

## AN OUTBREAK OF NEWCASTLE DISEASE AMONG PHEASANTS IN THE ZOO, SEOUL, KOREA

By

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### Introduction

In the early winter of 1959 a number of pheasants housed in the Zoo died from a disease which had not previously been observed by either the keeper of the veterinarian in charge. For many years pheasants had been kept at the Zoo with only an occasional loss.

The particular group of birds in which the disease occurred, consisted of about eighty birds, which had come six months previously, from the Island of Chejudo, and were to be exported to the United States. There was no direct contact between the two groups of birds and they were separated, by a distance of approximately 100 yards.

### Clinical History

Little clinical history could be obtained from the man who fed and cared for the Chejudo birds. In most instances three birds were kept in one large pen, which provided ample room. There was no overcrowding. The keeper reported that in almost every case death was sudden. Birds which had appeared well on one day, were found either dead or dying on the following day. He knew little about birds, his duties consisted in feeding and keeping the pens clean. Due to the mysterious nature of the disease and the suddenness of death, a tentative diagnosis of "death due to poison" had been made.

### Gross Pathology

Ten birds had been brought to the college for post-mortem examination, seven of which were carefully examined. The following were the most important

findings.

*Skin and subcutaneous tissues.*—In most cases there were areas of well marked congestion of the capillaries of the skin. In two cases this was accompanied by slight hemorrhagic gelatinous exudation.

*Respiratory organs.*—In all cases the lungs appeared to be congested. In one case there was a well marked area of consolidation involving approximately one third of the affected lobe. Slight pressure caused a hemorrhagic serous exudate.

No other significant lesions were found, although a careful examination of the alimentary tract, liver, spleen, kidneys and whole carcass was made. Autopsy findings were minimal and of little diagnostic significance.

*Bacteriology.*—Blood agar cultures made from the lesions described were negative.

### Investigation at the Zoo

Believing that some information of value might be obtained by observing the conditions under which the birds lived, a visit was made to the Zoo. This proved to be of great importance in giving a lead, as to the nature of the disease.

First. Poison as a causative agent, was excluded. It seems incredible that poison could be administered in the feed with such skill, that only one, or even two birds in a cage of three were killed, while the others remained well.

Second. Why had such a malignant disease not spread to the other pheasants on the premises occurring only in these from Chejudo? While there was no direct contact, indirect contact occurred.

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Third. A bird which had been sick for several days had been placed in isolation. This bird, especially when excited, showed in-coordination, and convulsions, which suggested Newcastle, disease. Another bird showed the characteristic mouth breathing.

Fourth. On enquiry it was found out, that the pheasants resident at the zoo for some years, had all been immunized against Newcastle disease. The birds from the Island of Chejudo had not been protected.

### Diagnosis by Pigeon Inoculation

Newcastle disease may be differentiated from the more serious disease fowl plague, by pigeon inoculation, which causes paralysis of the wings followed by death.

Two pigeons, A and B, were inoculated as follows: A. mixed, saline suspension of lung and brain from the diseased pheasants. One c. c. orally, and one c. c. intramuscular.

Result. On the fifth day following inoculation, the wings showed partial paralysis. The sixth-day, wing paralysis complete, and death.

Post mortem. Marked congestion of the subcutaneous tissue in the region of neck and back, congestion of the lungs. Other tissues and organs normal.

Pigeon B. Intramuscular inoculation of saline suspension as used in bird A. On the eighth-day partial paralysis of the wings. Found dead, morning of the ninth day.

Post mortem. Areas of marked congestion in the sub-cutis; peritonitis; areas of severe enteritis other organs and tissues normal.

Histo-Pathology. Intestine; haemorrhage in the mucosa and submucosa; visceral peritoneum swollen, serous exudate on surface with cell infiltration. Spleen; numerous small haemorrhage. Spinal cord; oedema, and foci of cell infiltration. Liver; normal. Brain; oedema.

### Isolation of Virus

The virus of Newcastle disease was isolated from the brain of the diseased pheasant by Dr. Lee Chang Koo, virologist Anyang Laboratory.

The surviving Chejudo birds were vaccinated, and no more cases occurred.

It is most probable that, these birds were immunized following sub-clinical infection.

### Conclusion

The malignant disease which caused heavy loss among the Chejudo pheasants at the Seoul Zoo has been demonstrated to be Newcastle disease.

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