SKIN AND OESOPHAGEAL LESIONS IN A SHEATHBILL, *Chionis alba* (Gmelin), FROM SIGNY ISLAND, SOUTH ORKNEY ISLANDS

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ABSTRACT. Two papilloma-like and four ulcer-like lesions of the oesophagus are described from a 3-year-old adult male sheathbill, *Chionis alba* (Gmelin), killed at Signy Island, South Orkney Islands, in July 1965. The bird also showed extensive denudation and cornification of the ventral region of the neck, probably resulting from pecking to relieve the irritation caused by the oesophageal lesions. No causal agent of the oesophageal lesions was identified and no helminth parasites were found in the bird. When killed, the bird was of normal weight and field observations indicated that it was not unduly handicapped by the oesophageal lesions and denudation of the neck.

As far as we are aware, no disease conditions have been described previously in wild sheathbills, although causes of death of captive sheathbills in the London Zoo have included mycosis, chronic nephritis and cystic degeneration of the kidney and pulmonary congestion.† This distinctive charadriiform bird breeds on the islands of the Scotia Ridge and on the Antarctic Peninsula, while non-breeding sheathbills occur regularly in the Falkland Islands, the Magellanic islands and the Atlantic coast of South America as far north as the Rio de la Plata. A general account of the biology of *C. alba* has been given by Jones (1963) and the tapeworm parasites have been studied by Jones and Williams (1967). A second species of *Chionis*, namely *C. minor* (Hartlaub), is confined to the more easterly Prince Edward Islands, Iles Crozet, Archipel de Kerguelen and Heard Island; the breeding distribution of the two species does not overlap.

MATERIAL AND METHODS

The present specimen of *C. alba* was taken on 7 July 1965 at the British Antarctic Survey station on Signy Island (lat. 60°43′S., long. 45°38′W.), South Orkney Islands, by Mr. C. A. Howie of the British Antarctic Survey, because the front of the neck was bare of feathers, red and swollen. After death, the bird was fixed in formol-saline and partly dissected by Mr. Howie, who noticed a large papilloma-like outgrowth from the mucosal surface of the oesophagus. After returning to the United Kingdom, Mr. Howie kindly entrusted the specimen to us for further examination.

In addition to a general examination of the specimen, histological sections were made of pieces of skin and underlying tissue from the naked area of the neck, and of the normal oesophagus and oesophagus showing papilloma-like and ulcer-like lesions, and stained in haematoxylin and eosin, haematoxylin and Van Gieson's stain, and Mallory's triple stain.

OBSERVATIONS

The sheathbill was a 3-year-old adult male which weighed 700 g. at death. As an immature bird it had been ringed at Signy Island on 30 July 1962 (ring number AT 85484). Externally, the ventral region of the neck was swollen and bare of feathers over an area measuring 6 cm. long by 5 cm. wide. The naked patch was extensively cornified with a prominent callus in the central area. According to Mr. Howie, the neck was swollen and congested during life, although the bird had been seen frequently around the British Antarctic Survey station apparently feeding normally, and it did not appear handicapped.

Sections of the bare patch of skin showed areas of hyperkeratosis of the stratum corneum, necrosis and loss of the stratum germinativum and absence of feather papillae (Fig. 1). There

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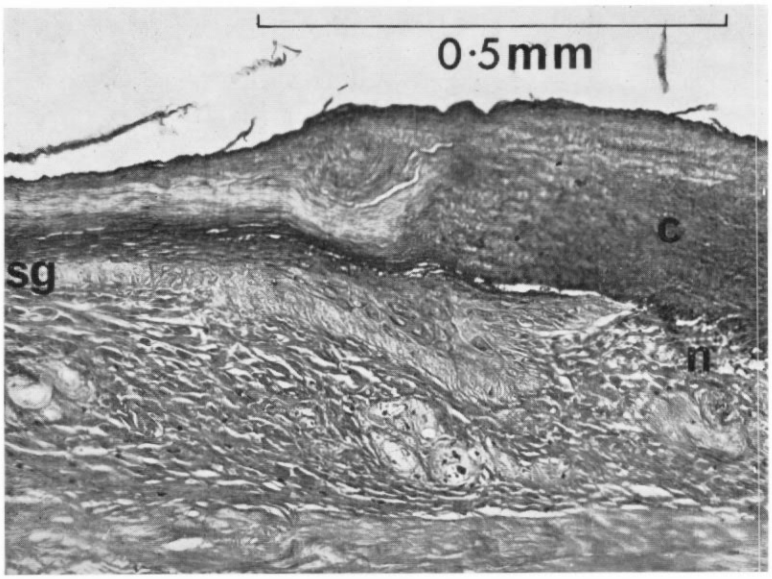

Fig. 1. Section of skin from the denuded ventral region of the neck showing an area of hyperkeratinization, disorganization and necrosis of the stratum germinativum and fibrosis of the dermis. Note the absence of feather papillae.
c heavily cornified area; *n* necrotic focus; *sg* stratum germinativum.

