curium-242 in samples of neutron-irradiated americium by pulse analysis methods over periods of up to one year.

The present measurements have been made by direct counting of α -particles from a source of pure curium which had been exhaustively purified from americium by ion-exchange methods. The α -counter used was of the low-geometry proportional type² designed for high precision and long-term stability³.

The curium source was deposited on a polished platinum disk. It was practically weightless, and gave initially about 2×10^7 α -disintegrations per minute. During a period of about seven months, fourteen measurements were made, each to a statistical accuracy of ± 0.1 per cent (that is, at least 10^6 counts were recorded).

It was necessary to correct for the growth of the long-lived α -active daughter, plutonium-238, and for this purpose the half-lives of curium-242 and plutonium-238 were taken as 162.5 days and 89 years respectively; but as these corrections amounted to less than one per cent of the counting-rate in every case, the final result is not critically dependent on these assumptions.

The corrected counting-rates were fitted by the least squares method to a linear relationship of the form:

$$\ln C_t = \ln C_0 - \lambda t,$$

where C_0 and C_t are the corrected counting-rates at time 0 and time t respectively, and λ is the decay constant of curium-242. The deviations of the experimental points from this straight line were quite random and showed no detectable trend with time, as would be expected if the sample contained any long-lived contaminant (for example, americium-241 of curium-243), or if the correction for plutonium-238 were inaccurate. The results were consistent with the existence of random effects producing a standard deviation of ± 0.1 per cent in addition to the standard deviation of ± 0.1 per cent due to counting statistics.

The slope of the least squares line gave a half-life value of 162.46 days with a standard deviation of ± 0.27 day.

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In connexion with the work described above, we have attempted to provide a check on the half-life of curium-242 by the entirely independent method of calorimetry.

A sample of approximately 2 μgm . of curium-242, slightly less pure than that used above, was kindly made available to us by Dr. J. Milsted. We have determined the total heat output of this sample at