INTRODUCTION

The role played by fishes in food production and health of man is being increasingly appreciated. India, a country with population of about 700 millions, faces the biggest problem of fighting hunger and malnutrition. The productive capacity of any nation is directly related to the level of health and nutritional status of its population. The importance of fish as an indispensable item of nutrition is now fully realized. Fishes are one of the richest sources of proteins, calcium, phosphorus, vitamins, and other minerals. Fishes, however, are easily susceptible to helminthic infections which cause considerable damage to them and in acute cases of infection may result in their death. Moreover, fishes also spread diseases to man and other domestic animals since many of them serve as intermediate hosts for parasites. The fishes constitute an important and the most nutritious diet supplement of a considerable population of this country; these should not be allowed to suffer from any disease by which their mortality occurs and have to be kept free from any parasitic infection.

It is, therefore, imperative to know the parasites infecting fishes and their systematic position in the animal kingdom. The cestodes represent a group of organisms which present many features of exceptional physiological interest.
They are unique amongst parasites in that the adult invariably occupies only one particular type of habitat—the alimentary canal of vertebrates and very rarely found outside of it. Although a large number of cestode parasites have been reported from various parts of the world, only a little work has been done in India on the cestode parasites of fresh-water fishes. The present systematic studies are made on cestode parasites found in the fishes of Gobind Sagar Lake and its associated tributaries in northern India. As many as seventeen species of cestode parasites representing twelve genera under five families have been recovered from the different fishes (list given) of the above water resources. Of these, three are found to be new and fourteen already known species. All these have been described in this text. Revised keys to the species of five genera are given. The keys to species of rest of the genera are already available in literature.

During recent years the application of biochemical, biophysical, physiological and immunological techniques have enabled us to understand the physiology of parasites. Some of the least studied areas, are histochemistry, ultra-structure and metabolic activities of host-parasite interface. As a first step it is essential to know the chemical constitution of the parasites and its interaction with the environment.

The histochemistry of cestodes has been studied by many
authors but the literature concerning the histochemistry and physiology of fish cestodes is scanty. The study of fish cestodes were generally limited to systematics only.

Since numerous physiological studies of endoparasites have shown considerable differences, often between taxonomically closely related forms, in the present studies an attempt has been made to study the comparative histochemical studies on the three cestode species to determine what differences, if any, exist in the distribution of carbohydrates, proteins, lipids and nucleic acids. The cestodes selected are: one, proteocephalid, *Proteocephalus vitellaris* Verma, 1928 (Family Proteocephalidae La Rue, 1911), and two caryophyllaeids, *Bovienia serialis* (Bovien, 1926) Führmann, 1931 and *Lytocestus indicus* (Moghe, 1925) Woodland, 1926 (Family Caryophyllaeidae Leuckart, 1878).

A great deal of information is available on the pathological changes caused by adult cestodes in domestic and laboratory animals. Heavy infections of dogs with *Dipylidium caninum* and *Echinococcus granulosus* cause acute or chronic intestinal cattarrh, small haemorrhages, hypertrophy of intestinal villi, atrophy of tubular glands and hypertrophy of connective tissues. In poultry, cestode infections are reported to produce capillary congestion, slight lymphocyte and polymorphonuclear cell infiltration in the villi around the scolices, moderate proliferation of epithelial cells and
areas of fibrosis containing active fibroblasts (Rees, 1967).

In spite of such a keen interest in the subject, however, the pathological changes caused by adult and larval cestodes in fishes and other lower vertebrates have not received much attention in this country. An attempt has also been made to study the histopathological changes caused by Bovienia serialis and Proteocephalus vitellaris in the wall of intestine of fish hosts.