the sample placed onto the column. None of the fractions have as yet been found to contain a component resembling orotic acid.

In these experiments the UMP appears to be the first detectable product of the reaction. Fig. 1 shows the results of a time study of the reaction in which the isotope first appeared in the UMP and subsequently was distributed among the other uridine fractions and the "U" fraction.

In another time study similar to that of fig. 1, 4 μmoles of non radioactive UMP was added with the radioactive orotic acid. The incorporation of the label from the orotic acid in the "UDPG", "UDP" and "UTP" peaks was greatly diminished even though about 1 μmole of the added UMP was converted into the latter compounds. At the 40 minute time point of this experiment a large part of the radioactivity appeared in the "U" fraction in the form of uracil and uridine which were identified by chromatography on starch columns [7].

In a third time study it was found that 0.25 μmoles of added radioactive UMP, in the absence of orotic acid, was converted to the other uridine phosphate derivatives within 10 minutes.

The presence of 2 μmoles of non labeled uridine did not influence the incorporation of C^{14}-orotic acid into the UMP derivatives and thus uridine is excluded as an intermediate in the reaction.

The fixation into uridine phosphates of ribose formed from hexose metabolism may provide a useful system for evaluating the current concepts of ribose synthesis. The possibility is being examined that the ribotide formation from hexosediphosphate or ribosephosphate involves ribose-1,5-diphosphate as does the conversion of adenine to the adenine nucleotides [5]. The enzyme preparation is seen to be capable of degrading the UMP as well as of phosphorylating it, and the enzymes interconverting the "UDPG", "UDP" and „UTP" are also present.

The further investigation of these reactions by substrate limitation, inhibition and enzyme fractionation is continuing.

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The Structure of Selenium Diselenocyanate

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The crystal structure of selenium diselenocyanate [1,2], $Se(SeCN)_2$, has been determined from X-ray data, by two-dimensional Patterson and Fourier methods.

The unit cell dimensions, from oscillation and Weissenberg photographs (Cu$K\alpha$ radiation, $\lambda = 1.542$ Å) are: $a = 10.07 \pm 0.03$ Å, $b = 13.35 \pm 0.04$ Å, $c = 4.48 \pm 0.02$ Å. There are four molecules per unit cell. Absent reflections, $0kl$ when $k + l$ is odd, $hk0$ when h is odd. The space group is the centrosymmetric one, D_{2h}^{16}—$Pnma$.

Patterson projections along the a, b and c axes revealed the positions of the selenium atoms. In the subsequent Fourier syntheses, signs of the reflections were initially based on the selenium contributions alone. The final atomic coordinates, in fractions of corresponding cell edges, are:

	x	y	z
Se_1	0.540	0.250	0.492
Se_2	0.442	0.115	0.249
C	0.295	0.112	0.488
N	0.203	0.095	0.586

The reliability factor, $R = \Sigma\|F_{obs}| - |F_{calc}\|/\Sigma|F_{obs}|$, is 0.15, 0.12 and 0.13, respectively, for the $hk0$, $0kl$ and $h0l$ reflections, with an over-all value of 0.14 for the three zones.

The selenium diselenocyanate molecule possesses, by space group requirements, a

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mirror plane of symmetry. The three selenium atoms and the cyano groups form an unbranched and non-planar chain, with a Se-Se bond length of 2.33 Å and a Se-Se-Se bond angle of 101°. The values, 94° and 95°, respectively, were found for the SeSeSe/SeSeC dihedral angle and the Se-Se-C bond angle.

The crystals are isomorphous with those of selenium dithiocyanate [3,4], $Se(SCN)_2$.

Details of the structure of selenium diselenocyanate will be published later.

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A Note on the Occurrence of Dimethyl Sulphone in *Cladonia deformis* Hoffm.

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In the course of an investigation on the presence of triterpenoids in lichens a sample of *Cladonia deformis* Hoffm., collected in a peat-bog, through which the railway runs, some 100 miles north of Trondheim, was investigated. The material was extracted with ether. The neutral fraction left after acidic substances had been removed by alkali was subjected to chromatography on alumina. The fraction eluted with ether-methanol (49 : 1) contained a substance that sublimed on the water-bath in a vacuum. It was sublimed twice and then melted at 98—105° (15 mg). Its IR-spectrum contained bands which could be due to the presence of the sulphone grouping. The simplest sulphone, dimethyl sulphone, has m.p. 109°, and, indeed, its IR-spectrum showed almost complete identity with that of the isolated substance. A mixture of the two compounds melted at 105—108°; the melting points of the two substances and the mixture were taken at the same time. Recrystallisation of the isolated sulphone from methanol-ether raised the m.p. to 107—108°, no depression on admixture with the authentic dimethyl sulphone.

During an investigation of sulphate turpentine (unpublished results with E. Hafnor) we isolated dimethyl sulphone, which we regard as arisen by aerial oxidation of dimethyl sulphide. This prompted us to consider the possibility of the presence of dimethyl sulphone, presumably originated in a similar way, in the large amount (3—4 litres) of solvent used. We think it unlikely that the sulphone should have been present as an impurity in the petroleum b.r. 40/70° and the methanol used during the chromatography, and have checked that it was not present in the benzene or the ether by filtering 12 litres of each solvent through 200 g of alumina with subsequent elution of any adsorbed substance with methanol *etc.*, as for the isolated substance. No crystalline substance could be detected. Similarly, we have also checked that no dimethyl sulphide was present in the benzene. None was detected.

Dimethyl sulphone has previously been isolated from cattle blood [1], from the adrenal gland [2] and from the horse-tail, *Equisetum palustre* [3], and other *Equisetum* species [4].

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