Abstract

The molybdenum(II) and tungsten(II) halocarbonyls, $[M(CO)_4X_2]_2$ (M = Mo, W; X = Cl, Br) react with a large excess of the nitrogen bases, 1-methylpyrrolidine, 1-methylpiperidine, 1-ethylpiperidine and 2-ethylpiperidine to give aminecarbonyl complexes of the type $M(CO)_3L_3$ (L= alkylamine). Excess piperidine reacts with the tungsten halocarbonyls, $[W(CO)_4X_2]_2$ (X = Cl, Br), to give the trans isomer of the complex, $W(CO)_3(C_5H_{11}N)_3$. The halogens were recovered as the amminium salts, amine, HX. The oxidized amine dimerized to form a yellow product which was recovered as an oily liquid but in very small amounts. However, in the reaction between $Mo(CO)_4Br_2$ and 1-ethylpiperidine, a yellow crystalline solid, with a melting point of 224 ^{o}C was recovered in sufficient amounts for elemental analysis, melting point and spectral data. Its mass spectrum showed a molecular ion peak at $m^+/z = 222$, a clear evidence that the oxidized amine dimerizes. The cyclic dibasic amine piperazine, $C_4H_{10}N_2$ is not, however, oxidized by these halocarbonyls but rather it reacts by substituting some CO groups to form products of the type, $M(CO)_3(C_4H_{10}N_2)_2X_2$ (M = Mo, W; X = Cl, Br). Products were characterized by elemental analysis, IR, UV, ^{1}H NMR and mass spectrometry.