INTRODUCTION

In any natural aquatic ecosystem there are three major groups of organisms : producers, consumers and reducers.The first group is responsible for the production of organic matter on which the second group is entirely dependent and the third group is responsible for decomposing and mineralizing the first two groups of organisms after their death and decay. Of the three groups of organisms, the first group may be considered the most important as it is responsible for the manufacture of organic matter through the primordeal process of photosynthesis. The problem of measuring primary production in natural waters, then, resolves itself into the measurement of the photosynthetic rates of the aquatic macro- and micro-plant communities.

The macro- and micro-plant communities in any aquatic biosystem may be broadly sub-divided into three categories: macrophytic aquatic vegetation,

free-floating phyto-plankton and periphyton. The limnological literature dealt mainly with the biological productivity of phyto-plankton in fresh water environments and seldom with macrophytes and/or periphyton until emphasis was laid by the PF (Freshwater Productivity) of the IBP (International Biological Programme) for studies on all aspects of biological productivity during the last decade. The contribution of littoral and benthic regions to higher trophic levels, though really great, has not yet been realised.

If that is the case in the highly technically advanced countries of the west, the situation in the tropics is not very encouraging. The metabolic cycles occuring in these regions must be rapidly proceeding, and involve characteristic mechanisms that are different from those found in temperate zones. Talling (1965) has drawn attention to the absence of data relating to fundamental knowledge of production processes in tropical waters for comparison with the more numerous accounts from temperate waters. It is also stated in the IBP News No.17 (1969) that in

in the tropics "Great deficiences appear even in the preliminary knowledge of inland waters and their flora and fauna". The paucity of information relating to organic production in the so-called under-developed and developing countries like India where the dry and wet seasons alternate and water level changes drastically, has to be attributed according to Stepanek (1965), to the absence of trained workers or specialists in this particular field for determining productivity directly. Sophisticated instruments for determining surface and under-water radiations intensities for integrated depth photosynthesis are also not available. Inspite of these handicaps an attempt has been made in the investigation reported here to make a comparative study of the primary productivity of higher aquatic plants, periphyton and phyto-plankton in a large shallow reservoir called the Ajwa reservoir which is the source of water supply to the Baroda city in the Gujarat State, India, by simple methods which may lead to results which may be considered as approximations. Still they represent a definite advance and do contribute to our knowledge of production of tropical waters.