now Iowa and Kansas. The first report of the starling in Illinois was apparently that of Professor Frank Smith, of the University of Illinois, in 1922. These were observed by Professor Smith and the writer, and an attempt was made to secure several specimens, but without success. The latest report gives eight records for Illinois.[1] Of these records, only two are of specimens taken and preserved, at Quincy and Godfrey on the Mississippi River.

That the starling has become a resident of Illinois is fully attested by its presence with large flocks of the bronzed grackle. Every year local reports are received of the presence of the bird in Urbana and vicinity. Recently (January 5) five starlings were brought into the museum by Mr. Reinhold Bialeschki, living on a farm at Sodorus, Champaign County, where they were found roosting with pigeons in the evening. Mr. Bialeschki reports that they were captured by hand after dark. They were in fine winter plumage, and there appeared to be four males and one female. More recently, a specimen was brought in by Miss Dameier on January 17, from Lena, Stephenson County, near Freeport. This is in the northwestern part of the state and is farther west than the previous records from the northern part of the state. While winter records are becoming common, spring and summer records are rare, although a pair are recorded as having bred at Texico. The specimens noted above have been incorporated in the research collections of the university museum.

The five specimens from Sodorus were kept alive for several days. They were confined in a sparrow trap in which entrance could be made only by the small door at the trap and this opened *inward*. On the second day myself and family were away from the house for several hours in the morning, returning early in the afternoon. What was our surprise to discover three of the five birds flying about the house. It was later observed that the birds had learned that the door could be pulled inward and had thus been able to force the door open far enough to squeeze out of the cage and escape by the space in which the balanced trap operated. Later a heavy cloth was placed over this end of the cage, but even this did not prevent several birds from escaping. To the students of animal behavior this is interesting as an example of comparative intelligence in birds. During their captivity, every wire in the trap was pulled and twisted in an attempt to get out, and this method probably caused the discovery of the movable door.

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[1] See Cooke, Circ. 40, U. S. Department of Agriculture, November, 1928.

DISPERSED STAGES OF THE STIGMA IN EUGLENA

SOME observations on the stigma of *Euglena gracilis* and *Euglena* sp. are of interest in connection with the commonly held view that such organelles of flagellates are modified chloroplasts, and that they divide during fission of the organism (Klebs) or may be formed *de novo* in one of the daughter cells (Korshikov). In flagellated forms of *E. gracilis* the stigma varies in diameter and thickness, and in size and number of its component granules. The granules may be large and few in number, or they may be numerous and so small that it is difficult to resolve them optically. The stigma, therefore, is not constant in structure in the species examined, and seems rather to be a loose aggregate of pigment granules of various sizes, possibly embedded in some sort of a homogeneous matrix. In non-flagellated ("division-cyst") stages of *E. gracilis* a number of reddish-orange granules are often seen in the inter-alveolar spaces; these are identical in color and similar in size to the granules of the stigma in flagellated stages. In some cases most of the granules are grouped in a loosely granular mass comparable in appearance to a somewhat diffuse stigma. In cells without such aggregates the granules are widely scattered. A "condensed" stigma like that of the flagellated form has not been observed in division-cysts. These facts point to the occurrence of a dispersed phase of the stigma in the life-cycle of *E. gracilis*.

The junior author, in continued observation of living flagellates, has traced the stigma through binary fission in *Euglena* sp. In the prophases the stigma breaks up into its component granules, which become scattered through the cytoplasm. In metaphase or early anaphases the granules become rearranged in two loose aggregates, one near each daughter gullet. These two aggregates persist through later anaphases and telophases, and give rise to a definitive stigma in each daughter organism.

If Grasse's view, that the stigma of Euglena represents the Golgi apparatus, be accepted—and its reaction to methods for demonstration of the Golgi apparatus supports such an interpretation—these observations afford an example of change in form of the Golgi apparatus in a free-living flagellate. In one species this involves a breaking up of the definitive Golgi apparatus into discrete granules in binary fission, followed by a rearrangement of the granules into two aggregates, one in each daughter organism. In the other species, there is a dispersal of such granules, varied with the formation of loose aggregates, in the non-flagellated division-cyst stages.

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