INTRODUCTION

Limnology, which deals with the biological productivity of inland waters with all the physical, chemical and biological factors which affect it, is a subject of growing interest. The dependence of man - agriculture, industries and food supply - on water has created critical problems for adequate supply and satisfactory quality of water throughout the world. These problems are bound to increase as the world population increases. Because of this interrelationship of water and its resources with human beings, the limnologist may play an important role in solving these problems.

Lakes, ponds and reservoirs have many uses. Some persons take interest in these waters for recreational purposes (such as swimming and boating etc.) and some for controlling floods, developing power and culturing different communities of aquatic animals, mostly fishes. In India most of the ponds are also used for the cultivation of *Trapa bispinosa*um crop. Under such circumstances greater changes take place in limnological conditions of the environment, which affect the recreational and commercial uses of these waters.
In comparison with many other sciences, Limnology is still in its developing stage in India, although it already has become reasonably mature in many other countries of the world. In India with the increasing demand of fish food, water supply and power development some States have already taken steps to investigate the hydrobiological conditions in lakes, ponds, bogs and reservoirs etc.

In India great regional differences in topography, geology and climate exist. As a result of these differences, the limnological resources (lakes, ponds and reservoirs) are very unevenly distributed. The inland water resources are enormous to support extensive and regular fisheries of various kinds. The inland fisheries include, besides capture fishery of the rivers, lakes and large bodies of waters, the culture fishery whose contribution to the dietary of man is of highest importance. From the catch statistics of these waters it becomes quite clear that the fish production is very low in comparison to those of other countries like China, Japan, Indonesia and Phillipines etc. The efforts for increasing fish production in inland waters are underway. However, any effort towards developing the fish resources requires an intimate knowledge of physical, chemical and biological properties of the environment.
Most of the limnological researches have been conducted by persons associated with the permanent centres for limnological studies at Mettur Dam, Annamalai (South India), Cuttuck, Barrackpore, Baroda, Delhi and Aligarh (North India). Fisheries departments of various states are also contributing significant knowledge to different aspects of limnology. Important contributions from India in the field of limnology are those of Pruthi (1933), Ganapati (1940, 1949, 1955 and 1960), Chacko and Ganapati (1949), Alikunhi et al. (1961), Chacko and Krishnamurthy (1964), Alikunhi et al. (1966), Das and Srivastava (1965), George (1961 and 1962), Gulati and Sarkar (1961), Singh (1961, 1962, 1963 and 1964), Krishnamoorthy and Visveswara (1963), Sreenivasan (1963, 1964a, 1964b, 1964c, 1964d, 1965a, 1965b, 1966 and 1967), Ramanadham et al. (1964), Sarkar and Rai (1964), Sreenivasan et al. (1964), Rama Rao (1964-65), Hussainy (1965a, 1965b and 1967), Arora (1966), Ray et al. (1966), Verma (1967) and Ganapati and Sreenivasan (1968).

Most of these studies mainly deal with ponds and reservoirs while the rivers and large lakes have been left unexplored. Besides, no organised efforts have been made to limnological studies of inland waters. It was, therefore, thought desirable to make an extensive limnological survey of North Indian inland waters. At first step the limnological study of Aligarh fish ponds
has been initiated by the Section of Ichthyology and Fisheries of the Department of Zoology, whereas limnological study of rivers and outer Himalayan lakes will be made in future.

The present work is an extensive study on the limnology of two freshwater fish ponds and has been presented in the form of this thesis for the Ph.D. degree of Aligarh Muslim University. Its scope and results can be assessed by going through the following accounts:

A systematic and detailed account of the physical, chemical and biological properties of two fish ponds of Aligarh;

A brief account of the aquatic resources and climatology of Aligarh region. Morphology, morphometry, thermal regime and light conditions in the ponds;

Chemical properties of the ponds with detailed account of the dissolved gases, ionic composition, dissolved nutrients, electrical conductivity and total dissolved solids;

An account of the plankton of the ponds, diurnal variations in some physical, chemical and biological properties and primary productivity.