M.S.79. CHANDRA PRABHA, A.C.–Studies on Oxygen Minimum Layer in the Arabian Sea in relation to Oceanic Circulation–1987–Dr. G.S. Sharma.

The thesis is an attempt to study the unique and peculiar characteristic features of the oxygen minimum layer occurring at the shallowest depths and also with lowest concentration in the Arabian Sea compared to any of the oceanic region in the world, in relation to the oceanic circulation.

The aim of the study is achieved by working out the topography of the oxygen minimum layer and also the oxyty within it.

The data for the present study mainly come from those collected on board different research vessels during the International Indian Ocean Expedition (1960–65).

In general, the oxygen minimum layer in the Arabian Sea mostly lies within the isanosteric surfaces of 180 to 220 cl/t and 200 to 240 cl/t during the southwest and northeast monsoons respectively, except very near the coasts particularly off Somalia and Arabia.

In the Arabian Sea, oxyty in the oxygen minimum layer showed southward increase during the southwest and northeast monsoons.

In the open sea, alternate cells of high and low oxyty are conspicuous especially during the southwest monsoon, as a consequence of cyclonic and anticyclonic circulation with hyperbolic points in between them.

The depth of the minimum layer decreases towards south. The oxyty on the isanosteric surfaces increases southward, while the isanosteric surfaces slope up southward.

An important feature observed during the southwest monsoon is the shallowest topography and high oxyty on all the surfaces, off Somalia and off the Arabia Coast.

The vertical advection is much less and it is the horizontal advection that mainly controls the minimum layer during the northeast monsoon compared to that during the southwest monsoon.

High oxyty waters from the south are transported towards north along the westernside of the Arabian Sea in the Southwest Monsoon Season.

The present study confirms the hypothesis of Wyrtki (1962) and is against the opinion expressed by Sverdrup (1938) and Sverdrup et al. (1941) that the biochemical processes control the oxygen minimum layer.