

consideration temperature data of the dormant period. That the long duration of low extremes of temperature may be a critical factor in the wide-spread destruction of vegetation is further substantiated by the fact that the juniper of the upper limits of the Upper Sonoran Zone of southern Utah are bronze in appearance because of the rigors of the past winter. Whether repopulation of these damaged areas will be accomplished by means of seeds ripened last fall or whether a general altitudinal lowering of these vegetation zones will result, only time will tell.

WALTER P. COTTAM

UNIVERSITY OF UTAH

REGENERATION OF ULTRACENTRIFUGED ADRENAL TISSUE IN THE ALBINO RAT

IN a previous paper¹ the writer reported the cytological changes produced in rat adrenal cells by ultracentrifuging at 400,000 times the force of gravity. Briefly, such cells show marked stratification of their components according to relative specific gravity and the viscosity of the medium. In order to determine the capacity of these cells to retain their viability, to reconstitute, regenerate and function normally, autoplasmic grafts have been made.

A significant series of rats averaging 50 days age were doubly adrenalectomized, a portion set aside as controls, and the remainder used for transplanting. In the latter group the excised glands were ultracentrifuged for 30 minutes, thereby producing maximum stratification, as described in the paper already referred to. These were then halved and two or three pieces grafted autoplasmically into pockets cut into the abdominal muscles. Both the control and the transplanted rats were placed on a salt diet to guarantee a sufficient survival period in which the grafts might "take." After about 30 days the animals were returned to a normal diet to check the efficacy of the implants. Up to the present time (three months after adrenalectomy of the first lot) none of the implanted rats have died, except for a few whose death during the first 72 hours could be attributed to traumatic shock. On the other hand, most of the control animals (doubly adrenalectomized, but without implants) failed to survive even the first 30 days on salt diet. At the present writing some of the implanted animals have been killed, the grafts excised and serially sectioned, and thorough search made for accessory adrenal tissue which included serial sectioning of the original adrenal sites. In the cases so far examined no accessory tissue has been found; however, the ultracentrifuged implants show excellent and abundant regeneration of cortical tissue, but no medullary cells.

¹ Dornfeld, *Anat. Rec.*, 65: 403, 1936.

Cytologically, the cortical cells appear normal, though certain differences in the histological arrangement are apparent. More detailed studies are in progress.

It appears, therefore, that the severe centrifugal displacement of cytological elements in adrenal cortical cells does not hinder these cells from reconstituting, regenerating and performing their normal physiological functions. A complete and detailed account of this work is in preparation and will be published elsewhere.

ERNST J. DORNFELD

DEPARTMENT OF ZOOLOGY

UNIVERSITY OF WISCONSIN

ABUNDANCE OF THE EUROPEAN STARLING IN ILLINOIS

SINCE its first appearance in Illinois, about fifteen years ago, the European starling has steadily increased in numbers until it may now be considered a pest almost equal to that of the English sparrow. When first noted in Champaign County by Professor Frank Smith and the writer (1922), it was always observed in company with grackles, never in flocks by itself.

During several motor trips about the state the past winter this bird was observed in certain places in great abundance. On March 7, while passing over route 24 from Peoria to Forrest, eight flocks of starlings were noted, none of which contained less than 100 birds in each flock. The flock was pure starling, no grackles being noted in this part of the state at this time of year. Going south on route 47 from Forrest to Mahomet seven flocks of starlings were noted, each flock estimated to contain at least 75 birds. An estimation of the total number of starlings seen on these two routes on this day gives over 1,300 birds. When the automobile passed the flock the birds rose in a great cloud.

On March 8 and on April 4 trips were taken over route 10 to Decatur and over route 36 to Springfield and no starlings were observed. This area is south of that upon which the large flocks were seen.

Several years ago an attempt was made to reduce the immense numbers of the purple grackle which infest the city of Urbana, and the police department shot at evening time into several flocks which were preparing to roost for the night. Several hundred were killed, but there was not a starling among them. But, curiously enough, there were many cowbirds; perhaps the flocks may have contained 15 per cent. of this species. As there were no starlings it seems evident that this species is here in sufficient numbers to flock by itself and does not mingle with the grackles as formerly.

FRANK COLLINS BAKER

MUSEUM OF NATURAL HISTORY

UNIVERSITY OF ILLINOIS