

Foreword

In December 1969, the field party of the Japanese Antarctic Research Expedition (JARE) dispatched to study geomorphology and geology of the Yamato mountain range in Antarctica found and collected, just by accident, nine pieces of meteorite within a small area in the neighbourhood of southeastern foot of the Yamato Mountains. Four larger pieces (heavier than 60 gm in weight) among these meteorite samples have been chemically, petrographically, mineralogically and physically analyzed in some detail.

These four pieces of meteorite, Yamato (a), (b), (c) and (d), have been identified respectively to enstatite chondrite, Ca-poor hypersthene achondrite, carbonaceous chondrite Type III and bronzite chondrite.

Accordingly, the field party dispatched in 1973 for the same geological exploration made some effort to find meteorites in the same small area, collecting eleven new pieces of meteorite-like rock. Four larger pieces (heavier than 480 gm in weight) among these meteorite-like samples are now under systematic chemical, petrographical and physical studies. Provisional results of the preliminary studies have suggested that these are three bronzite chondrites and one achondrite.

Encouraged by these findings of meteorites in a very limited area in East Antarctica in 1969 and 1973, the field party sent out to the same region in 1974 made a special effort to find and collect meteorite-like specimens as many as possible during a limited time. Now, the 1974 field party has collected more than 600 pieces of meteorite-like rock in the same locality. These new samples have not yet been examined. It seems, however, that the majority of large samples (larger than 4 cm in mean diameter) can be identified to the stony meteorites: It is reported further that much more of meteorite-like rock specimens could be collected in the same place.

The present and future studies on these Yamato meteorites could be classified into two main directions: (a) general chemical, petrographical, mineralogical and physical properties of these meteorites in connexion with the origin of meteorites as well as the origin of the solar system and (b) reasoning why such a large number of different kinds of stony meteorite are found within a very limited area in Antarctica.

In this special volume of *Memoirs of National Institute of Polar Research*, the field work description of meteorite findings, the chemical analyses, the petrographical characteristics, the mineralogical properties and the magnetic properties of Yamato (a), (b), (c) and (d) meteorites, which were collected in 1969, are altogether summarized.

Since the storage and distribution of these Yamato meteorites have not been fully regulated, only general properties of these meteorites are reported in this volume. Detailed studies, for example the dependence of the cosmic-ray exposure age upon the depth from the surface of a meteorite, would be systematically performed on the Yamato meteorites collected in 1973 and 1974 and to be collected in the future.

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