Sedimentological Investigation of the Ladinian “Wettersteinkalk” of the “Kaiser Gebirge” (Austria)

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With 11 Figures

Summary

The Middle Triassic “Wettersteinkalk” of the “Kaiser Gebirge” (Nördliche Kalkalpen, Austria) can be divided into several types of carbonate facies, each of which can be assigned to the different areas of a reef complex.

A. Introduction

Dr. W. Heissel, Professor of Geology at the University of Innsbruck suggested a sedimentological investigation of the Ladinian “Wettersteinkalk” of the “Kaiser Gebirge” (Austria).

The following account represents a summary of the preliminary results.

Fig. 1. Area of study. The cross sections are projected into the recent topography. The base of each columnar section corresponds to the proper beginning of the section in the field.

The area of study is situated east of the river Inn where it cuts through the Nördliche Kalkalpen (Fig. 1). About 6000 m of vertical stratigraphic sections were examined in the northern part of the area (“Zahmer Kaiser”) and in the southern part (“Wilder Kaiser”), comprising nine sections with nearly 700 oriented samples.

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Most of the stratigraphic sections occur above dark-gray limestones with chert nodules ("Hornsteinknollenkalke") and above stratified calcarenites which are rich in crinoids; both horizons belong to the "Anisian Alpine Muschelkalk Series". The lower shale member of the "Raibler beds" (Carnian) forms the top of all the sections. Observations in the field showed that the entire area of the Ladinian "Wettersteinkalk" investigated can be lithogenetically and stratigraphically grouped into seven types of carbonate facies that comprise a general facies scheme. They will be described briefly and assigned to the different areas of a reef complex (for a definition of a reef complex, see SARNTHEIN, 1967: 119).

Fig. 2. Attempt of reconstruction of the palaeogeography of "Kaiser Gebirge" in the Lower Ladinian stage

B. Description of the Stratigraphic Sections

1. Section I

Section I is located at the eastern slope of the "Scheffauer". It includes a unit of layers with a thickness of 436 m and can be subdivided into 3 types of carbonate facies.

1. Carbonate Facies Type 1

Dark gray, thick-bedded (0.4 to 0.6 m) limestones, bioarenomicrites with detritus of crinoids, algae (dasycladaceae), and gastropods. The sedimentation took place in a calm (micrite), intermittently agitated (biodetritus) environment,