

Studies on the Bottom Deposits of the Egyptian Lakes

Massoud A.-H. SAAD

Oceanography Department, Faculty of Science, Alexandria University, Moharem Bey, Alexandria (Egypt)

SUMMARY:— Sediment samples were collected from six Egyptian lakes and subjected to some physico-chemical investigations. Variable amounts of organic matter, calcareous substances, allochthonous materials and diatom-silica were deposited on the bottom of the Egyptian lakes. The distribution of these components in the Egyptian lake sediments was found to depend upon certain factors which were discussed.

Lake Manzalah, Lake Brollus, Lake Edku, Lake Mariut and the Nozha Hydrodrome are situated at the north of the Nile Delta, whereas Lake Qarun is found in Upper Egypt southwest of Cairo. The first three lakes are connected to the Mediterranean Sea and hence their chlorosity varies according to locality and season. All these lakes receive huge amounts of drainage waters, except the Hydrodrome which feeds from the Nile water. The present work was undertaken to study the nature and composition of sediments collected from these lakes and to compare the results from each lake with those of the others, since each lake has its own limnological characteristics. Sediment samples were collected from three different localities in each lake. The samples of each lake were mixed to form a composite, which was subjected to some physical and chemical investigations.

The external events have a remarkable effects on the nature, composition and distribution of the Egyptian lake sediments (Saad and Arlt, 1977, Saad, 1978). The allochthonous mineral materials entering into the Egyptian lakes mainly with drainage and sea waters, as well as by the influence of the prevailing wind are distributed by water currents throughout most of the lakes. The recent allochthonous sediments cover the autochthonous organic sediments or mix with them. Consequently the exchange of elements between the sediments and the upper free water is greatly reduced (Saad, 1984).

The maximum density of wet mud found in Lake Edku sediments coincided with the maximum value of dry matter and the minimum value of water content. This reflects the large quantities of allochthonous minerogenic materials entering into this lake via drainage and sea waters, giving the maximum value. However, the sediments of Lake Mariut showed the opposite trend; being soft due to the influence of heavy pollution (Saad, 1972).

Variable amounts of organic matter were deposited on the bottom of the Egyptian lakes. The great amounts of organic matter found in the sediments of Lake Brollus and Lake Qarun are due mainly to the increase in the amounts of allochthonous supply and autochthonous production of organic matter. In spite of the influence of organic pollution on Lake Mariut, the organic content in its sediments was relatively low, due to the high intensity of decomposition of organic matter (Saad, 1972).

The bottom of the Egyptian lakes are characterized by accumulation of shells and shell fragments of calcareous organisms (Saad, 1978). The increase in the amounts of calcareous substances in the sediments of Lake Brollus, Lake Edku and Lake Qarun is due to the abundance of these shells (Saad and Arlt, 1977, Saad, 1984).

Diatomaceous silica were deposited in variable amounts on the bottom of the Egyptian lakes. The maximum value of diatom-silica found in Lake Qarun sediments reflects the richness of these sediments with diatom shells (Saad, 1976, 1984). However, the minimum amount found in Lake Mariut coincided with the scarcity of diatom frustules in the sediments of this lake.

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