If the qualitative picture of the process is correct, the conversion of D_2 by diamagnetic materials is caused mainly by the quadrupole moment. This could be tested experimentally as follows:

(a) Measure conversion of D_2 by D_2O. From the experimental data of Farkas and Sandler[4] the rate for this process should be $\sim 2.2\times 10^{-5}$ l mole^{-1} min.$^{-1}$.

(b) Measure conversion of D_2 by various molecules having permanent electric moments. The conversion rates should depend quadratically on the moment of the catalyzing molecule.

[1] F. Kalckar and E. Teller, Proc. Roy. Soc. **150**, 520 (1935).
[2] H. B. G. Casimir, Physica **7**, 169 (1940).
[3] J. M. B. Kellogg, I. I. Rabi, N. F. Ramsey, and J. R. Zacharias, Phys. Rev. **57**, 677 (1940); A. Nordsieck, Phys. Rev. **58**, 310 (1940).
[4] L. Farkas and A. Sandler, Trans. Faraday Soc. **35**, 337 (1939).

Structure of the Ionized Helium Line λ1640

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THE ionized helium line at 1640.4A, which corresponds to H_α, has been photographed in the first order of a three-meter vacuum spectrograph, using a grating of 30,000 lines/inch. Three lines are resolved, and the measured peak-to-peak separation of the two strongest is 5.154 ± 0.024 cm^{-1}. The Dirac theory predicts a doublet separation of 5.314 cm^{-1}, whereas the $2^2S_{\frac{1}{2}}$ level shift of 0.442 cm^{-1} calculated by Bethe[1] would modify the structure of the line so as to produce a separation in ionized helium of 5.165 cm^{-1} under the conditions of this experiment. The accuracy of the measurement is sufficient to establish definitely the existence of a shift in the $2^2S_{\frac{1}{2}}$ level much larger than that previously found in the $3^2S_{\frac{1}{2}}$ level by Mack and Austern.[2] The accuracy as a test of Bethe's hypothesis, however, leaves something to be desired.

In the photographs thus far taken the weak center component $2^2S_{\frac{1}{2}}-3^2P_{\frac{1}{2}}$ appears clearly, but the dispersion is too small to locate its position accurately. Work is under way to obtain the line in a higher order of the grating.

[1] H. A. Bethe, Phys. Rev. **72**, 339 (1947).
[2] J. E. Mack and N. Austern, Phys. Rev. **72**, 972 (1947).

Erratum: On the Resolving Time and Genuine Coincidence Loss for Geiger-Mueller Counters

[Phys. Rev. 73, 90 (1948)]
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THE pressure of the gas in the counters was given inadvertently as 12-cm Hg rather than 7-cm Hg as was actually the case. The ratio of the partial pressures of the argon-ether mixture was 17:3.

The short resolving time was determined by counting random coincidences in separated counters and not from merely a consideration of circuit parameters. The writers have recently become aware of the work of two members of the Zürich group,[1] wherein the successful use of resolving times as low as 0.15 microsecond without genuine coincidence loss was reported.

[1] H. Bradt and P. Scherrer, Helv. Phys. Acta **19**, 251 (1943).

Spin of C^{14}

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THE procedures previously used[1] in determining the spin of C^{13} by the alternation of intensities in the band lines of the C_2 molecule have been successfully applied to radiocarbon. Spectrum tubes have been prepared from which the relative intensity of the bands indicates a concentration up to 30 percent of C^{14}. Some of the enriched samples were prepared by Mr. L. D. Norris of the Clinton Laboratories[2] and others by Dr. W. L. Whitson of the University of California Radiation Laboratory. The former samples were milligram amounts of $BaCO_3$ made available through the Isotopes Division, Atomic Energy Commission, while the latter were microgram amounts of carbon separated in the mass spectrograph, starting with material of lower concentration also obtained from the Isotopes Division.

The lines due to $C^{14}C^{14}$ appear plainly on the grating spectrograms, and most of them are entirely free from confusion by background lines of extraneous origin. Furthermore, the Λ-type doublets of both the R_3 and R_1 lines are resolved in the $C^{12}C^{14}$ band. In spite of this, all lines of $C^{14}C^{14}$ appear as strictly single lines, with an alternate displacement or "staggering" similar to the well-known effect in $C^{12}C^{12}$. This can only mean that alternate lines are completely missing and that therefore the nuclear spin is zero. The missing lines are those one would expect for nuclei obeying the Bose-Einstein statistics. It is worth mentioning that the next higher value of the spin that is possible, $I=1$, would give an intensity ratio of 2:1 and that the presence of the weaker components could not possibly have been overlooked.

This result is surprising in view of the exceptionally long half-life of C^{14}, which, coupled with the relatively high energy of the beta-rays, would seem to require a large spin change in the decay. The product nucleus, N^{14}, has a spin of unity, so that the change is not large. On the other hand, a spin of zero is consistent with the value always observed for stable isotopes of even charge and mass. The details of this work will appear in The Physical Review, including a summary of the work on both C^{13} and C^{14}.

[1] F. A. Jenkins, Phys. Rev. **72**, 169 (1947).
[2] The writer is indebted to Dr. A. H. Snell for calling his attention to the availability of this material.