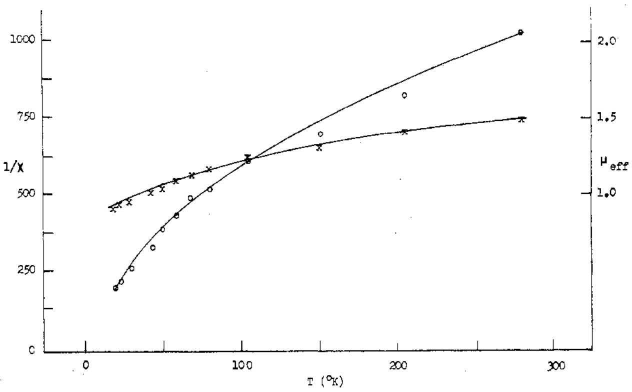

Figure 1. Magnetic susceptibility data for $Cu_3(2'\text{-}dG)_2(OH)_4 \cdot 4H_2O$. ○ and × are experimental points for the inverse corrected molar susceptibility and magnetic moment, respectively, and the lines are theoretical best fits to a bent trimer model.

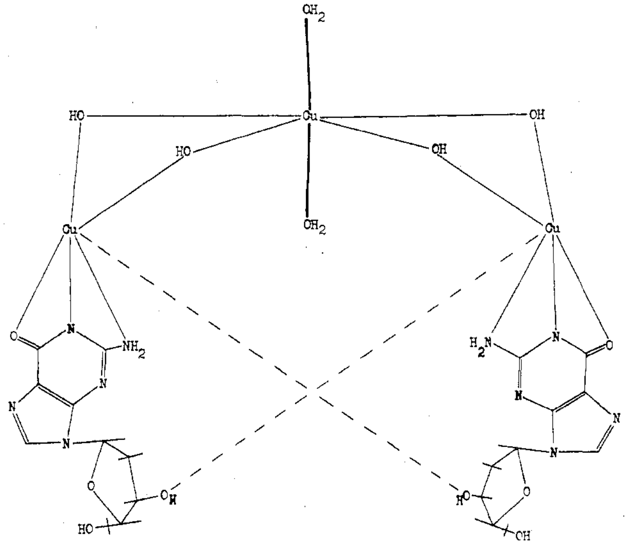

Figure 2. Schematic of the proposed structure for the $Cu_3(2'\text{-}dG)_2(OH)_4 \cdot 4H_2O$ complex.

is seen in the half-field and full-field EPR absorptions (vide supra).

A comparison of the infrared spectra of free and coordinated ligands shows substantial differences. A high-frequency shoulder at 3550 cm^{-1} in the complex supports OH bridging. This assignment is corroborated by the presence of a weak absorption at 957 cm^{-1} in the complex that is not present in the free ligand.[13] The C(6)=O stretch at 1727 cm^{-1} in the free ligand is lost upon complexation and points to C(6)O coordination. The reduction in intensity of δ(N(1)H) at 1525 cm^{-1}, corroborated by the reduction of ring stretches at 1656 and 1637 cm^{-1}, suggests N(1) involvement. The participation by $C(2)NH_2$ is evidenced by the loss of $\delta(NH_2)$ at 1689 cm^{-1} and $\nu(NH_2)$ (asymmetric and symmetric) at 3420 and 3333 cm^{-1}, respectively, in the complex. The 2′-deoxyribose oxygen is presumed to be involved in coordination to the metal to some extent as the intensities of both the degenerate 2′-deoxyribose stretches at 1075 and 1031 cm^{-1} and the symmetric 2′-deoxyribose stretches at 833 and 865 cm^{-1} are lost. However, hydrogen bonding to water molecules in the lattice may be contributing to the diminution of the intensities of these stretching modes. These data, together with the results of the electronic, EPR, and variable temperature magnetic susceptibility measurements, suggest a structure as shown in Figure 2. Attempts to grow single crystals suitable for X-ray study have proved unsuccessful.

