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ASPECTS OF REEF AND SEDIMENTOLOGICAL STUDIES (*)

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INTRODUCTION

CL. L. V. MONTY

This second yearly colloquium organized by the Center for Paleoecological and Sedimentological Analysis will keep on confronting past and present-day processes and records; it is indeed my conviction that geological and paleontological problems must be simultaneously approached by both ends; a *progressive* analysis will first define the historical status of the Present opening the door to its intelligent study whereas the subsequent *regressive* analytical phase will permit the interpretation of ancient situations in terms of the everyday laws of nature discovered in the Present.

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By confining its main interest to the Past, i.e. to the study of poorly recorded paleosituations, and by imagining « how things might well have been », the geologist risk to freeze his thoughts in an artificial logic that will eventually yield elegant solutions, but by no means natural solutions.

The Present is a show that we have to be at if we want to open our mind, multiply our ideas, sharpen our reasonning, discover the complexity of convergences in many biological and sedimentological responses vs. the diversification of acting processes (hence the ambiguity of the facts recorded in the geological column), if we want to wash away the numerous interpretative myths that have for long rooted in our reasonnings, in a word, if we want to interpret the Past properly, that is according to the logic of Nature. The Present as such however is not *the* key to *the* Past, but some given key to selected paleosituations on the one hand (and here, all the informations gained from the Present *must* always be confronted with stratal evidence which should never be transgressed), a board of schooling on the other hand.

Accordingly, if a good critical knowledge of the Present and of present-day processes is a prerequisite for a sound deciphering of the Past, we also must know and *feel* that Past (these Pasts) in order to be able to decide what to take and what to sift from the Present and reconstruct the puzzle of the Past with its own pieces and in its proper historical context.

The scope of today's colloquium is wide as it goes from coral colonies almost to plate tectonic.

Dr. HUBBARD will analyse the ecological and ethological meaning of coral colonies. She will show that the morphology of their skeletton is not simply a rigid taxonomical fact characterized by given types of « ornementations », but on the contrary is a functionnal adaptation down to the fine structural level. This morphology is hence in dynamic equilibrium with the ecological and sedimentological parameters. Hubbard will accordingly account for the zoneographic distribution of coral morphologies. Transposing her concepts to the Past she will finally propose an interesting interpretation of Paleozoic coral successions.

Passing to the reef level, J. SCHROEDER will then briefly describe some ways in which Recent reefs get cemented; he will approach the fossilization of the various cements by carrying comparative observations on Pleistocene reefs.

H. ZANKL (*) will then discuss the fabric and dynamics of reefs and will draw, from the Recent, theoretical concepts for analyzing and interpreting fossil (Triassic) reefs.

The second part of the colloquium will be devoted to sedimentological problems.

A. LEES will accuratly question the classic interpretation of ancient bio-calcarenites as reflecting tropical seas. Studies carried from the high latitudes to the equator show that cold or temperate water carbonates are as much worthwhile being considered than the intertropical ones. Compositional analysis of the recovered sediments provide data for distinguishing cold from warm water carbonates. Lees conclusions will however be careful as he found significant interferences between temperature and salinity, interference which may alter the simplified presented scheme.

R. GARRISON will take a further step and introduce pelagic sediments and their diagenesis. His objectives will be to show that if marine geology has frequently be

(*) Manuscript not received.

the source of models that could be applied to sedimentary deposits on the continents, the classical geological models drawn from the study of sedimentary rocks on land become more and more needed to interpret deep sea cores correctly. Land and Marine geology are hence complementary.

Finally, J. W. MURRAY will provide a detailled study of the Cenozoic sedimentation on the Western Canadian Shelf. He will illustrate the importance of tectonic control on sedimentary filling, whereas both tectonic and depositional features will be related to Ocean floor spreading.