PART - V

CONCLUSION.
CONCLUSION

Structural modifications of the birds are primarily in accordance with the aerial mode of life. The Columba livia (pigeon), Gallus domesticus (fowl) and Milvus migrans govinda (Kite) vary greatly so far as their flying adaptations are concerned. The pigeon flies more while compared with the fowl, and the kite flies most. The domestic fowl which had possibly its origin from the Gallus gallus (jungle-fowl), though built on the lines of a flying, and not of a running bird, does not possess any notable capacity for flight. The kite is an actively flying bird, and the pigeon stands in between the two. Differences in their flying capacity may account for differences in their structural and functional modifications.

Tyne and Berger (1953) stated that in 50% of some of the falcons and also in some other birds, bilateral symmetry occurs so far as reproductive organs are concerned. Tendency of bilateral symmetry of this system, as it mostly occurs in falcons, may be due to active flying habit at a relatively high altitude. If this factor is in operation in the mechanism of evolution, it may lead to appearance of bilateral reproductive organs in all the actively flying birds.
The persistent left oviduct of birds with an atrophy of the right side is an interesting subject of study. The real basis is evidently hormonal and is based on the physiological function of the cell-types of this part of the reproductive system. The work envisaged a more complete understanding of the problem on the basis of cellular response to oestrogons and other sex hormones with regard to the oviduct and the nature of the histological, histochemical and biochemical response.

Histological studies show presence of tubular gland cells in the corium of the vagina in hen (contrary to Bradley and Grahame, 1950), as well as in the pigeon and kite, indicating secretory process in this region. These glands make positive contribution to mucus secretion which helps in the act of laying. Besides, the corium of the magnum, isthmus (excepting at the constriction), and uterus contains tubular gland cells contributing secretory materials in the egg. Vascularity of the oviduct of the kite exceeds that of the other two species, while the pigeon stands in the intermediate range. Increased vascularity is, probably, related with the greater activity of these birds. The muscular coat of the blood vessels in the oviduct becomes more prominent in the pigeon and most so in the hen. On the other hand, the lining epithelium of the reproductive tract gradually loses the pseudostratified double layers in the uterus and the vagina of the hen.

Histochemistry shows fundamental differences in the reaction of alkaline and acid phosphatases in the oviducal
components. The reaction is quite weak in the oviducts of the kite and the pigeon, as contrasted to the hen, indicating that the oviducts of these birds are not suitable for transfer of phosphorylated compounds. In the laying hen alkaline phosphatase activity is greater than the pigeon possibly due to larger size of the eggs in hens, which necessitates greater secretory deposition on the egg. Increased reaction of nucleic acids in the chief secretory zones, viz. magnum, uterus and vagina, is possibly, related with the increased physiological activities for protein synthesis in those regions.

In the hormone stimulated oviducts of the pigeon (45 days and 65 days old), it is observed that the oestrogen causes prolific morphological growth, but glandular development, related with the physiological activity, is caused by the treatment of oestrogen followed by progesterone or oestrogen and progesterone in combination. So, it is evident that synergistic effect of progesterone is required for bringing about physiological activities. The reaction of RNA is almost insignificant in the control groups, whereas it is much increased in the sex hormone stimulated oviducts. The behaviour of this cytoplasmic nucleic acid may be explained by the fact that the cytoplasmic nucleic acid sharply falls with the establishment of an organ and may be increased in those cells which are actively concerned with the production of large amounts of protein (Danielli, 1953).
High percentage of protein is found in the different oviducal components, being maximum in the magnum, the chief albumen secreting region, and is correlated with its secretory activity. Of the different amino acids, leucine, isoleucine, valine, threonine, glutamic acid, aspartic acid, and serine were detected in all the five regions of the oviduct by the paper chromatographic method, and chromatographic analysis of the fat of the oviduct revealed the presence of high percentage of oleic acid, palmitic acid and stearic acid.

References cited in the conclusion are listed below:

