

evidence in favour of this solution<sup>6</sup>, it is not quite satisfactory.

The two possibilities could be tested by measuring the energy of combustion of the SO molecule, which has been recently isolated by Schenk<sup>8</sup>. For this molecule as well as for S<sub>2</sub>, two values are possible,  $D_{SO} = 5.05$  v. and  $D_{SO} = 3.92$  v., corresponding to the two possible interpretations of the predissociation at 5.05 v. A thermochemical cycle gives for the heat of combustion of SO, for the possible values of  $D_{S_2}$  and  $D_{SO}$ , the values 63, 77, 90 or 104 kcal., so that a measurement of that heat of combustion would give  $D_{SO}$  as well as  $D_{S_2}$ .

*Note added in proof:* In a recent paper<sup>9</sup>, Olsson suggests the value 3.6 v. for  $D_{S_2}$  on the basis of his experiment on the induced predissociation. His interpretation of the process of induced predissociation is, however, not necessarily correct<sup>6</sup> and the value 3.6 v. does not agree with the attractive character of the S<sub>2</sub>-level producing predissociation at 4.41 v.

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<sup>1</sup> *Phys. Rev.*, **37**, 490 (1931).

<sup>2</sup> *J. Chem. Phys.*, **2**, 417 (1934).

<sup>3</sup> *Z. Elektrochem.*, **9**, 626 (1903); *Z. anorg. Chemie*, **56**, 320 (1908).

<sup>4</sup> Olsson, *NATURE*, **137**, 745 (1936); *Z. Phys.*, **99**, 114 (1936).

<sup>5</sup> Rosen, Désirant et Duchesne, *Phys. Rev.*, **48**, 916 (1935).

<sup>6</sup> Rosen, *C.R. du Congrès de photoluminescence*, Varsovie 1936. In the press.

<sup>7</sup> Désirant et Minne, *Bull. acad. Roy. Belg.*, **22**, 646 (1936).

<sup>8</sup> Schenk, *Z. anorg. Chem.*, **211**, 150 (1935).

<sup>9</sup> *Z. Phys.*, **100**, 656 (1936).

### Scattering of Light by Light

In a recent paper<sup>1</sup> Euler and Kockel have calculated the effective cross-section for the scattering of light by light. The calculation was carried out for the case of small frequencies ( $\hbar\omega \ll mc^2$ ), the frequencies being taken in a frame of reference, where the total momentum of the colliding quanta vanishes.

We have calculated the cross-section for the opposite case of large frequencies ( $\hbar\omega \gg mc^2$ ). For the integral cross-section we get an expression of the form:

$$\sigma = a \alpha^4 \left(\frac{c}{\omega}\right)^2,$$

where  $\alpha = \frac{c^2}{\hbar c}$  with a constant  $a$ , which is difficult to

compute. According to Euler and Kockel, for small frequencies  $\sigma$  is proportional to  $\omega^6$ . Consequently  $\sigma$  has a maximum value in a region  $\hbar\omega \sim mc^2$ .

It is also difficult to compute the dependence of the differential cross-section on the angle of scattering. We find that for the small angles the polarization of the light quanta is not altered. The differential cross-section for small angles is

$$d\sigma = 8\pi \alpha^4 \left(\frac{c}{\omega}\right)^2 \log^4 \Theta d\theta,$$

$\Theta$  being the angle of scattering and  $d\theta$  the solid angle. This formula is valid for small angles, but not essentially small compared with  $mc^2/\hbar\omega$ . In the latter case it is necessary to insert into the logarithm  $mc^2/\hbar\omega$  in place of  $\Theta$ .

The formula has a relative accurateness of  $1/\log \Theta$ . The cross-section increases with decreasing angles,

but not very rapidly, and it is impossible to affirm that this region plays the main role in the integral cross-section.

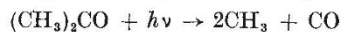
The detailed calculations will appear elsewhere.

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<sup>1</sup> *Naturwiss.*, **23**, 246 (1935).

### Mechanism of the Photo-Decomposition of Acetone

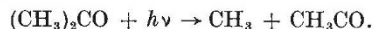
IN continuation of an investigation which has been reported elsewhere<sup>1</sup>, an attempt was made to produce free methyl radicals by the photo-decomposition of acetone. According to Norrish, Crone and Saltmarsh<sup>2</sup>, the radicals are produced by the following mechanism:



which is based on the latter authors' observation that at 60° the main products are equal volumes of carbon monoxide and ethane.

At room temperature, however, we were unable to obtain this equivalence, the volume of ethane being always 1.5 times that of the carbon monoxide. Furthermore, we were able to isolate diacetyl from the liquid products in considerable quantity, determine its boiling point and prepare several derivatives. Diacetyl has previously been detected in the products of photo-decomposition of aldehydes and ketones by Barak and Style<sup>3</sup>.

Further experiments with filtered light of different intensities and with different concentrations of acetone suggest that the primary photo-chemical process is:



However, when the photolysis is carried out at 60°, approximately equal amounts of carbon monoxide and ethane are formed together with some methane, the acetyl radical evidently being extremely short-lived at this temperature.

A detailed account of the experiments will be given in a forthcoming publication.

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<sup>1</sup> *Proc. Leeds Phil. Soc.*, **3**, 141 (1936).

<sup>2</sup> *J. Chem. Soc.*, 1456 (1934).

<sup>3</sup> *NATURE*, **135**, 307 (1935).

### Proposed Suspension of Rules of Nomenclature in the Case of Bohadsch 1761

THE undersigned invites the attention of the zoological profession to the fact that application has been made to the International Commission on Nomenclature to suspend the Rules in Bohadsch 1761, "De Quibusdam Animalibus Marinis" and its translation 1776, on the ground that the application of the rules in these cases will produce greater confusion than uniformity.

Zoologists interested in this case, for or against suspension, are invited to present their views to the Commission.

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