Preface:

Progress in Parasitology with the aid of the microscope was rapid, but the discovery of the life cycle and the diversity of the intermediate hosts, of immunity and epidemiology, are a modern legend and not part of this early history. In 1721, a little volume appeared, entitled “A History of Worm” it was written by a Dr. Leclerc, translated from the Latin into English, and Published in London. It may well be that this manuscript is the first and only. Such history of worms to be published. It was written at the end of the particular era in scientific through and before our modern age began. (Stewart, 1951.)

Birds are having high economic value, as they provide the highly nutritious food for deadly growing people. Birds are also important component of ecosystem as well as of high economic value, which are reared by rural and suburban people of India for their eggs and meat as a source of animal proteins and farm manure.

A huge loss of bird (Gallus g. domesticus) due to disease is being faced by farmers due to management related problems. It carries infection of varied types of parasites. i.e. Helminthes, protozoans, viruses etc. Intestinal cestode infections have a serious impact on (Gallus g. domesticus) poultry health productivity, quality and quantity of meat. The infections of helminth parasite are found in desi birds eg. Cestode, Nematodes, Ascaridia species Cause ascaridiosis which reduced the food value of poultry and increases the mortality which in turn affects on total production and high economic loss to farmers as well as nation too.
The cestode infection in gastro-intestinal tract of birds is more common which affects their growth rate, malfunctioning of organs. In some instances, there is no apparent disease but reduces productivity. Severity of diseases can depend on type of parasite or the number of parasites involved. (Fathiu, M.V.1991). Heavy infection characterized by emaciation, mucoid diarrhoea, anaemia, paralysis and death of bird. Associated with parasitic infection are acute or catarrhal inflammation, maceration and thickening of gastro-intestinal tract.

Hence, keeping in mind the economical and food value of birds for human, the author has undertaken the work on study of cestode parasites from birds. In India, the pioneer workers on systematic and morphology of cestode parasites are Johri, Gupta, Ali, Woodland, South well, Bhalerao, Thaper, Foetdar, Rajeshwar Rao V., Singh, H.S. Nama, Malhotra, Pande, Capoor, G.B. Shinde, B.V. Jadhav, Hiware C.J. and H.J Wankhede

The author has examined the gastro-intestinal tract of *Gallus g. domesticus* from Aurangabad district and study was conducted for Taxonomy, Seasonal Variation, and Haematology of cestode parasites as well as histopathology of host intestine. The drawings are made with the aid of Camera lucida. All the measurements are given in millimeter.


All the slides are deposited in the Helminthology Laboratory, Department of Zoology, Dr. Babasaheb Ambedkar Marathwada University Aurangabad. M.S., India.
GEOGRAPHICAL BACKGROUND OF RESEARCH AREA

Maharashtra state is located in the north of peninsular India. It is surrounded by the Gujarat, Madhya Pradesh, Chattishgarh, Andhra Pradesh, Karnataka and Arabian sea in the west. This state is physically homogenous but the landscaped of this state is dominated by a plateau viz. Sahyadri, Satpuda, Satmala, Deccan, Ahmednagar, Buldhana and Yavatmal.

The entire state has been divided into six administrative divisions. The divisions are further divided into 35 districts. Out of that Aurangabad is the divisional place. Marathwada region comprising of eight district, viz. Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad and Parbhani.

Location

The location co-ordinates for Aurangabad are N 19° 53' 47" - E 75° 23' 54". It is located 515 meters above sea level. The total area of Aurangabad district is of 10,107 sq. km. Population density of Aurangabad district is 289 sq. Km the climate of this district is hot and humid. The district is surrounded by hills on all sides. Roughly triangular in shape, the southern side corresponds to the godvari and the northern side to the northeast trending arm of the Ajanta ranges. With an extreme east to west distance of nearly 175 kilometers, this district is bounded by Jalgaon district of the north, Buldhana and Jalna districts on the east, Beed and Ahmednagar districts on the south and Nashik district on the west. The district is divided into nine tahsils viz. Aurangabad, Paithan, Sillod, Kannad, Soygaon, Vaijapur, Phulambri, Khultabad and Gangapur.
**Boundaries**

The norther boundary separating this district from that of Jalgaon lies mostly in the northern piedmont zone of the Ajanta Range. Only to the northwest of Kannad town it deviates to the south of the Ajanta range and then follows for some distance the crest of the range itself before it turns northward into the piedmont. Only in two more small stretches it follows the crest of the range in the northwestern portion of the district, one toe the north of Dhayda and the other to the east of Vadhona. The eastern boundary also is a zigzag, one following no natural feature except for a small stretch along the Dhamna River and another along the southwestern edge of the Buldhana plateau, and a dew smaller stretches along some small streams, such as the Madhnai River and the Dol. nadi. Unlde the other boundaries, the southern boundary is wel defined as it coincides with the bed of the Godavari except far some half a dozen small deviations, the easternmost of them south of Paithan being the largest. The western boundary separation the district from Nasik district is again purely one for administrative convenience and historic accidents without any natural significance.

