

74 (2306)

The absence of one kidney associated with hereditary abnormalities in the descendants of x-rayed mice.

By HALSEY J. BAGG.

[*From the Huntington Fund for Cancer Research, Memorial Hospital, and Cornell University Medical College, New York City.*]

Adult male and female mice were irradiated with comparatively light doses of unfiltered x-rays. They were mated and a few of their offspring in the second and third generations showed marked deformities of the eye. The eye abnormality was extensively inbred and after several generations all the individuals of many litters have shown the deformity in one or both eyes. Genetic tests have shown that the eye abnormality behaves as a Mendelian recessive.¹

Club feet have been prominently associated with the eye defect. One or more limbs may be affected.

The young from such defective lines were killed *in utero*, and it was found that the structural defects of the eye were associated with arrests in development due apparently to a tendency to blood vascular extravasation in the region of the eye. In a few instances lesions were noted in the region of the foot, suggesting that a similar blood vascular disturbance and arrest in development may have brought about the club foot condition.

During the last few months the defective lines have become well established, and it has been possible to perform many autopsies on adult animals showing eye and foot defects.

Three hundred autopsies have been recorded and 50 animals (16 2/3 per cent) have shown practically complete absence of one kidney. In two instances very small remnants of renal tissue have been detected, which were not more than 1 mm. in diameter. Histological examination reveals apparently normal adult kidney tissue. One animal was blind in one eye and the other had apparently normal eyes. Two adult animals were

¹ Dr. C. C. Little was associated with the writer during the years 1920 to 1922, during which time the genetic tests were made. The results have been submitted for publication. See Little and Bagg, *J. Exp. Z.*, and Bagg and Little, *Am. J. Anat.*

found in each instance with a large cystic mass replacing one kidney. No normal kidney tissue was present. One of these animals was blind in both eyes and the other had apparently normal eyes. Each of the remaining 46 animals showed apparently complete absence of one kidney. One ureter in each case was missing, but both adrenals have been found in all animals. One animal killed at birth was found to have but one kidney.

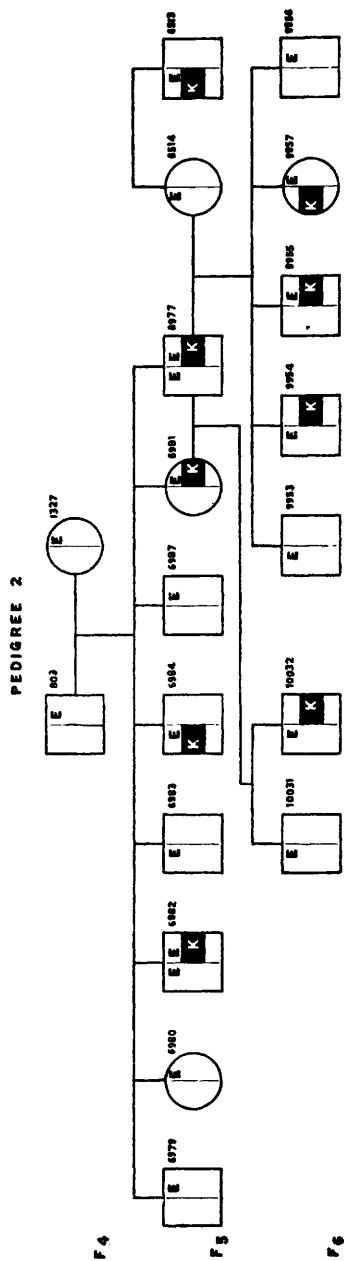
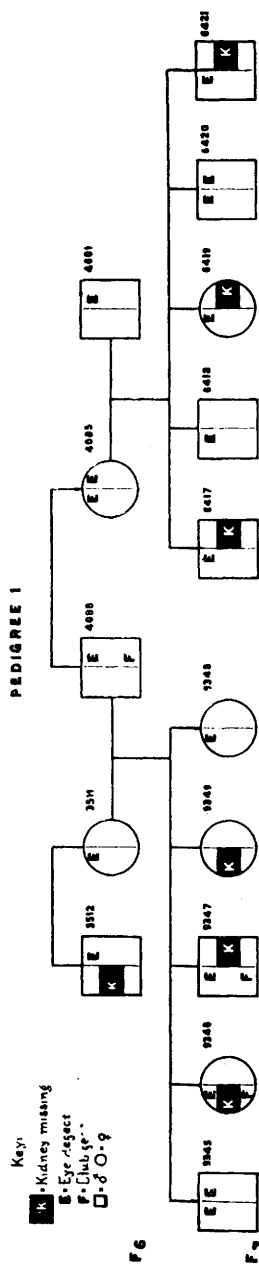
No. of animals with right kidney missing.....	25
No. of animals with left kidney missing.....	25
No. of animals with right eye abnormal and one kidney missing.....	14
No. of animals with left eye abnormal and one kidney missing.....	19
No. of animals with both eyes abnormal and one kidney missing.....	6
No. of animals with eyes normal and one kidney missing.....	11

