The frequencies of four of the pure rotational absorption lines of deuteroformaldehyde D$_2$CO have been measured and the corresponding transitions have been identified. No analysis of centrifugal distortion is possible because of the small number of measured frequencies, but rough initial estimates of the rotational constants are

\[ b - c = 6,095.85 \text{ Mc/sec} \]
\[ (a-c)/2 = 57,470 \text{ Mc/sec} \]
\[ \delta = 0.053 \]

Stark-effect measurements confirm the identification of the lines and yield dipole moments not inconsistent with Lawrance's value of 2.31 debye units for H$_2$CO. What are believed to be vibrational satellites have been observed in the neighborhood of the 2$_1$ and 5$_2$ lines. They have not yet been investigated beyond noting that their intensities agree roughly with values calculated from infrared measurements published by others.

P. Sieck, L. Blumberg

Work on stabilizing oscillator tubes in the K band to better than a kilocycle, by means of a Pound stabilizer and/or automatic frequency control locking to a low-frequency crystal, preparatory to operating a new system designed to reduce Doppler broadening of spectral lines is progressing.

H. R. Johnson, J. G. Ingersoll

Work on heavy organic molecules is in progress. The compounds recently studied were ethyl mercaptan (H$_3$C-CH$_2$-SH) and n-propyl mercaptan (H$_3$C-CH$_2$-CH$_2$-SH). Several absorption lines in the frequency range 17,000 - 26,000 Mc/sec have been found. At dry ice temperature (about -78°C) several of the lines seem intense enough to serve as check-lines for the identification of these compounds by microwave spectroscopy. Only rough frequency measurements by means of a calibrated wavemeter have been made so far. The frequencies and other relevant information will be reported as soon as accurate measurements are made.

B. V. Gokhale

The centrifugal distortion coefficients of hydrogen deuteriumoxide (HDO) have been calculated from theoretical expressions, using the known molecular structure and force constants of the molecule H$_2$O. These coefficients were used in the expression developed by R. E. Hillger for the frequencies of type a transitions corrected for centrifugal distortion to estimate the three molecular parameters $K$, $(a-c)/2$ and $(a+c)/2$ from five known absorption frequencies in the microwave region. The resulting values are
$K = -0.67712$, $(a-c)/2 = 8.2340 \text{ cm}^{-1}$, $(a+c)/2 = 14.457 \text{ cm}^{-1}$. These values are slightly different from previous values obtained by analysis of a vibration-rotation band in the infrared. Some of the more important type a transitions in the microwave region have been predicted on the basis of the parameters deduced. These transitions, when found, will allow a further refinement of knowledge concerning the molecule.

W. H. Lewis