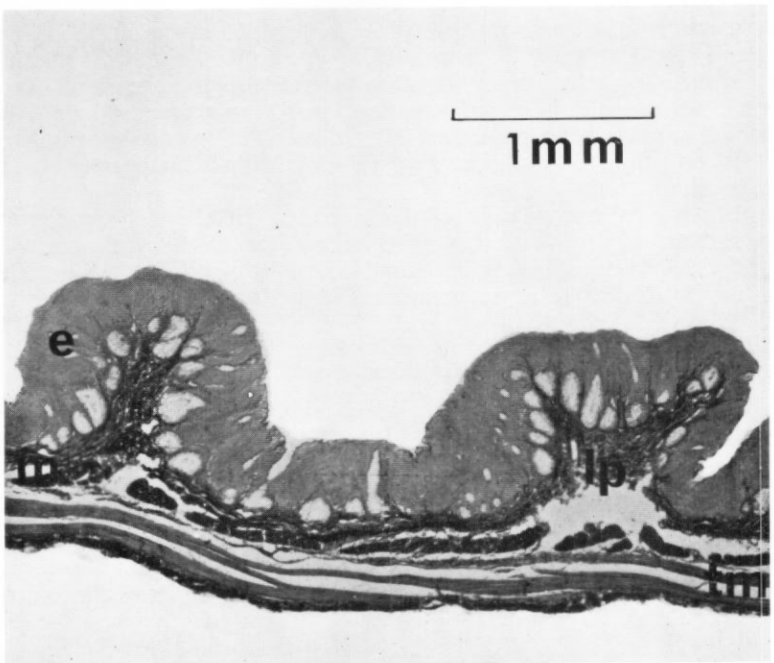

Fig. 2. Section of a normal part of the oesophagus.
e squamous epithelium of the oesophagus; *lp* lamina propria; *m* muscularis mucosae; *tm* tunica muscularis.

was extensive collagenous fibrosis of the underlying dermis, in which a large number of eosinophils were present.

The normal oesophagus of the sheathbill is capable of considerable distension and possesses numerous longitudinal rugae, especially posteriorly. The wall of the normal oesophagus consists of a thick layer of squamous epithelium with numerous simple, tubular, mucogenic, oesophageal glands which extend basally into the lamina propria (Fig. 2). The fibrous lamina propria is thick, especially where the longitudinal rugae are present. The muscularis mucosae is thick and the sub-mucosa is thin. The circular layer of the tunica muscularis is powerful whereas the longitudinal layer is weak, so that in sections the outermost muscular layer of the oesophagus appears to be a circular layer but closer inspection shows a delicate outer

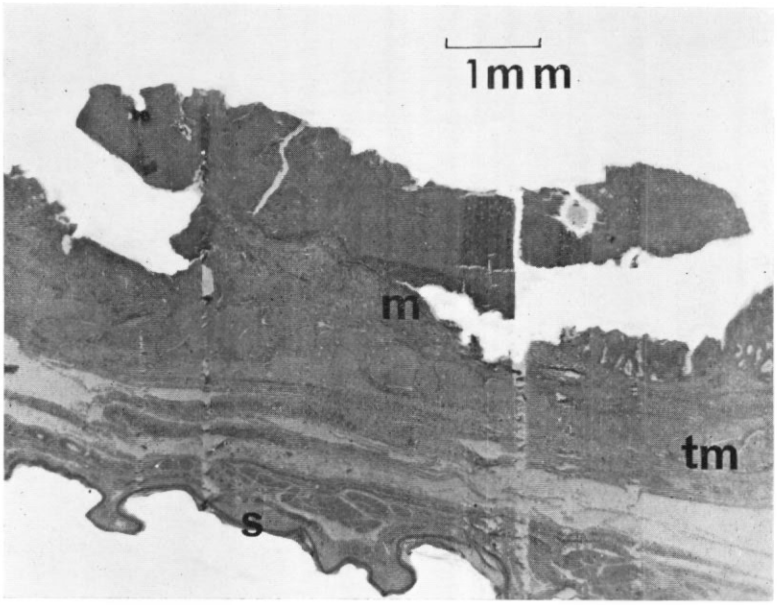

Fig. 3. Section of the oesophagus and dermal tissues showing the attachment of a large growth from the oesophageal wall.
m muscularis mucosae; *tm* tunica muscularis; *s* skin.

longitudinal layer. The thickness of the normal wall measures 1·0–1·5 mm. and the rugae attain a height of 1·5 mm.

