would be expected to undergo a Jahn–Teller distortion, no splittings in the spectral bands were resolved.

The data in Table I for $Ni(OH)_6^{4-}$ and $Ni(H_2O)_6^{2+}$ are very similar. The double humped band in the visible region which gives the compounds their pale green color is present in both spectra. The splitting of the two components of the visible band for the hydroxo complex may not be as great as given since our band maxima were estimated by an approximate Gaussian analysis of the spectrum.

The spectral data show that Dq of hydroxide ion is the same as that of water toward the cobalt(II) ion and slightly larger than that of water toward the nickel(II) ion. On the basis of the spectrochemical series found in most reference books this is an unexpected result. However, it must be remembered that the spectrochemical series was constructed from data obtained for the most part from substituted six-coordinate ammine complexes in which the centers of gravity of the main absorption bands may be greatly affected by the σ- and π-antibonding effects of each ligand.[10] Unresolved spectral splittings may give rise to centers of gravity on which estimates of Dq should not be based.

Acknowledgment.—This work was supported by the Advanced Research Projects Agency and by the North Carolina Board of Science and Technology.

(10) D. S. McClure, "Advances in the Chemistry of Coordination Compounds," S. Kirschner, Ed., The Macmillan Company, New York, N. Y., 1961, p. 498 ff.

DEPARTMENT OF CHEMISTRY
UNIVERSITY OF NORTH CAROLINA
CHAPEL HILL, NORTH CAROLINA 27515

WILLIAM E. HATFIELD
JOHN F. ANDERS
LOUIS J. RIVELA

RECEIVED FEBRUARY 19, 1965

Book Review

The Chemistry of Complex Cyanides. By M. H. FORD-SMITH. Her Majesty's Stationery Office, London, England. 1964. vi + 93 pp. 19 × 25 cm. Price 27s. 6d.

The purpose of this book as set forth in the Introduction is to provide "a review of the work reported in the literature, on the preparation, detection, and quantitative and qualitative properties of complex cyanides with the emphasis placed on their solution chemistry." A systematic compilation is given for 64 oxidation states of 28 elements which form cyanide complexes. The 420 references appear to cover the literature through 1962 with a few references given to 1963 work. Information concerning each oxidation state of each element is generally summarized under the two headings: Preparation and Properties. The following data or information are given whenever available for each system: kinetics, polarography, oxidation–reduction potentials, anion structure, infrared spectra, Raman spectra, ultraviolet and visible spectra, magnetic moments, formation constants, acids, mixed complexes.

The book is a well-organized compilation which is remarkably free of errors, typographical and factual. However, several statements were noticed which deserve comment. On p. 21 ferrocyanide ion is stated incorrectly to be more stable thermodynamically than ferricyanide ion [G. D. Watt, *et al.*, *Inorg. Chem.*, **4**, 220 (1965)]. In discussing Hg^{2+}–cyanide complexes (p. 67), it is stated that addition of H^+ to $Hg(CN)_4^{2-}$ results in immediate formation of $Hg(CN)_3^-$, $Hg(CN)_2$, $Hg(CN)^+$, and Hg^{2+}. Actually the latter two species are sufficiently stable [log K approximately 35 for formation of $Hg(CN)_2$ from Hg^{2+} and $2CN^-$ ("Stability Contants of Metal Ion Complexes," Special Publication No. 17, The Chemical Society, London, 1964, p. 112)] that $Hg(CN)_2$ is not appreciably decomposed in 1 F H^-. The statement is made on p. 91 that log K values determined by different workers are usually in good agreement. This statement is overly optimistic since reported values often disagree by several powers of 10, *e.g.*, $Ni(CN)_4^{2-}$ where log K values from 11 to 30 have been reported for the reaction $Ni^{2+} + 4CN^- = Ni(CN)_4^{2-}$ ("Stability Constants of Metal Ion Complexes," Special Publication No. 17, the Chemical Society, London, 1964, pp. 109, 110).

A useful section on suggested research topics is included. It would have been helpful to include ΔH and ΔS data in the compilation.

DEPARTMENT OF CHEMISTRY
BRIGHAM YOUNG UNIVERSITY
PROVO, UTAH

REED M. IZATT

BOOKS RECEIVED

May 1965

B. J. AYLETT and B. C. SMITH. "Problems in Inorganic Chemistry." The English Universities Press Ltd., 102 Newgate St., London EC1, England. 1965. xii + 154 pp.

MARTIN GRAYSON and EDWARD J. GRIFFITH, Editors. "Topics in Phosphorus Chemistry." Volume 2. John Wiley and Sons, Inc., 605 Third Ave., New York 16, N. Y. 1965. vii + 225 pp. $12.50.