are respectively 2.79 and 2.77 Å for cation A and 2.87 and 2.69 Å for cation B.

The NMR data for **2** are consistent with the structure determined crystallographically. Thus, the ^{31}P NMR data are similar to those of **1** and are characteristic of a $Pt_3(dppm)_3$ complex with only one Pt–Pt bond.[13] The ^{1}H NMR spectrum contained resonances due to nonequivalent $P_2CH^aH^b$ protons of the dppm ligands, indicating that there is no plane of symmetry containing the $Pt_3(dppm)_3$ unit. In complex **1**, similar features are observed in the low-temperature ^{1}H NMR spectrum, but a fluxional process, involving inversion of the $Pt_3(\mu_3\text{-S})$ unit, leads to the effective equivalence of the $P_2CH^aH^b$ protons at room temperature.[13] In complex **2**, this inversion is clearly prevented from occurring by the presence of the μ_3-AgCl ligand.

If we consider formation of **2** to occur by addition of the electron-poor AgCl fragment to the electron-rich $[Pt_3(\mu_3\text{-S})(AuPPh_3)(\mu\text{-dppm})_3]^+$ unit (having a structure similar to that of **1**), it is interesting that AgCl adds to the electron-rich platinum atoms rather than to the sulfido ligand, which still carries a lone pair of electrons and should have donor properties.[19] We have attempted to synthesize higher clusters by addition of 2 or more equiv of $[Au(NO_3)(PPh_3)]$ or $[Au(NO_3)(PPh_3)]$/AgCl to complex **1**, but we have been unable to isolate pure compounds from such reactions. It is therefore not clear if further cluster building via the sulfido ligand is possible. The isolation of **2** was unexpected, but the cluster is interesting as the first PtAuAg cluster. While there is no Au–Ag bonding, the unbridged Pt–Au bond and the $Pt_3(\mu_3\text{-AgCl})$ unit with only one Pt–Pt bond are both, so far as we know, unprecedented.

Experimental Section

NMR spectra were recorded by using a Varian XL200 or XL300 spectrometer, with an internal Me_4Si (^{1}H) or an external H_3PO_4 (^{31}P) reference. The complex $[Pt_3H(\mu_3\text{-S})(\mu\text{-dppm})_3]PF_6$ (**1**) was prepared by the literature method.[13]

$[Pt_3(\mu_3\text{-S})(AuPPh_3)(\mu_3\text{-AgCl})(\mu\text{-dppm})_3]PF_6$. To a solution of **1** (84.1 mg, 0.0465 mmol) in CH_2Cl_2 (10 mL) was added a mixture prepared by reaction of $[AuCl(PPh_3)]$ (23.2 mg, 0.0469 mmol) in CH_2Cl_2 (5 mL) with $AgNO_3$ (9.7 mg, 0.0571 mmol) in CH_3OH (5 mL). After this mixture was stirred for 5 min, water (20 mL) was added, the layers were separated, and the organic layer was dried over $MgSO_4$. The volume was reduced under vacuum, and NH_4PF_6 in methanol was added to precipitate the product, which was recrystallized from acetone/pentane. Yield: 53%. Mp: 175 °C dec. Anal. Calcd for $C_{93}H_{81}AgAuClF_6P_8Pt_3S$: C, 44.4; H, 3.2. Found: C, 44.6; H, 3.3%. NMR in acetone-d_6: ^{1}H, δ 6.04 [m, 2 H, $^2J(H^aH^b)$ = 12 Hz, $C^2H^aH^b$], 4.2 [d, 2 H, $^2J(H^aH^b)$ = 12 Hz, $C^1H^aH^b$], 3.6 [d, 2 H, $C^1H^aH^b$]; ^{31}P, δ 35.0 [s, $^2J(PtP)$ = 667 Hz, *P*Au], 31.2 [s, $^1J(PtP^a)$ = 3120 Hz, P^a], 5.9 [t, $^2J(PP)$ = 20 Hz, $^3J(P^bP^{b'})$ = 156 Hz, $^1J(PtP^b)$ = 3168 Hz, $^2J(PtP^b)$ = 132 Hz, P^b], −17.2 [t, $^2J(PP)$ = 20 Hz, $^1J(PtP^c)$ = 3576 Hz, P^c].

