

inhibition of embryonic and newly-hatched chicks and in response to various dosage levels.

Summary. 1. Chick embryos at 8 days of incubation were given one-half or one mg of cortisone acetate by injection onto the chorio-allantoic membrane. 2. The one-half mg dose resulted in a reduction of the liver to approximately 86% of the control weight. 3. In the one mg series, the liver was relatively smaller and the eyes and gonads were relatively larger on the basis of 100 g of body weight. In absolute values, the entire embryo and all organs were greatly reduced in size. 4. Measurements of body length, neck, wings and legs after treatment with one mg cortisone indicated the greatest degree of growth inhibi-

tion during 8 to 10 days of incubation for all except the legs. 5. A comparison of wet and dry weights from day 10 through day 18 of incubation showed that cortisone-treated embryos retained water. This retention becomes statistically significant at 15 days of incubation.

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Fibroma Arising from Feather Follicle of Duck Following Local Application of Methylcholanthrene to Skin.* (20256)

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The occurrence of papillomata, squamous cell carcinomata and hemangiomata in the skin of the duck following the local application of methylcholanthrene has been reported (1). In similarly treated ducks a fibroma has been observed to arise from the feather follicles. The pathogenesis and pathologic characteristics of this latter tumor are reported.

Methods and results. The technic used in the local application of a 0.25% acetone solution of methylcholanthrene to the skin of White Pekin ducks has been described (1). Ducks varying in age from 10 to 90 days were used. The birds were observed for a period of 6 months. The feathers were plucked frequently both during and after the local application of methylcholanthrene. This carcinogen was applied daily for 30 days by dropping 0.5 to 2.0 cc of the solution on the skin beneath the right wing and the adjacent

portion of the body wall. The neoplasms in some of the ducks were removed for pathological study. Portions of skin showing developing feathers were also removed for histological study. A normal feather follicle is shown in Fig. 1A.

The feather shaft normally is composed of a loose fibrous tissue stroma with few blood vessels. The periphery of the feather as it emerges from the skin is covered by a thin layer of squamous epithelium. In ducks where the feathers are plucked frequently, the new feathers may fail to mature and may appear as a small projection 2-6 mm above the surface of the skin as illustrated in Fig. 2D. These abnormal feathers may become infected, hemorrhagic, gradually become dry, black structures that atrophy and then desquamate; others only atrophy and desquamate. Fig. 1B shows the macroscopic features of a tumor arising from such a follicle. Note the small feather growing from this tumor. Within 48 hours following the time this lesion was photographed, it spontaneously disappeared.

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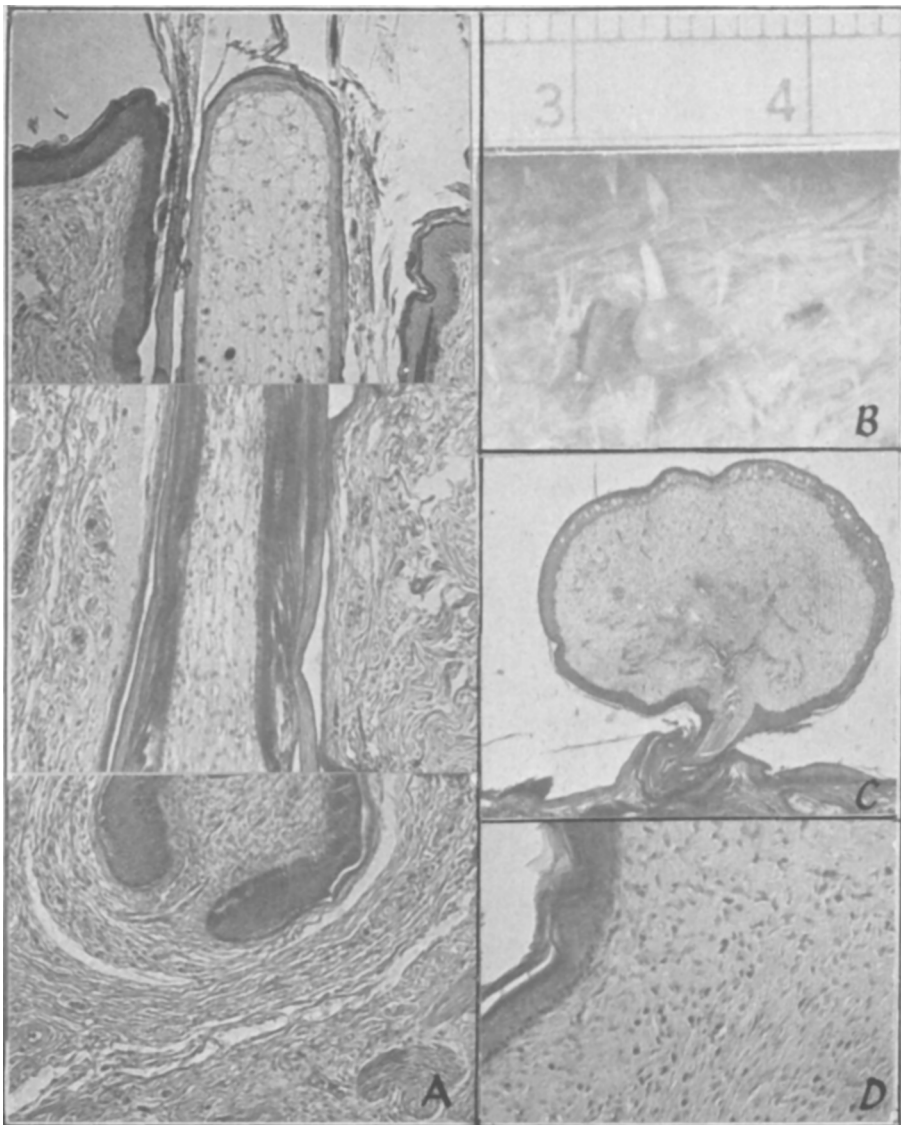


