

1935

## An Unusual Appearance of the Cyanogen Bands

Leonard O. Olsen  
*State University of Iowa*

*Let us know how access to this document benefits you*

Copyright ©1935 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

---

### Recommended Citation

Olsen, Leonard O. (1935) "An Unusual Appearance of the Cyanogen Bands," *Proceedings of the Iowa Academy of Science*, 42(1), 154-155.

Available at: <https://scholarworks.uni.edu/pias/vol42/iss1/67>

This Research is brought to you for free and open access by the IAS Journals & Newsletters at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

**Offensive Materials Statement:** Materials located in UNI ScholarWorks come from a broad range of sources and time periods. Some of these materials may contain offensive stereotypes, ideas, visuals, or language.

THE LIMITATIONS OF PRESENT COMPUTATIVE  
METHODS OF STUDYING LIQUID STRUCTURE

GEORGE A. BOYD

The inadequacy of the approximate method of x-ray diffraction intensity computation in the case of liquids is illustrated by computations relative to n-paraffins. Warren apparently proved, by using Zernike and Prins theory, that the structure of the liquids is hexagonal parallel packing. These computations have been repeated and extended to larger scattering angles. Similar calculations were made for the parallel packing. Conclusive proof for either array was not found. Preference, however, due to peak position, should be given to the former. The work emphasizes the need for a better theoretical approach to the problem of liquid structure in explaining the scattering of x-rays.

DEPARTMENT OF PHYSICS,  
STATE UNIVERSITY OF IOWA,  
IOWA CITY, IOWA.

---

AN INVESTIGATION OF THE FORMATION AND EX-  
CITATION OF THE MERCURY HYDRIDE MOLE-  
CULE THROUGH RESONANCE RADIATION

LEONARD O. OLSEN

A weak excitation by collisions of several of the HgH bands belonging to the electronic system  ${}^2\pi \rightarrow {}^2\Sigma$  was detected. It was found that HgH was formed in the  ${}^2\pi_{\frac{1}{2}}$  and  ${}^2\pi_{\frac{3}{2}}$  (excited) states through a collision process involving Hg  $6^3P$  and the  $H_2$  molecule, one Hg  $6^3P$  atom dissociating the  $H_2$  molecule and a second Hg  $6^3$  atom uniting with an H atom to form the excited HgH molecule.

DEPARTMENT OF PHYSICS,  
STATE UNIVERSITY OF IOWA,  
IOWA CITY, IOWA.

---

AN UNUSUAL APPEARANCE OF THE CYANOGEN  
BANDS

LEONARD O. OLSEN

A unique formation and excitation of the CN molecule occurred in the resonance tube. (Observed in connection with the investiga-

tion of the mercury hydride molecule.) The bands which were noted belong to the  $^2\Sigma \rightarrow ^2\Sigma$  electronic system. The excitation has been determined to be due to collisions of the CN molecule with excited mercury atoms in the  $6^3P$  state.

DEPARTMENT OF PHYSICS,  
STATE UNIVERSITY OF IOWA,  
IOWA CITY, IOWA.

---

### MEAN FREE PATHS OF GAS MOLECULES IN MERCURY VAPOR

JOHN A. ELDRIDGE

The mean free paths have been obtained for hydrogen, helium, nitrogen, carbon dioxide, methane, ethane, propane, butane and isobutane through mercury vapor. The decrease in intensity is observed as a beam of the gas passes through the vapor, any deviation as great as a half degree removing the molecules from the beam. The free paths measured in this way are, as is expected, several times smaller than the values determined from viscosity data.

DEPARTMENT OF PHYSICS,  
STATE UNIVERSITY OF IOWA,  
IOWA CITY, IOWA.

---

### X-RAY IONIZATION CHAMBER MATERIALS

J. NORVEL SAYLER

An attempt has been made to reduce leakage and troublesome current fluctuations in ionization chambers due to  $\alpha$ -particle emission from materials of which chambers are made. Work of Bearden (Johns Hopkins), 1932, has been checked in good agreement, with one exception. Counts of  $\alpha$ -particle emission have been made for steel, electroplated copper, aluminum, tin, brass, and glass, after Bearden, and in addition for platinum, molybdenum, electroplated nickel, and electroplated chromium. Best results were obtained from cold rolled steel. In all cases the materials were cleaned with abrasives, and  $\text{CH}_3\text{Br}$  was used as ionizing gas. A "cage" type ionization chamber, designed to reduce  $\alpha$ -particle effects, was studied, and quantitative comparisons with