termining the fate of this disappearing sugar: whether it is oxidized, converted to fat, deposited as glycogen or changed to some other complex.

7973 C

Mechanism of Ingression in the Egg of Triturus Torosus.*

A. M. SCHECHTMAN. (Introduced by B. M. Allen.)

From the Department of Biological Sciences, University of California at Los Angeles.

In a previous paper[1] it was shown that the ventralmost surface of the zygote of the salamander, *Triturus torosus,* is carried into the interior of the egg sometime before gastrulation begins. Vitally stained marks were placed on the lower (vegetal) surface of the zygote and development allowed to proceed for 24 to 30 hours. The marks were subsequently located in the uppermost portion of the blastula floor.

In the present experiments large, clear marks were placed on the ventral (vegetal) surfaces of eggs at successive stages of cleavage. The subsequent location of the stained materials was determined by dissecting the eggs in the mid-blastula stage. Observations were

TABLE I.
Extent of Ingression of Vitally-Stained Marks Placed upon the Ventral Surfaces of Eggs at Successive Stages of Development.

Stages of Development	Presence of Stained Cells in the Floor of Blastula		
	Upper Third	Middle Third	Lower Third
Uncleaved egg (zygote)	+ (Fig. 1, A)	+	+ — in some cases*
First cleavage completed†	+ A few cells in some	+	+ — in some cases*
Second cleavage completed†	A few cells in some	+	+
Third cleavage completed†	—	+	+
Early Blastula	(Fig. 1, B)	A few cells in some	+
Later "	—	—	+

*The presence of stained material in the lower third of some eggs and its absence in others seems to be correlated roughly with the sizes of the stained marks. In several instances in which this point was observed specifically the positive cases were eggs with large stains.

†The term "completed" signifies that the cleavage furrow has reached the lower (vegetal) pole of the egg.

*This study was aided by a research grant from the University of California.

1 Schechtman, A. M., *Univ. Calif. Publ. Zool.,* 1934, **39**, 303.

made with a device which gives a ventral or lateral view without the necessity of inverting the egg.[1] The ingression described cannot, therefore, be a result of the movement of the heavier yolk material under the influence of gravity.

The results obtained with 34 eggs are given in Table I. Typical examples are illustrated in Fig. 1. From the table it is apparent that ingression is most extensive if the stain is applied *prior* to the completion of the first 3 cleavage furrows. Stains made after this stage undergo only a relatively small degree of ingression. And finally, if stains are applied when the egg is a well-developed blastula, very little or no ingression at all is discernible.

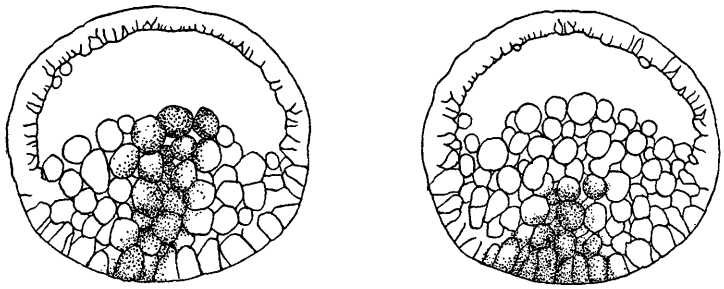

FIG. 1.
Sections through bisected blastulæ showing locations of vitally-stained materials (stippled). *A*. Egg stained in the zygote stage. *B*. Egg stained in the early blastula stage when 20-24 cells were visible from top view.

This relationship between extent of ingression and stage of cleavage gives us an insight into the mechanism involved.[2] The first 3 cleavages are the most extensive in scope, passing through a greater portion of the egg's substance. They are thus capable of displacing the stained ectoplasm to the greatest extent. Later cleavages are progressively localized to smaller and smaller portions of the egg.

These results support our original suggestion that ingression is accomplished by the movements incidental to cell-division. The displacement of the ventralmost material of the zygote to the top of the blastula floor is accomplished by the centripetal movement of the cleavage furrows.

[2] Since this paper was sent to press the type of experiment described has been applied to the egg of the frog, *Hyla regilla*. The results were identical to those reported for *Triturus torosus*.