Acknowledgment. The authors gratefully acknowledge financial support from a G. N. Shuster Fellowship.

Registry No. $Cu_3(2'\text{-}dG)_2(OH)_4$, 69686-91-5.

References and Notes

(1) R. M. Izatt, J. J. Christensen, and J. H. Ryttig, *Chem. Rev.*, **71**, 439 (1971).
(2) U. Weser, *Struct. Bonding* (*Berlin*), **5**, 41 (1968).
(3) H. Sigel, Ed., "Metal Ions in Biological Systems", Vol. 1, Marcel Dekker, New York, 1974.
(4) G. L. Eichhorn, Ed., "Inorganic Biochemistry", Vols. 1 and 2, Elsevier, New York, 1973.
(5) J. F. Villa, *Inorg. Chem.*, **12**, 2054 (1973).
(6) J. F. Villa, R. F. Doyle, H. C. Nelson, and J. L. Richards, *Inorg. Chim. Acta*, **25**, 49 (1978).
(7) J. F. Villa, F. J. Rudd, and H. C. Nelson, *J. Chem. Soc., Dalton Trans.*, 110 (1979).
(8) H. C. Nelson and J. F. Villa, submitted for publication.
(9) H. C. Nelson and J. F. Villa, *Spectrosc. Lett.*, **11**, 67 (1978).
(10) J. F. Villa and H. C. Nelson, *J. Chem. Educ.*, **53**, 28 (1976).
(11) P. F. Knowles, D. Marsh, and H. W. E. Rattle, "Magnetic Resonance of Biomolecules", Wiley, New York, 1976, Chapter 1.
(12) E. Sinn and C. M. Harris, *Coord. Chem. Rev.*, **4**, 391 (1969).
(13) J. R. Ferrara and W. R. Walker, *Inorg. Chem.*, **4**, 1382 (1965).

Department of Chemistry
The University of Texas at Austin
Austin, Texas 78712
Harold C. Nelson*

Department of Chemistry
Herbert H. Lehman College of
The City University of New York
Bronx, New York 10468
Juan F. Villa

Received January 26, 1979

Additions and Corrections

1978, Volume 17

C. A. Tolman,* A. D. English,* S. D. Ittel, and J. P. Jesson: Preparation, Structure, and Reactions of Triphenyl Phosphite Complexes of Iron, Ruthenium, and Osmium.

Page 2375. We are indebted to Dr. A. Foust, University of Bergen, Bergen, Norway, for pointing out that in the caption to Figure 1, the signs of the coupling constants should read $J_{AC} = \mp 325$, $J_{AD} = \pm 74$ in place of the present $J_{AC} = \pm 325$, $J_{AD} = \mp 74$.—C. A. Tolman

Gary J. Long: A Mössbauer, Magnetic, and Electronic Structural Study of Two Iron Squarate Complexes.

Page 2706. Reference 7 should read as follows: R. West and H. Y. Niu, *J. Am. Chem. Soc.*, **85**, 2589 (1963); H. Y. Niu, Doctoral Dissertation, University of Wisconsin, 1962, p 99; S. M. Condren, Doctoral Dissertation, University of Missouri—Rolla, 1971, p 51. —Gary J. Long

1979, Volume 18

I. S. Jaworiwsky, J. R. Long, L. Barton, and S. G. Shore*: Directive Effects in Bridge Cleavage Reactions of Methyl-Substituted Boron Hydrides. 1. Preparation and Nuclear Magnetic Resonance Spectra of $3\text{-}CH_3B_6H_{11}$, $3\text{-}CH_3B_6H_{10}$, and $1\text{-}CH_3B_4H_9$.

Page 56. The title of this paper should read as follows: Directive Effects in Bridge Cleavage Reactions of Methyl-Substituted Boron Hydrides. 1. Preparation and Nuclear Magnetic Resonance Spectra of $3\text{-}CH_3B_6H_{11}$, $\mathit{3\text{-}CH_3B_5H_{10}}$, and $1\text{-}CH_3B_4H_9$.—S. G. Shore