complete substitution by four phosphine equivalents can be effected. Efforts are currently underway to clarify the mechanism of the triphenylphosphine ylide forming reaction, to use these reactivity patterns to control related reactions in this series, and to investigate the chemistry of these interesting bis(phosphonium ylide) transition-metal complexes.

Acknowledgment. We thank Dr. Mark J. Hampden-Smith and Professor Christopher J. Samuel for helpful discussions and John C. Huffman for the X-ray crystal structure determination. Financial support from the donors of the Petroleum Research Fund, administered by the American Chemical Society, is gratefully acknowledged.

Supplementary Material Available: Details of the data collection and structure solution, atomic positional and thermal parameters, and complete bond distance and angle data (16 pages); a listing of F_o vs F_c (11 pages). Ordering information is given on any current masthead page.

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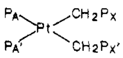
(14) The observed ^{31}P resonances (four approximately equally spaced strong lines flanked on each side by a weak line) were analyzed as an AA′XX′ spin system (^{195}Pt coupling neglected) by using the labeling scheme shown and simulated by using the observed chemical shifts and the following coupling constants:

$$J_{AA'} = 19.1\ \mathrm{Hz}$$
$$J_{AX'} = J_{A'X} = 14.0\ \mathrm{Hz}$$
$$J_{AX} \approx J_{A'X'} \approx J_{XX'} \approx 0\ \mathrm{Hz}$$



Calculations were carried out on an IBM PC-XT using the program PCPMR, available through Serena Software, P.O. Box 3076, Bloomington, IN 47402.

Additions and Corrections

Ann E. Ogilvy, M. Draganjac, Thomas B. Rauchfuss,* and Scott R. Wilson: Activation and Desulfurization of Thiophene and Benzothiophene by Iron Carbonyls. **1988**, 7, 1171.

On p 1172, the last sentence in the second paragraph should cite ref 22b, not ref 21. Reference 22b should read: Hachgenei, J. W.; Angelici, R. J. *Angew. Chem., Int. Ed. Engl.* **1987**, *26*, 909.

Book Reviews

Gmelin Handbook of Inorganic Chemistry. Eighth Edition. Cu. Organocopper Compounds. Part 4. H. Bauer, J. Faust, R. Froböse, J. Füssel, U. Krüerke, M. Kurz, and H. M. Somer, volume authors. J. Füssel, volume chief editor. Gmelin Institut für Anorganische Chemie der Max-Planck-Gesellschaft zur Förderung der Wissenschaften and Springer-Verlag, Berlin. 1987. xii + 272 pages. DM 1249.

The present book and Part 5, the index volume (244 pages, DM 1189), complete the Gmelin Handbook miniseries on organocopper compounds. In contrast to the first three volumes, Part 4 deals mostly with "real" organocopper compounds, ones which have been isolated or for which structurally useful solution data have been obtained (in contrast to the many organocopper reagents for which the only information available is method of preparation and reactivity toward organic substrates). This volume covers mononuclear organocopper compounds with ligands bonded to copper by two or more carbon atoms as well as organocopper compounds of higher nuclearity.

The explosive copper(II) acetylide is the first compound described in this book. It is followed by detailed coverage of η^2-olefin and acetylene complexes of copper, both classes of compounds that have received a good bit of attention. Mononuclear copper complexes with ligands bonded by three and more carbon atoms come next. Of these, only the η^5-cyclopentadienylcopper derivatives take up more than one or two pages.

The rest of the book (169 pages) is devoted to di- and polynuclear organocopper compounds: a few "higher-order" cuprates about whose structure in the solid state or in solution something definitive is known, some copper carbonyls, and organocopper compounds with organic or halogen bridges between two Cu atoms. The tetranuclear copper compounds are mostly of the type R_4Cu_4, R_5Cu_4Li, R_6Cu_4Mg, and $R_4Cu_4M_2X_2$, and quite a few have been characterized by X-ray diffraction.

As usual in a Gmelin Handbook volume, all available information is provided about the compounds covered. For those which are soluble in organic solvents the NMR data that have been obtained are given. If an X-ray crystal structure determination was carried out, a figure generally shows the structure. For every compound, information concerning preparation, physical properties, and reactivity are given, insofar as it is available.

It should be noted that some of the organocopper compounds listed in earlier volumes of this series very likely are polynuclear species. However, in the absence of definitive information on molecular weight and structure in solution or in the solid state, these were listed under their simplest empirical formula with the mononuclear compounds. The reader should keep this in mind when he is searching for a specific compound.

These four books bring a useful overview of organocopper compounds, and this series, while of interest to organometallic and inorganic chemists, should be of great value to the synthetic organic chemist since a detailed exposition of the applications of all kinds of organocopper reagents in organic synthesis, with a large number of examples, is provided.

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