

# CAUSES OF DEATH OF BIRDS AT SLIMBRIDGE, 1955—1957

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## Introduction

A TOTAL of 680 birds has been examined in the period 1955-1957. Routine post-mortem examinations have been carried out and where necessary bacteriological, parasitological and histological examinations have been made. The annual mortality and the causes of death are summarised in Table I. The birds have been assigned to three main age groups; adults, immature and downy young and newly hatched chicks. The numbers of birds do not represent the total mortality at Slimbridge since not all dead birds were examined post-mortem. This is particularly the case in regard to the newly hatched young because, when very large batches of chicks were received at the laboratory, only representative samples were examined.

TABLE I

Causes of Death	Adults			Immatures			Chicks			Total
	1955	1956	1957	1955	1956	1957	1955	1956	1957	
Organic Disease ..	—	5	9	3	24	45	—	51	84	221
Parasitic Disease ..	1	6	8	6	5	3	—	—	—	29
Cysts and Tumours ..	1	6	6	1	2	—	—	—	—	16
Dietetic Disease ..	—	1	2	—	9	7	—	6	7	32
Disease of Serous Membranes ..	1	5	5	—	—	7	—	1	—	19
Trauma ..	—	3	4	—	1	2	—	1	2	13
Infectious Disease ..	6	7	17	49	11	28	2	4	14	138
Causes not determined	8	14	5	57	14	9	17	60	27	211

## Organic Disease

**Respiratory System.** The largest number of deaths were classified under this heading due to the very high incidence of acute pulmonary congestion and pneumonia amongst the very young birds. Sudden lowering of the air temperature often associated with heavy rainfall brings about this pulmonary syndrome which is often referred to as "chilling." This type of acute respiratory disease is a common cause of high mortality in free living species and it is of interest that the same conditions seem to apply even under conditions of semi-captivity. The changes at post-mortem are quite typical and comprise acute congestion and oedema of the lungs, an enlarged gall bladder full of viscous bile and usually an unabsorbed yolk sac.

**Circulatory System.** Two cases of a congenital heart deformity were encountered, one in a N.Z. Brown Duck, and one in a Ruddy Duck. In both cases there was a large aneurysm of the left ventricle. In three birds, a Ne-Ne, a Teal and a Goosander, the cause of death was a condition macroscopically indistinguishable from the round heart disease of poultry. The hearts were greatly enlarged and barrel-shaped and there was a characteristic indentation at the apex. The fibres in this area had a whorled appearance.

**Gastro-intestinal Tract.** Enteritis other than that due to infectious and parasitic disease was infrequent and only eight cases were seen. The enteritis in these birds was acute and haemorrhagic in type and no cause for it was found. In three birds death was due to impaction of the gizzard and lower oesophagus with hard fibrous grass.

**Urogenital Tract.** Pyelo-nephritis, which is said to be the common form of nephritis in birds, was not often diagnosed. Deposits of urates in the kidneys were frequently seen but such a change cannot be regarded as specific since urates may be present in many disease conditions and such renal changes are not necessarily primary in origin. A few cases of renal coccidiosis were seen but the numbers of coccidia present were not thought to be pathogenic.

Only two cases of egg peritonitis were seen. This is perhaps surprising since large numbers of breeding birds are kept, though, on the other hand, the birds are not bred to a high pitch of egg production.

**Serositis.** Nineteen cases of a diffuse sero-fibrinous pericarditis and peritonitis were encountered. The condition was very characteristic, the heart and abdominal viscera being covered by a glistening white fibrinous network. In several birds the exudate showed signs of organisation. The liver and spleen were enlarged. The disease is said to be due to *Moraxella anatipestifer* but this organism was not isolated; pleuropneumonia-like organisms were present in smears from the affected organs.

**Cysts and Tumours.** A peculiar cystic condition was noted in the liver of a female Philippine Duck. The liver was grossly enlarged and took the form of a multiloculated cyst. Histological examinations showed this to be a cyst-adenoma. There was no sign of malignancy. A cavernous haemangioma was present in the liver of a Coscoroba Swan and an ulcerated papilloma was seen on the neck of a Scaup. The liver of an Orinoco Goose was much enlarged and almost filled the abdominal cavity. The liver was a mottled grey in colour and of firm consistency. On section the enlargement was seen to be due to extreme infiltration by mononuclear cells chiefly lymphoblasts and lymphocytes. The appearance suggested lymphatic leucosis and a similar picture has been seen in eleven other birds from the Slimbridge grounds.

