

## NOTES

Abstract:Sedimentological Studies of Recent and Old Sediments,  
A Comparison, by D. J. Doeglas \*

The author had planned sedimentological studies of modern sediments during the war. Afterward studies were made of the tidal flats in Holland (A. Koning), continued by Dr. vanStraaten, of the continental deposits by the Netherlands Soil Survey Institute and by students of the author of the Rhine River (Van Andel), the Rhone River and its delta (Van Andel and Kruit) and the Persian Gulf (Houbolt).

In cooperation with Prof. Kuenen a study was made of the delta front deposits of the Orinoco delta by Dr. Nota and Dr. Koldewijn.

In the U.S. extensive sedimentological studies have been made of the Mississippi River and delta, the Gulf coast (Fisk, Moore, Scruton and Shepard) and the California coast (Scripps Institute).

In a relatively short time a very large amount of valuable data of various modern environments has been collected. In 1955 the author returned to studies of old sediments. He found with surprise, how little of the data of investigation of modern sediments could be used for the interpretation of old sedimentary formations.

In modern sedimentary environments the regional distribution of the properties of sediments and age are accurately known in a comparatively thin top layer. Modern marine environments, furthermore, have been formed during the last 5,000 years after one enormous transgression with a sea level rise of more than 200 feet. Modern delta deposits, therefore, have thicknesses of more than 200 feet (one sequence).

The study of the recent sediments has been carefully planned. Accurate field and laboratory investigations have been made on a large scale.

In old sediments the exact regional distribution of one layer is hardly known. Studies have to be made in outcrops with a limited horizontal extent. The vertical distribution and sequences of the deposits, however, can be studied much better than in modern sediments. The sequences are much thinner than in modern sediments due to a more rapid change between transgressions and regressions. Cyclothem in the Western European coal measures (delta and coastal deposits) vary

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between 12 and 24 feet thickness.

The accuracy of the field and laboratory methods has been much less than of studies of modern sediments.

New techniques for accurate studies of the old sediments were needed. The long descriptions only can be compared with difficulty and the general lithological logs don't give enough information.

The graphic methods of Lombard, Carozzi and others only depict a small number of the properties of sedimentary formations.

A detailed graphic logging method which shows all sedimentary properties in a semi-quantitative way has been developed and used in studies of various formations. Field and laboratory data are shown. Paleontological, petrographical and other data as Schlumberger logs can be added. It can be used for presentation of well logs.

At present our main purpose is to collect a series of standard detailed graphic logs of known fossil environments. They will form a base for comparison. Logs taken from similar environments have the same petrographic and paleontological properties. A second aim is to determine if petrological properties alone will be sufficient to fix the kind of environment.

A number of profiles taken from shallow and deep water environments will be shown. They include the Molasse from Switzerland, Upper Devonian from Germany and Belgium, turbidity current deposits (Flysch) from the South of France and the Apennines in Italy, coal measure deposits from Belgium and modern estuarine deposits from Holland.

The study of recent sediments should be made by borings from which undisturbed, oriented cores have been collected. Lacker or plastic films show the structures very well, and enable to draw graphic logs for comparison with old deposits.