X-ray Analysis of $[Pt_3(\mu_3\text{-S})(AuPPh_3)(\mu_3\text{-AgCl})(\mu\text{-dppm})_3]PF_6$ (2). The specimen was a transparent red crystal, grown from acetone/pentane and mounted in air. All crystallographic measurements were made on an Enraf-Nonius CAD4F diffractometer using Mo X-rays and a graphite monochromator. The dimensions of the reduced triclinic cell (Table II) are based on a least-squares fit to the setting angles of 22 reflections with $11 \le \theta \le 14°$. The measured intensities were corrected for *Lp* effects, and an empirical absorption correction was applied.[20] During data collection the intensities of two standard reflections showed only random fluctuations of ±5% about their mean values.

The structure was solved successfully in the space group $P\bar{1}$. The metal atoms were located by direct methods,[21] and the remaining non-hydrogen atoms were found from subsequent difference syntheses. In the final calculations fixed contributions were added to the structure factors to account for the scattering of all 162 hydrogen atoms: they were assigned a common isotropic displacement parameter U = 0.10 Å, and their positions were deduced geometrically, assuming C–H = 0.96 Å. For Au, Pt, Ag, Cl, S, and P atoms anisotropic displacement parameters were refined, whereas isotropic displacement parameters were adjusted for F and C atoms. The 30 phenyl rings were refined as planar rigid groups with C–C = 1.38 Å and ∠C–C–C = 120°. The PF_6 anions were also refined as rigid groups with P–F = 1.53 Å and ∠F–P–F = 90 or 180°. In alternate full-matrix least-squares calculations, the parameters of cation A, together with those of the PF_6^- anions, and then those of cation B were refined. Atomic parameters for **2** are given in Table III. The most prominent features of the final difference synthesis (ca. 2 e Å^{-3} are associated with a site partially occupied by a disordered solvent molecule. We were unable to model this feature successfully. Mean $w\Delta^2$ showed no consistent variation with $|F|$ but increased at low $(\sin\theta)/\lambda$.

Neutral-atom scattering factors and complex anomalous dispersion corrections were taken from ref 22. Calculations were performed on a Gould 3227 32-bit minicomputer using the locally developed GX program package.[23]

Acknowledgment. We thank the NSERC (Canada) for financial support (to R.J.P.), the SERC (Great Britain) for a studentship (to G.D.), and NATO for a travel grant.

Supplementary Material Available: Tables SI–SIV, listing experimental details of the structure determination, derived hydrogen positions, anisotropic displacement parameters, and interbond angles (12 pages); Table SV, listing calculated and observed structure factors (38 pages). Ordering information is given on any current masthead page.

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(20) Walker, N.; Stuart, D. *Acta Crystallogr.* **1983**, *A39*, 158.
(21) Gilmore, C. J. *J. Appl. Crystallogr.* **1984**, *17*, 42.
(22) *International Tables for X-ray Crystallography*; Kynoch: Birmingham, England, 1974; Vol. IV, pp 99 and 149.
(23) Mallinson, P. R.; Muir, K. W. *J. Appl. Crystallogr.* **1985**, *18*, 51.

Additions and Corrections

1987, Volume 26

Teddy G. Traylor* and Shinji Tsuchiya: Perhalogenated Tetraphenylhemins: Stable Catalysts of High Turnover Catalytic Hydroxylations.

Page 1338. In Table I, the porphyrin has a shoulder at 643 and not 603 nm, and the zinc complex has a shoulder at 660 and not 600 nm. In addition, the bromination must be carried out under scrupulous anhydrous conditions.—Teddy G. Traylor

1988, Volume 27

Johann W. Buchler,* André de Cian, Jean Fischer, Martina Kihn-Botulinski, and Raymond Weiss*: Metal Complexes with Tetrapyrrole Ligands. 46. Europium(III) Bis(octaethylporphyrinate), a Lanthanoid Porphyrin Sandwich with Porphyrin Rings in Different Oxidation States, and Dieuropium(III) Tris(octaethylporphyrinate).

Page 340. Reference 10 should have appeared as follows: (a) Lux, F.; ... (as given). (b) Girolami, G. S.; Milam, S. N.; Suslick, K. N. *Inorg. Chem.* **1987**, *26*, 343–344. References 10a and 10b are correctly cited in the corresponding text.

Page 341. In the left column, second complete paragraph, the fourth complete sentence should read as follows: It did not show any absorption in the near-infrared region (900–2000 nm).—Johann W. Buchler