**Trauma.** Injuries were responsible for the death of six geese and three ducks. In the majority death was due to internal haemorrhage which followed the rupture of a fatty liver.

**Parasitic Disease.** Almost all the birds examined had some parasites in the gastro-intestinal tract or in the respiratory system. The parasites which were identified will form the basis of a second report, by Dr. E. J. L. Soulsby. In 29 birds parasitism was the cause of death and it is probable that the presence of parasites in many of the other birds was an important contributory lethal factor.

**Dietetic Diseases.** Twenty-nine birds were thought to have died as a result of dietetic disorders. In twenty cases the chief lesion was gizzard erosion. There were varying degrees of erosion of the gizzard lining so that the affected areas were brown in colour and had a frayed appearance. The condition was chiefly seen in young birds. A form of muscular dystrophy of the gizzard was also encountered and in some cases this was probably the cause of death through inanition. The gizzard in these birds was very thin and poorly developed.

**Infectious Disease.** The infectious diseases noted are listed in Table II. In all 138 birds died from various infections. Aspergillosis was the most frequent with 117 cases, the predilection sites for the fungus were the lungs and air sacs. The lesions were usually typical fungal granulomata but in some birds there was an acute diffuse pneumonia. Tuberculosis was the next most common disease and eight cases were seen. The lesions were principally in the alimentary tract and were in the form of large easily enucleated yellowish-white nodules. These infections with *Myco. tuberculosis* most probably arose from tuberculous bantams which had been used as brooders. One case of *Pasteurella aviseptica* was seen; this was in a Black-necked Swan recently brought into the collection. *Pasteurella pseudo-tuberculosis* was the cause of death of a Goldeneye and salmonellosis (*s. typhimurum*) was seen in a Black Swan, an Hawaiian Goose and a Ross gosling. A strongly haemolytic streptococcus was isolated from 3 adult birds and 3 downy young. It was present in pure culture from heart blood, liver and bone marrow. *Erysipelothrix rhusiopathiae* was isolated from a Canvasback. (It is perhaps surprising that this organism was not isolated on other occasions since it not infrequently causes losses in domestic poultry and ducks and is present in the soil in many areas.)

**TABLE II**  
**The Infectious Diseases**

Disease	Year	Adults			Immatures			Chicks			Total
		55	56	57	55	56	57	55	56	57	
Aspergillosis	.. .. .	3	5	9	46	9	25	2	4	14	117
Tuberculosis	.. .. .	—	1	6	—	—	1	—	—	—	8
Pasteurellosis	.. .. .	1	—	—	—	—	—	—	—	—	1
Pseudotuberculosis	.. .. .	—	—	1	—	—	—	—	—	—	1
Streptococcal Infection	.. .. .	1	1	1	1	2	—	—	—	—	6
Salmonellosis	.. .. .	1	—	—	2	—	—	—	—	—	3
Haemolytic Coliforms	.. .. .	—	—	1	—	—	—	—	—	—	1
Swine Erysipelas	.. .. .	—	—	—	—	—	1	—	—	—	1
											138

**TABLE III**  
**Some species in which the cause of death was not determined.**

Species	Adult	Young	Total
Red-billed Whistling Duck	3	5	8
Marbled Teal	—	12	12
Vesicolor Teal	1	11	12
Cinnamon Teal	1	20	21
Red-crested Pochard	—	6	6
Redhead	—	9	9
Mandarin	1	8	9
Carolina	1	28	29

**Cause of death not determined.** In 211 birds the cause of death was not determined. Individual birds from a wide range of species died and no cause could be found. In certain species (Table III), however, relatively large numbers died shortly after hatching and on post mortem examination there were no lesions and bacteriological examinations showed no evidence of infection. A probable explanation of these deaths is that they were due to a dietary deficiency.

### **Summary**

A total of 680 dead birds has been examined post-mortem in the three year period 1955-1957. The most important cause of death was acute pulmonary congestion and oedema of the newly hatched young. This syndrome together with pneumonia in older birds accounted for about 30 per cent. of all deaths. Infectious disease was responsible for approximately 22 per cent. and of this group Aspergillosis was the most important disease. In all about 20 per cent. of all deaths were due to this fungal disease. On a relatively high percentage of cases no diagnosis was made.

### **Acknowledgements**

I wish to record the help of Miss E. A. Robb, I.M.L.T., in carrying out these post mortem examinations.