Nineteen of the 33 animals with but one eye abnormal showed the eye and kidney defect on the same side of the body. Four of the six animals that were blind in both eyes had in each instance a missing right kidney and in the remaining two cases the left kidney was missing. Five of the eleven animals with normal eyes had a missing right kidney and six a missing left kidney. In three instances the association of defects was pronounced. The eye, club foot and kidney abnormalities were present in each animal.

Two examples of preliminary genetic results:

The entire seventh generation litter (Pedigree 1, Nos. 6417-6421 incl.) was killed at one time. Three animals were found each with a right kidney missing. At about the same time No. 3512 was killed and found to have a left kidney missing. As indicated in the chart the sib of the mother of the first litter mentioned was mated with the sib of 3512. Their offspring constitute litter Nos. 9345 to 9349 inclusive. Three of these five animals have in each case a missing kidney and in two instances the eye and foot abnormalities are also present.

The presence of the kidney abnormality has been only recently detected, so it is not known whether the ancestors of Nos. 803 and 1327 (Pedigree 2) carried the tendency for the condition or not. They probably did. The fifth generation litter of these two animals (Nos. 6979 to 6987 incl., 2 died, condition undetermined) showed four animals with one kidney missing, and two of these were also blind in both eyes. No. 6981 was mated with 6977. They each lacked one kidney. The offspring are shown in the sixth generation as Nos. 10031 and 10032, the lat-



ter having but one kidney. No. 6977 was also mated with No. 6514 (a sib of 6513 having but one kidney). Their offspring constitute litter Nos. 9953 to 9957 inclusive. Three of the five animals have in each instance but one kidney.

The results so far obtained have shown that the kidney abnormality may be greatly increased in the experimental stock by breeding from animals heterozygous for this condition. Genetic experiments are now under way to determine the inheritance of the kidney abnormality by out-crossing with normal unrelated stock.

75 (2307)

An unusual sensitizing action of thyroid substance on the effect of epinephrin in man.

By RUTH M. MORRIS, MARGARET S. WITTER, and SOMA WEISS.

[From the Department of Medicine, Second (Cornell) Medical Division, Bellevue Hospital, and the Department of Pharmacology, Cornell University Medical College, New York City.]

During a study on the behavior of the autonomic nervous system in man, the following observation was made:

A woman 27 years old, suffering from hypothyroidism received epinephrin, 0.015 mg. per kilogram of body weight (total 1.16 mg.) (tablets of Parke, Davis and Company) solution 1:1000, subcutaneously. The systolic and diastolic blood pressure and the pulse rate were recorded for 95 minutes following the injection. Readings were made at intervals averaging three minutes. The chart shows that there was only a slight rise (max. 12 mm.) in the systolic and a relatively marked fall (max. 34 mm.) in the diastolic blood pressure. The pulse rate showed a maximum increase of 22 beats per min. The patient felt comfortable during and following the test except for a slight tremor lasting a few minutes.