Lower Devonian trilobite assemblages of Novaya Zemlya

by Jaroslav N. Spassky

with 3 figures

Abstract. Five trilobite assemblages are distinguished within the Lower Devonian deposits of the Novaya Zemlya Archipelago (USSR). The assemblages may be grouped into three major evolutionary stages which correspond to the early Lochkovian, late Lochkovian to Pragian, and to Zlichovian-Eifelian intervals. Marked interregional affinities between the assemblages of Novaya Zemlya and those of Urals, Altai-Sayan regions, Barrandian, North Africa, and especially Arctic regions of North America demonstrate the correlative value of trilobites particularly in the lower Lochkovian and Pragian.

Introduction

The Novaya Zemlya archipelago consists of two major submeridionally elongated islands with a lot of minor islands along their coasts. The west and east coasts are surrounded by the Barents and Kara Seas, respectively. The two major islands, virtually, are a single range flattened in the N and S and uplifted and divided in the centre. The northern part reaches its maximum height at 1500 m. The south end of the archipelago is a small montaneous plateau not exceeding 300 m in height. It is incised by deep river valleys and canyons. Most of the North Island is glacial. The South Island is almost ice-free.

The most important rocks of Novaya Zemlya are the Paleozoic and Quaternary deposits. The Paleozoic sequence is built of sedimentary and volcanic rocks dated as Middle Cambrian to Upper Permian (Geologia SSSR, vol. 26, 1970). The Novaya Zemlya and the Vaigach Island structures are incorporated into the Urals-Novaya Zemlya fold belt of late Hercynian age.

Within the SE part of the South Island of Novaya Zemlya (Fig. 1) the author has studied in detail 23 sections of Lower Devonian deposits to provide a bed-by-bed trilobite collection. Totally, more than 3000 trilobite specimens have been studied. The region in question severs as the regional stratotype area because all type and reference sections of regional stratigraphic units of the Lower Devonian are located here. The study area shows predominantly Lower Devonian carbonate deposits which rest conformably upon the Silurian ones and are overlain by shale-carbonate sediments of the higher Lower and of the Middle Devonian. A common feature of all Lower Devonian sections is a regular trend of facies development, namely from coastal shallow-marine towards the outer shelf regime.

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