FIG. 1. A. A normal feather. Note the loose fibrous tissue stroma and the layer of squamous cells surrounding this developing feather. B. Duck 416. A fibroma 4 mm in diameter growing from a feather follicle. C. Duck 418. A fibroma growing from a feather follicle. H & E stain $\times 16$ mm. D. Duck 407. Usually these fibromata show relatively few fibroblasts with squamous cells covering the periphery of the tumor. H & E stain $\times 150$.

The narrow base of such tumors may account for their spontaneous disappearance because of the poor blood supply. This feature also would contribute to the fact that these neoplasms are usually small. The largest tumor observed in this study was 1.0 cm. Six ducks have shown this oval shaped tumor attached by a narrow pedicle. Many fibroma-like tumors with a large amount of neoplastic

tissue continuous with the corium have been observed in these methylcholanthrene-treated ducks. It is difficult to determine the exact site of origin of the latter group of fibromata.

Histologically these tumors are composed of fibroblasts, a few small blood vessels, and as the tumor ages groups of lymphocytes make their appearance within the neoplastic tissue. The periphery of the tumors

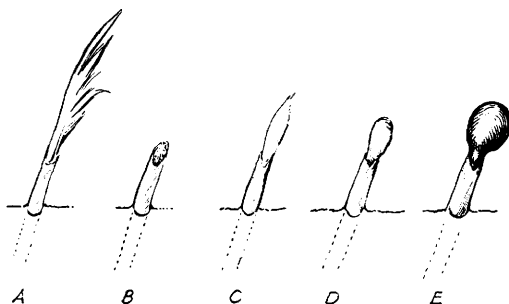


FIG. 2. Diagram of a feather (a) normal; (b) feather has been plucked leaving the shaft; (c) feather regrowing normally; (d) degenerating feather observed after frequent plucking; (e) tumor developing from a feather follicle.

is covered by a narrow layer of squamous epithelial cells (Fig. 1C and D).

Discussion. The skin of ducks treated with methylcholanthrene in acetone shows a wide variety of both histologically malignant and benign neoplasms. All tumors observed so far in more than 100 ducks have spontaneously disappeared except for those removed for histological study. The characteristics of these regressing tumors will be reported subsequently. The occurrence of a fibroma arising from the feather follicle is infrequent when compared with the occurrence of papillomata

and hemangiomas in the skin of the duck. Many fibromata do occur in the skin and subcutaneous tissue of ducks treated with methylcholanthrene; however, their pathogenesis is more difficult to determine than the one arising from the feather follicle.

Ducks of similar age with feathers plucked and unplucked treated with acetone and normal ducks with their feathers plucked and unplucked have been observed for 6 months. No tumors have occurred. Degenerative changes, however, have been found in the feather follicles such as described above.

The duck has proven to be a satisfactory experimental host for the production of tumors with methylcholanthrene. The frequent occurrence of papillomata, squamous cell carcinomata and hemangiomas and the spontaneous regression of all neoplasms in the duck present a challenge in carcinogenesis.

Summary. A fibroma is described as arising from the feather follicle of White Pekin ducks following multiple local applications of methylcholanthrene to the skin.

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Surface Fixation as a Practical Method for Diagnosis of Brucellosis in Man and Animals. (20257)

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In spite of the considerable work developing and improving methods for the diagnosis of Brucellosis we still lack procedures which by themselves would detect all cases of human and animal diseases. It has been our experience that the more tests that are used the better the chance of obtaining an accurate diagnosis. It is for this reason that we have added to our routine, a new test, the results of which we consider of interest to report. In a previous paper we described a method for the detection of antigen antibody reactions which, so far, has been found applicable only

to *Brucella* and its antibody(1). For practical purposes it was considered desirable to simplify the test, using material of uniform sensitivity and if possible standardized to produce reactions comparable in intensity to the results of tube agglutination tests. Considerable simplification of the test has been achieved by using antigens suspended in sugar cane syrup which may be printed on filter paper and which remain sensitive for several months. This change in the physical condition of the antigen allows for titration of its sensitivity to *Brucella* antibody in order to