

application of a field of 14,300 volts caused an instantaneous rotation of  $\alpha = +3.01^\circ$ , but in a few seconds, whilst the field was still on, it dropped to  $\alpha = 0.35^\circ$ . After the solution had been standing for three days, even the most powerful field had no effect on it; however, with a fresh hot solution rotational changes were again observed. The effects obtained with the ethyl ester appear to be distinct from those exhibited by the menthyl ester.

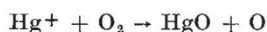
It is hoped to continue these investigations.

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### Separation of the Mercury Isotopes by a Photochemical Method

WHEN a mixture of mercury vapour and oxygen is irradiated with the mercury resonance line  $\lambda$  2537, the mercury becomes oxidised. Since excitation is a necessary stage in the oxidation, Mrozowski<sup>1</sup> has suggested that it should be possible to produce a separation of the mercury isotopes by exciting them selectively. If the reaction consists of the primary photochemical process



only the atomic species which are excited by the incident light should be oxidised.

In my experiments the light from a mercury arc was passed through a Mrozowski filter<sup>2</sup> consisting of a column of mercury vapour in a magnetic field. This transmitted only the hyperfine structure components of the resonance line corresponding to the isotopes 200, 202. After an irradiation of between 10 and 30 minutes, the isotopic composition of the remaining mercury or of that recovered from the oxide was examined by the method of absorption of single hyperfine structure components<sup>3</sup>. The results of the experiments show:

- (1) The separation is in every case only partial, so that besides the primary process, secondary reactions must take place.
- (2) An addition of nitrogen assists the separation ( $p_{\text{O}_2} : p_{\text{N}_2} \sim 1 : 1$ ,  $p_{\text{O}_2} \sim 1$  mm. Hg).
- (3) It has been possible to obtain samples in which

the ratio  $\frac{P_{200, 202}}{P_{198, 199, 201, 204}}$  was modified by a factor of four.

More detailed information will be published in the *Helv. Phys. Acta*.

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<sup>1</sup> S. Mrozowski, *Z. Phys.*, **78**, 826; 1932.  
<sup>2</sup> S. Mrozowski, *Bull. Acad. Pol.*, **A**, 464; 1930.  
<sup>3</sup> K. Zuber, *Helv. Phys. Acta*, **8**, 370; 1935.

### Dissociation Energy of Carbon Monoxide

IN a former communication<sup>1</sup> we suggested 8.41 volts as the most probable value for the energy of dissociation of carbon monoxide. This was based upon a predissociation which we found in the upper level  $B^1\Sigma$  of the Angstrom bands<sup>2</sup> and in the upper level  $b^3\Sigma$  of the third positive group<sup>3</sup>, at a height of 11.08 volts above the normal state of the molecule.

Both predissociations we ascribed to the dissociation state  $^3P$  (oxygen) +  $^1S$  (carbon). To fix the dissociation energy with certainty, however, it is necessary to find another place of predissociation caused by a different state of the dissociation products.

An attempt in this direction was made by Schmid and Gerö<sup>4</sup>. They found predissociation in the higher level of the Herzberg bands at 0.48 volt above the predissociation mentioned above. This difference may be compared with that between two dissociation states of the molecule. As Fig. 1 shows, the difference between  $^3P + ^1S$  and  $^1D + ^1D$  is 0.53 volt, that between  $^1S + ^3P$  and  $^1D + ^1S$  is 0.46 volt. Schmid and Gerö believe that here the former difference must be taken, hence assuming an error of 0.05 volt, which is much larger than the triplet splitting in the atomic energy states concerned. Therefore we believe that the dissociation energy of carbon monoxide was still left uncertain.

In examining the fourth positive group of CO, we found a sudden disappearance of the band lines in the bands with  $v' = 10$ , which points to a predissociation in the upper level  $A^1\Pi$  of these bands. With the known band constants, the height of the dissociation state which causes this predissociation is calculated to be 9.66 volts above the normal state of the molecule. Comparing this predissociation with that in the upper level of the Angstrom bands at 11.08 volts, we find that the difference 1.42 volts corresponds exactly with that between the  $^3P + ^1D$  and  $^3P + ^1S$  states. Therefore we are sure of the following results: (1) the predissociation in the  $A^1\Pi$  level is caused by  $^3P + ^1D$ ; (2) the predissociation in the  $B^1\Sigma$  level is caused by  $^3P + ^1S$ ; (3) the dissociation energy of CO is 8.41 volts.

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<sup>1</sup> D. Coster and F. Brons, *Physica*, **1**, 648; 1934.  
<sup>2</sup> D. Coster and F. Brons, *Physica*, **1**, 155; 1934.  
<sup>3</sup> F. Brons, *NATURE*, **135**, 873; 1935. L. Gerö, *Z. Phys.*, **95**, 747; 1935.  
<sup>4</sup> R. Schmid and L. Gerö, *Z. Phys.*, **96**, 546; 1935.

### A New Technique in Cookery

THE leading article on "Food, Farmer and Future", by Prof. H. E. Armstrong, in *NATURE* of October 12, p. 565, encourages me to invite attention to what is, I believe, a new technique in the art of cooking.

It is commonly held that meat should be roasted in an oven at a temperature of 300°–500° F. and that the oven should be very hot for the first fifteen minutes so as to 'seal up the nutritive juices', particularly in the case of brown meat such as beef or mutton. It was, therefore, with some trepidation that my wife permitted a Sunday joint, a 6 lb. shoulder of mutton, to be put at 9 p.m. on a Saturday night into an oven thermostatically controlled at 212° F. She did not encourage me to experiment