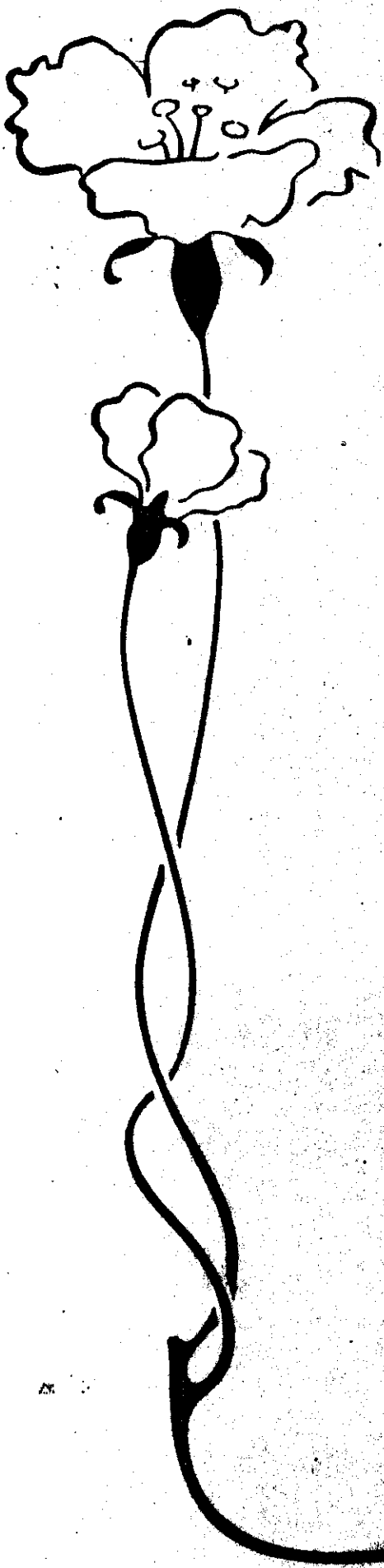

# *Introduction*

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Progress in the commercial culture of many marine animals is currently being hampered by an inconsistent supply of feed. This is due, in part, to the difficulty and expense associated with securing large, predictable quantities of high-quality live feeds, especially micro-algae and rotifers (Droop 1975, Horstmann 1985). Live animals and plants are used as feed for many types of commercially important aquatic organisms, and although research continuous, inert feeds have not fully replaced by live feeds.

In particular, micro-algae are of great importance to the commercial culture of bivalves (larvae, juveniles and adults), crustaceans (mostly the early larval stages), zooplankton, and to a lesser degree, finfish (larvae and / or adults), Horstmann 1985, De Pauw and Pruder 1986. The large scale, intensive production of microalgae suffers from two major problems: it is expensive and often unreliable.

Silver carp larval rearing often depends on the production of phytoplankton. Phytoplankton serve as feed for the fish larvae. Feeds production must be consistent in quality and quantity for the duration of the hatchery cycle if larval rearing is to be successful. Phytoplankton production can occupy the majority of the space and labor allocated to larval rearing.. Phytoplankton production generally requires the most space. Therefore, any improvements in the production of algae have the potential to improve overall hatchery production.

As natural sites for the cultivation of fish become rarer due to decreasing water quality and grow-out facilities will have to increase to sustain production levels. However, the limiting factor in determining the

carrying capacity of such facilities is the mass production of algae (De Pauw et al., 1983, 1984, Walsh e al., 1987). The batch culture technique commonly used in most facilities is a rather simple and reliable method, but makes inefficient use of the production capabilities and manpower of the facility.

The use of semi-continuous and continuous algal production systems allows dominant cultures to be maintained easily by manipulation of environmental parameters including temperature, light, pH, and nutrient enrichment. Additionally, algae can be maintained in the exponential growth phase, allowing for indefinite culture periods and increasing the amount of algae produced per unit volume (Ukeles 1971, Palmer et al., 1975, Trotta 1981).

Microalgae are indispensable as feed in today's intensive fish. Although most of the major biological issues related to culturing microalgae have been resolved, the task of growing enough feed to supply the needs of a commercial fish rearing and hatchery can be unreliable and unnecessarily expensive. The workshop focused on the techniques and hardware used to culture of micro-algae.

For economic production of ***Chlorella*** it was intended in this research to find a cheap source of nutrients in the medium for growth of ***Chlorella*** and also optimum conditions for production of ***Chlorella*** cells in a large scale. On the other hand, an outdoor mass-culture of ***Chlorella*** grown in a nutrient solution containing inorganic nitrogen was carried out. The product of this culture was subjected to chemical and biological evaluation for its nutritional value.