**Physical Features**

The district being a part of the Deccan plateau sloping southeastwards from the Sahyadris has many features in common with other districts of the Deccan of like location. The southeasterly trending chandavad range in Nasik district becomes very subdued in the western part of Aurangabad district as a result of dissection in north-south but opposite directions by the
Mainiyad and shivana rivers in a probably structural depression. East of the latter rising steeply the Ajanta plateau begins with elevations of over 900 meters and slopes gently eastwards to be drained by the Purna and its tributaries. The northern edge of this plateau is a continuation in an east-northeast direction of the Chandavad range after the above mentioned depression as the Satmala or the Ajanta range. This presents a pronounced scarp face towards the Tapi valley of the north and a gentle back slope to south on the plateau. The energetic northward flowing tributaries of the Tapi have in several places cut across the scarp by their active head ward erosion and extended their source regions farther south into the plateau, sot that the water divide between the Tapi and the Godavari drainage has receded from this scarp and has become low and indistinct in several places.

The Satmala hill (3093 ft or 943 meters) from which one of the names of he range is derived is situated north of Kannad town. The Outram Ghat providing road communication from Karmad to Chalisgaon across the Satmala range is situated about 7 km. to the west of this Satmala hill.

The Satmala range contains several hill forts on it overlooking the Tapi valley to the north. From west to east they are Antur (2704 ft. or 826 meters), Sutonba(1812 ft or 552 meters), Abasgadh (2202 ft or 671 meters), Baithaulvadi (2052 ft or 625 meters and), Ajanta.

**Climate**

- **Season**
The climate of the district is characterized by hot summer and general dryness throughout the year except during the southwest monsoon season. The year may be divided into four seasons. The cold season from December to February is followed by the hot season from March to May. The period from June the September constitutes the southwest monsoon season. October and November forms the post-monsoon season.

- **Rainfall**

Most of the rainfall occurs in the monsoons season (June to September). Rainfall in Aurangabad varies from 9.0 to 693 mm/month. Average annual rainfall is 750 mm.

- **Temperature**

Annual temperature of Aurangabad district range from 9 to 40 °C. The best time to visit Aurangabad is in the winter - October to February. The highest maximum temperature ever recorded at Aurangabad was 46 °C (114 °F). The lowest record temperature was 2 °C (36 °F). The climate of Aurangabad is mild compared to other cities and remains lower scaled in summer compared to other cities. Rarely the mercury touches 40+ degrees Celsius.

- **Humidity**

Except during the southwest monsoon season when the relative humidity is high, the air is generally dry over the district. The summer months are the driest when the relative humidity is generally between 20 and 25 % in the afternoons.
Material and Methods

Material and Methods

Taxonomy

For the taxonomical study of cestode parasites, the intestine of host *Gallus g. domesticus* were dissected longitudinally and parasites kept in distilled water. Then cestodes were collected, flattened and preserved in 4% formalin. These cestodes stained with Harris haematoxyline, washed in distilled water, dehydrated in ascending grades of alcohol, cleared in xylene, mounted in D.P.X and drawing are made with the aid of camera lucida.

Seasonal Variation

Gastrointestinal tract of the host *Gallus gallus domesticus* were collected from different location at Aurangabad Districts during June 2009- May 2011. The Gastrointestinal tract were examined and recorded the data of infected and normal gastrointestinal tract. After the separating and counting the prevalence of cestode parasites host. Cestode parasites were preserved in separate bottles. Some of these were used for the taxonomic study. Calculations were based on the following formula.

\[
\text{Prevalence of Infection} = \frac{\text{Infected hosts}}{\text{Total hosts examined}} \times 100
\]

Prevalence of infection - It is the percentage of host infected by particular species of cestode parasites.
**HISTOPATHOLOGY**

For the histopathological study the infected intestine and normal were cut in to small pieces and were fixed in Bouin’s fluid. After 48 hours, these tissues were cleared, dehydrated and embedded in paraffin wax. The fixed blocks were cut at 7 μ. These slides were stained with Eosin-Hematoxylin double stain.

**HAEMATOLOGY**

The study site was conducted during two year period in June 2009 – May 2011 and was carried out at Helminthes research laboratory dept. of Zoology Dr. B.A.M.University Aurangabad districts.

The Host *Gallus g. domesticus* were used for this study. Both Normal and infected were used for sampling.

**Sampling:** Blood sample collected from *Gallus domesticus* at Aurangabad district. Blood sample selected for haematological study from heavily infected host through tapeworms from same locality. Simultaneously blood sample collected of normal host. Blood sample were collected from the wing with a sterile hypodermic needle and syringe and examine intestine for cestode infection of the same host. Blood sample from heavily infected hosts were used for determination of blood parameters (Hb, RBCs, WBCs, PCV, MCV, MCH, MCHC) and differential leucocytes viz, neutrophil, Lymphocytes, monocytes and eosinophil etc. Haemoglobin estimation was done by Sahlis acid haematin method, total RBC count, Total WBCs count and PCV were done by
Material and Methods

PCV

- \( MCV = \frac{Hb \times \text{RBC count}}{1000} \)

Hb Value

- \( MCH = \frac{Hb \times \text{RBC count}}{1000} \) \text{Express in Picogrammes} \)

Hb

- \( MCHC = \frac{Hb \times \text{PCV}}{1000} \)
PLATE - II

HOST

Gallus gallus domesticus Linnaeus, 1758
PLATE - III

Working in Laboratory

Collected Cestode Parasite