

have been taken: to Lisbon (2,700 km. to the west; maximal distance in air-line); to Berlin (680 km. to the west; problem of magnetism and of the west direction); and to Harviala in Finland (1,132 km. to the north; problem of magnetism and of the north direction).

Each of these three groups was composed of four birds, specially marked with bright colours and rings, so as to be easily recognized on return to their nests in Butyny. Besides that, after long preliminary experiments we succeeded in fastening magnets to the heads of three birds of each group destined for Germany and Finland. The magnetic fields of the magnets were calculated according to the formula of Gauss. They were several times stronger than the magnetic field of the earth, which would mean, according to Stresemann's hypothesis, that they ought to eliminate its influence.

Our experiments did not give quite satisfactory results. That was partly due to difficulties in obtaining a larger amount of experimental material, and also to very unfavourable meteorological conditions in the second half of June 1938 when the experiments took place.

With regard to the first problem, though the birds behaved in identically the same way as others did in our first experiments in 1937, not one of the four birds of the Portugal group landed home. Of course the maximal distance from home had been exceeded (2,700 km. by air-line in comparison to 2,260 km. of the preceding year Lydda (Palestine) to Butyny). On the other hand, it is possible that the obstacles caused by the desert-tableland of Spain, the Pyrenees and the Alps were very difficult to overcome, and the air currents, of which storks take generally great advantage, were unfavourable.

In the second experiment, three birds, out of four released near Berlin, came home. Their flight home-wards was much slower this time. It varied between 43 and 107 km. daily, in comparison to 165 and 188 km. in the year 1937. It is yet impossible to give a definite decision concerning any influence that the earth's magnetism may exercise on the capacity of homing in birds, because of two control birds without magnets one came home. Yet comparing previous experiments (when birds had mostly been transported to the south, that is, along their usual migration direction) the return of birds of the Berlin group proves that they are capable of homing not only from great distances but also from directions and countries hitherto unknown to them.

The results observed of the transport of birds to Finland are still more striking. In this group three birds had magnets fastened to their foreheads and one bird a control bar, of the same weight. Owing to the fact that storks appear rarely in Finland, and owing also to the help of the members of the Zoological Museum in Helsingfors, we were well informed about the flight of the birds in Finland and partly in the neighbouring countries as well. Not one of the birds came home; two of them perished for unknown reasons. The most interesting fact is that the birds, after having left Harviala, were seen in many parts of the country, mostly on the beach of the 100 km. wide Finland Bay, which lies in between the straight and shortest air-line to Poland. From there they went back to Harviala at different intervals. Most probably the birds found the bay too wide to fly over. (The Straits of Gibraltar, the Bosphorus, Sea of Marmora, their usual routes,

are much narrower.) Their return to Harviala proves a curious attachment to a new locality.

Further experiments will be conducted in 1939.

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¹ NATURE, 141, 35 (1938).

Hypospadias and Non-descent of the Testes caused in Rats by Progesterone

Hain¹, Wiesner², Greene and Ivy³ have reported the occurrence of hypospadias in young female rats following the injection of oestrogens or androgens (oestrone, androstanediol, testosterone) into the pregnant mothers or into the young soon after birth. Lacassagne⁴ has observed a similar lesion in a male rabbit treated from birth with oestrone. I also have observed hypospadias in female rats and mice treated from birth with oestrone or testosterone. The males have not shown any malformation of the penis; but their testes have failed to descend into the scrotum at the normal time. In a recent experiment, fifteen new-born Wistar rats were given subcutaneous injections of 0.5 mgm. progesterone in sesame oil on each of the three post-natal days, and 1 mgm. was given three times a week until the twenty-third day, after which no further treatment was applied except that on the forty-fourth day 2 mgm. progesterone were given to each of the males. At this time the eight females all showed hypospadias and the seven males all had undescended testes. On the sixty-fifth day two only of the males have testes in the scrotum. Normally the testes would have descended not later than the fortieth day.

The comparable results obtained by all these three types of gonadal hormones seem to be worth recording.

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¹ Hain, A. M., *Edin. Med. J.*, 42, 101 (1935).

² Wiesner, B. P., *J. Obst. Gynecol.*, 42, 8 (1935).

³ Greene, R. R., and Ivy, A. C., *Science*, 86, 200 (1937).

⁴ Lacassagne, A., "Certain Biological Problems Relating to Cancer, Hormones and Radiation" (1936).

New Data on Spontaneous Mutations

AMONG the factors that are of decisive importance in the development of the individual, but do not influence directly its germ-cells, the nutritive regime must be mentioned in the first place. The purpose we had in view was to study the rapidity of mutation process in *Drosophila melanogaster* under conditions of an avitaminous B₂ regime.

We made use of the line 'white' for investigation. By way of many times repeated transfers of the flies (Guyénot method, 1911) a complete elimination of microflora was achieved and an aseptic line obtained.

Three groups of individuals could be employed for genetical purposes: (1) the control individuals