Two papilloma-like and four ulcer-like lesions were present on the ventral mucosal surface of the oesophagus. The larger papilloma-like growth of the oesophageal lining measured 25 mm. in length by 8 mm. at its base, the other measured 4 mm. across and 1·5 mm. in height, being wart-like in appearance. The basal region of the larger growth had been bisected during Mr. Howie's examination and it revealed a central cavity filled with necrotic material. The four ulcer-like lesions were circular in outline with slightly raised rims; they measured from 3 to 5 mm. in diameter.

The epithelium of the oesophageal wall in the immediate vicinity of the larger papilloma-like growth was eroded, possibly due to movement of the growth during normal oesophageal action, perhaps also because of pressure by the growth on the underlying mucosa (Fig. 3). The fibroblastic layer, which separated the muscle layers from the inner squamous epithelium, was thickened and supported by means of a hilum, a projection into the oesophageal lumen consisting of compacted lymphocytic, fibrous and, especially peripherally, necrotic material.

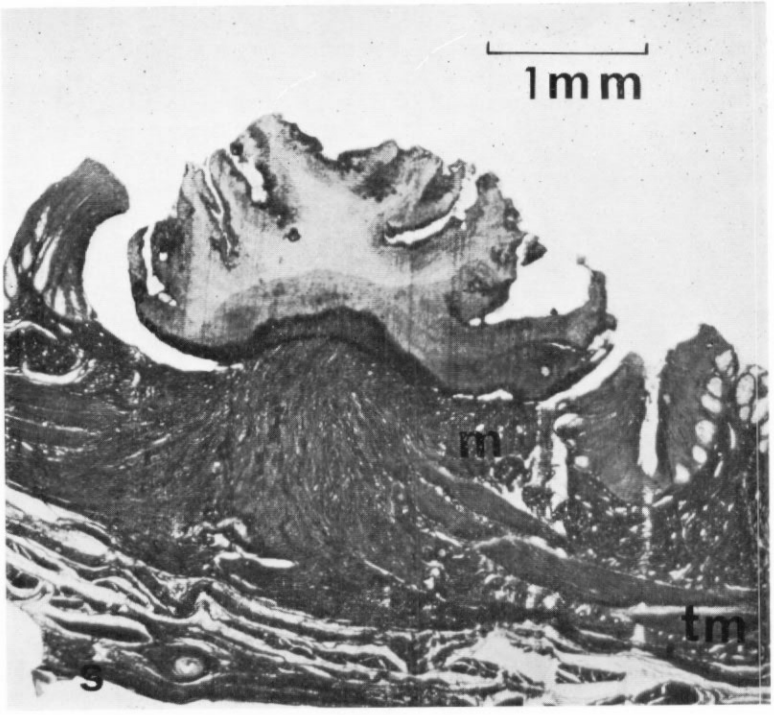

Fig. 4. Section through the wart-like growth from the oesophageal wall. *m* muscularis mucosae; *tm* tunica muscularis; *s* skin.

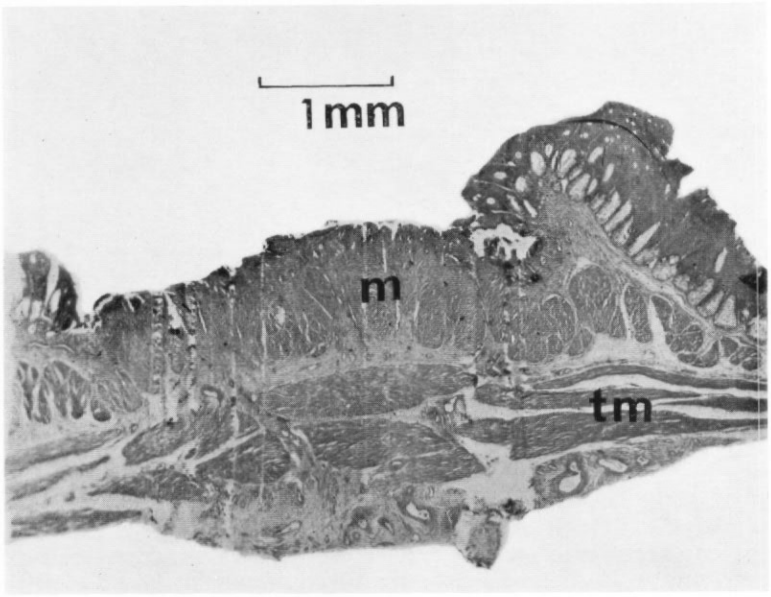

Fig. 5. Section through an ulcer-like lesion of the oesophageal wall. *m* muscularis mucosae; *tm* tunica muscularis.

