A SPINDLE-CELLED TUMOUR IN A FOWL FOLLOWING INJECTION OF 1 : 2 : 5 : 6-DIBENZANTHRACENE IN A FATTY MEDIUM.

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The spindle-celled tumours which can be produced in mice and rats by subcutaneous and intraperitoneal injections of fatty media containing 1 : 2 : 5 : 6-dibenzanthracene have been described elsewhere (1, 2). Transplantable tumours produced in this way have now reached the 47th and 28th grafted generation in mice and the 27th and 26th grafted generation in rats. To widen the field a test was made on fowls. Circumstances were not favourable to a large scale experiment of this nature, and therefore the following account has reference to two birds only. These were young adult, white Wyandotte hens.¹

TECHNIQUE

1 : 2 : 5 : 6-dibenzanthracene was dissolved in lard (4 mg. in 1 c.c.) by heating the hydrocarbon in the fraction of lard liquid at 37°: (a) in the earlier part of the experiment, on a hot plate at a temperature which was not measured exactly at the time, but was probably between 160° and 190°; (b) later, in an oven at 110°.

The experiment was begun on July 27, 1931, each fowl receiving 3 c.c. of the preparation into the right pectoral muscles and a

¹ Dr. Peacock, of the Research Department of the Glasgow Royal Cancer Hospital, informs me that he has carried out an experiment similar to the above and has produced tumours in birds injected with a solution of 1 : 2 : 5 : 6-dibenzanthracene in lard. His work is embodied in a paper which is now in the press.
similar amount subcutaneously into the left pectoral region. These injections were repeated on August 1st and 10th of that year and on March 3rd, 1932. Five days later, that is to say eight months after the first dose had been given, one of the fowls died and was found to be free from any tumour.

On May 2nd, 1932, the experiment having lasted ten months, a hard, rounded and fixed tumour was observed in the left pectoral region of the remaining bird. On the same day a piece of this growth was excised, an autograft was made into the muscles of the

fowl's right leg, and heterografts were implanted into the pectoral muscles and subcutaneous tissues of six five-weeks-old chicks, of which four were white Wyandottes. The excised material which remained after these grafts had been made was examined by the microscope and found to consist of spindle cells which were invading the muscles (Fig. 1). This hen died on Sept. 10th, 1932. The conditions found on examination of the body were as follows. There was a hard mass in the left pectoral region (8 x 6 cm.) and a smaller but otherwise similar mass on the opposite side (6.5 x 4 cm.). The autograft in the right leg had grown and measured

![Fig. 1. Portion of Left Pectoral Tumour Removed for Grafting May 2, 1932.](image)

Shows spindle-celled tumour with area of necrosis.
Fig. 2. Right Pectoral Tumour at the Time of the Fowl's Death, Sept. 10, 1932. × 145

Fig. 3. Left Pectoral Tumour at Time of the Fowl's Death. × 145
3.5 x 2 cm. Metastases were present in the right lung, liver (where one measured 3.7 x 2.8 cm.), and ovary.

**Microscopical Examination**

The right and left pectoral tumours are similar in appearance and may be described as spindle-celled new growths invading and destroying the neighbouring muscles and containing areas of necrosis (Figs. 2 and 3). The largest metastasis in the liver is composed of spindle cells. At the border line of the invasion the hepatic sinusoids are much dilated (Fig. 4). (The other metastatic deposits in this organ have not been examined microscopically). The deposit in the lung likewise consists of spindle cells, and vascular dilatation in the contiguous zone of the lung is again pronounced (Fig. 5). The nodule in the ovary (Fig. 6) has the same appearance as the pectoral tumours, as also has the autograft in the leg, which shows invasion of the muscles (Fig. 7).

No tumours grew in the six chickens into which heterografts had been made.

As controls, two fowls received injections respectively of lard
Fig. 5. Metastatic Deposit, Consisting of Spindle Cells, in the Lung.  × 145

Fig. 6. Ovarian Metastasis, with Area of Necrosis.  × 145
only and of fowl fat only. Unfortunately both birds died within a month. Nothing of note was found in them at autopsy. Further series of experiments are in progress.

SUMMARY

Bilateral spindle-celled tumours appeared in one of two white Wyandotte hens at the sites of intramuscular and subcutaneous injections of $1:2:5:6$-dibenzanthracene dissolved in lard. An autograft taken from one of these tumours became established and grew. There were metastases in the lung, liver, and ovary. Attempts to transmit the tumour to six young chicks by grafting were not successful. A fowl injected with lard only as a control died very early in the course of the experiment.

REFERENCES