INTRODUCTION
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The Object:

The object of this thesis is to contribute further to the knowledge of the fresh water algae (exclusive of Diatoms) of Aurangabad district of Marathwada region in the Maharashtra state. The present thesis consists of two parts.

I. Taxonomic study of fresh water algae of Aurangabad district with notes on their ecology.

II. A comparative study of algae of a semipermanent pond with those grown in cultures in the laboratory from the soil samples collected from the same pond.

Material and Methods:

A total of 2004 collections were studied. Almost all the collections were made by myself. The collections were made throughout the years 1975-1978 from 59 towns and villages in Aurangabad district. These algae were collected from all possible places of collections like pools, puddles, cisterns, tanks, ponds, lakes, talaoes, dams, rain water passages, waste water passages (gutters), streamlets, streams, rivers, dripping rocks, moist soils, moist stone walls, moist brick walls, tree barks, tap water cultures, pond water cultures, soil extract cultures. Home made plankton nets were used to collect the planktonic algae.

The collections were started immediately after the
commencement of the rainy season, that is in the first week of June 1975 and continued regularly till May 1978. Field note books are maintained in which the colour of the alga(e), habit, habitat and pH were noted down on the spot only. The pH of the water of the collection spots was found out by studying at least three samples of water from the three different places of the collection spots by using B.D.H. Universal indicator. On return to the laboratory from the field, the collections were cursorily observed under the microscope and important points were noted and if found necessary, more collections of the particular alga(e) were made immediately or within a few days as required. All collections were preserved in 4% commercial formalin added with 5% glycerin. These preserved algae were later studied in detail. Generally ten to fifteen random temporary mounts were made from each collection for microscopic observations for the detailed study except in cases where additional slides were necessary. Camera lucida diagrams of these algae have been drawn.

**Classification:**

Algae are divided into a number of divisions in accordance with International Rules of Botanical Nomenclature. However, phycologists are not in agreement with the number of divisions or phyla. Smith (1951, 1955) and Fott (1959) divided algae into seven divisions. Papenfuss (1955) recognized eight divisions by adding Charophyta. Moreover he
incorporated - phycophyta instead of - phyta as a suffix.
Chapman (1962) classified algae into four divisions, his
Euphyccophyta included Chlorophyceae, Charophyceae,
Phaeophyceae and Rhodophyceae. Christensen (1962) divided
them into two main groups - Procaryota and - Eucaryota based
on absence or presence of membrane of the internal Organelle.
Silva (1964) recognized eleven divisions while Bourrelly
(1966) divided into six divisions, he included Euglenophyceae
in Pyrrophytes. Prescott (1969) classified algae into nine
divisions. Same is the case with the lower ranks.
Algologists have different views regarding the number of
classes, orders, families belonging to a division.

The system of classification followed here is
substantially that of Smith (1951, 1955) and Prescott (1951).
Charales are identified according to Pal et al. (1962).
Chlorococcales are classified according to Philipose (1967)
and coccoid Cyanophyceae are classified according to Geitler
(1932), Desikachary (1959) and not according to Drouet and

Previous work on the freshwater algae of Aurangabad district:

The only work so far done on the algae of this region is
that of Kamat (1974, 1975). He has recorded 110 taxa from
Aurangabad district.

Organization of the Thesis:

The thesis is organized as follows -
First the object of the thesis is given and then the material and the methods are stated. A brief account of algal classification is given. Previous work on the freshwater algae of Aurangabad district is then mentioned.

Part I includes the geographical position, rainfall and temperature data of Aurangabad district and the algae collected during June 1975 to May 1978 are described and illustrated with notes on their periodicity and their associations in different habitats.

The second part gives the comparative study of algae of a semipermanent pond with those grown in cultures in the laboratory from the soil samples collected from the same pond and using pond water as culture medium.

Concluding remarks, summary and references are given at the end.