

INTRODUCTION

On December 30, 1960, an irregularly-shaped mass of a silvery metal was submitted to the Mineral Sciences Division by Mr. E.K. Swimmings of the Technical Services Division of the Mines Branch. The material had been received from a representative of the Department of Transport, Ottawa, and was described as an unidentified aerial object. The requested identification was done by X-ray diffraction and spectrographic analyses in the Physical Chemistry and Analytical Chemistry Sections, respectively.

The surface condition indicated that the object had been subjected to high temperatures. Preliminary tests showed that the material was very weakly ferromagnetic.

EXPERIMENTAL TECHNIQUES

X-ray powder diffraction patterns were obtained of material taken from a freshly-exposed metallic surface of the sample, and of the soft, brown deposit present on portions of the surface as received. The patterns were obtained using 57.3 mm diameter Debye-Scherrer powder cameras and Fe K α radiation. The films were interpreted by comparison with data published in the X-Ray Powder Data File issued by the American Society for Testing Materials, and by direct comparison with available standard films. The value of the unit-cell dimension of the cubic compound, which was the predominant constituent of the metallic object, was