The complete break-down of this growth was prevented by a fibrous reticulum which was an extension of the lamina propria. Small blood vessels in the eroded area were exposed and undoubtedly haemorrhage occurred during life. Throughout the mucosa, lamina propria, muscularis mucosae and sub-mucosa there was an extensive infiltration of lymphocytes and eosinophils indicative of an inflammatory reaction. Epithelial cells may have occurred on the growth, but there was no evidence of this, nor was surface keratinization seen in sections under a polarizing microscope. However, it is possible that continual erosion from the surface of the growth removed any keratinized cells.

The wart-like growth was papilliform in section and was composed of a hard mass of necrotic material with a fibrous stroma (Fig. 4). It was supported by a prominent hilum derived from the extensively hyperplastic lamina propria and metaplastic muscularis mucosae and tunica muscularis. The oesophageal wall at this point was very compact and fibrous, with a marked infiltration of lymphocytes and eosinophils. The mucosa immediately adjacent to the wart-like growth was compressed with signs of early keratinization; the oesophageal glands were also compressed and in some cases absent.

The ulcer-like lesions showed extensive erosion of the squamous epithelium and oesophageal glands, thus exposing the underlying fibrous lamina propria (Fig. 5). Haemorrhage occurred during life and lymphocytes and eosinophils were abundant in the fibrous layers and the outer part of the muscularis mucosae had undergone partial necrosis. The outer tunica muscularis showed partial fibrous degeneration.

Discussion

It seems likely that the denudation and cornification of the ventral region of the neck resulted from continual pecking by the bird to relieve the irritation of the oesophageal lesions.

The papilloma-like and wart-like growths do not seem to us to be true papillomata as the epithelium was apparently not retained in the necrotic inflamed mass, although the latter was supported by a central network of fibrous tissue as in a true papilloma. Growths of the oesophagael lining have been seen very rarely in wild birds; therefore it seems to us probable that the pathogenesis of the papilloma-like growths and the ulcers was related especially when they occurred simultaneously in the same sheathbill. Thus, a possible explanation to account for the presence of the ulcer-like lesions is that they represent the wounds remaining after the outgrowth from the oesophageal lining had been lost, perhaps during the normal action of the oesophagus in moving food.

We could not identify the causal agent which induced the oesophageal growths. It is possible that some article of diet, such as a fish bone, might have damaged the oesophageal wall thus setting up inflammation, but the presence of several lesions argues against this view. Mr. Howie's observation that the bird was feeding apparently normally, and the fact that the specimen was 3-years-old and of normal weight when killed, strongly suggests that the oesophageal lesions, although irritable, had not unduly interferred with the life of the bird. In a personal communication, Mr. Howie mentioned that "There is a report of another similarly afflicted bird seen [at Signy Island] a winter or two previously." Whether this was the same or another sheathbill is not known, except that when the present specimen was ringed as an immature bird in July 1962 no mention was made of damage to the neck. Also, we are indebted to the British Antarctic Survey for confirming that several such affected sheathbills were seen at Signy Island during this same period. These observations suggest that an infective organism might be the causative agent for the lesions we have described, yet there was no evidence of the presence, or recent occurrence, of helminth parasites, such as *Capillaria*, which are known to cause inflammation, necrosis and, in some cases, papillomata; indeed no helminths were found in the specimen. However, in recent post-mortem examinations of 25 sheathbills from Signy Island, by one of us (I.C.W.), two were found to be infected with the nematode worm *Paracuaria tridentata* (von Linstow 1877). In one of these infected sheathbills, the presence of *P. tridentata* was associated with mild inflammation of the oesophageal lining. Although we could not identify the causal agent of the oesophageal lesions in the present sheathbill specimen, it seems possible that a species of tissue invasive nematode may have been responsible for the initial damage to the oesophagus.

ACKNOWLEDGEMENT

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