EXPLANATION OF PLATES XX AND XXI.

Illustrating the Memoir on some Points in the Early Development of the Common Newt (Triton taeniatus), by W. B. Scott, B.A., and Henry F. Osborn, B.A.

With the exception of fig. 1 the following figures were drawn with a Zeiss' A objective. In figs. 2, 3, 4, 5, a No. 2 (Zeiss) eyepiece was used, and for figs. 6 and 7 a No. 3 eyepiece.

EXPLANATION OF PLATE XX.

LIST OF REFERENCES.

Fig. 1.—Longitudinal section of an embryo at time of commencement of invagination. Hartnack No. 7 obj., eyepiece 3. It shows one of the earliest stages of the epiblast.

Fig. 2.—Represents a longitudinal section of a Triton embryo (probably cristatus) in the early part of Stage A. At the opening of the blastopore the section is in the median line. It slants off forwards, however, to one side, and therefore out of the region of the alimentary canal. It shows the formation of the invagination-hypoblast and the confused mass of cells arising from the reflection of the epiblast.

Fig. 3.—A section of the same embryo. It may be considered the reverse of the last. At the blastopore it is at one side of the median line, while anteriorly it is directly in the median line. This obliquity explains the apparent upgrowth of yolk-cells in the centre. Putting this and the previous section together, a fair idea may be obtained of the actual relation of the layers at this period. It illustrates the formation of mesoblast by invagination, and the obliteration of the segmentation cavity by the advance of the alimentary canal. The blastopore has been artificially widened.

Fig. 4.—An anterior transverse section of an embryo, at Stage A, slightly more advanced than the previous one. It shows the shallow medullary groove, the lateral plates of mesoblast extending half way down the sides,
EXPLANATION OF PLATE XX—Continued.

also the invagination-hypoblast above the alimentary canal continuous at the sides with the yolk hypoblast.

**Fig. 5.—** A transverse section through the head region of an embryo of Stage b. It shows the splitting of the mesoblast and the formation of the medullary plate and notochord.

**Fig. 6.—** A transverse section through the trunk region of an embryo at Stage c, showing a slightly more advanced development than the last.

**Fig. 7.—** Represents a transverse section through the anterior trunk region late in Stage d.

EXPLANATION OF PLATE XXI.

**List of References.**


**Fig. 8.—** Another transverse section in the middle region. This section is cut obliquely, so that the lateral and vertebral plates of mesoblast do not appear continuous with the mesoblast lining the sides of the embryo; it gives therefore at first sight a false impression.

**Fig. 9.—** Enlarged view of the lateral epiblast of fig. 6. Zeiss D, ocul. 3. a. One point of cell division.

**Fig. 10.—** Horizontal longitudinal section through the head of an embryo of Stage f. The section is slightly oblique, and hence unsymmetrical. It shows the unsegmented head cavity.

**Fig. 11.—** Vertical longitudinal section through the head of an embryo of Stage k, showing the relations of the head cavities, aortic arches, and gill clefts; it is taken too much at the side to show the thyroid.

**Fig. 12.—** Transverse section through head of an embryo of Stage r.

**Fig. 13.—** Transverse section of head of embryo very slightly older than the preceding figure.

**Fig. 14.—** Section through the same embryo as fig. 12, but considerably further forwards.

**Fig. 15.—** Transverse section through the head of an embryo of about Stage m.

**Fig. 16.—** External drawing of an embryo of Stage d. s. r. Sinus rhomboidalis.

**Fig. 17.—** External drawing of an embryo of Stage r. a. Oral involution.
DESCRIPTION OF PLATE XXII,

Illustrating Professor Ray Lankester's Memoir "On the Structure of Haliphysema."

**Fig. 1.**—*Haliphysema Tumanowiczii*, Bowerbank, drawn from a specimen, placed while living in weak chromic acid (4th per cent.), and subsequently preserved in strong alcohol. *pl.* Streaming protoplasm investing the spicula. *esp.* Spicules derived from Esperia. *ren.* Spicules derived from Reniera.

**Fig. 2.**—Protoplasmic core of a similar specimen, obtained by gently crushing the test. The core as drawn is a restoration of a specimen broken into three pieces. It is somewhat *flattened*, and therefore widened by pressure. Anteriorly the egg-like bodies are seen embedded in the solid protoplasm. The surface of the core is grooved or ribbed by the longitudinally placed spicules forming the test.

N.B.—Figs. 1 and 2 are magnified 135 times linear.

**Fig. 3.**—A spicule of the test (derived from a Reniera) showing investment of streaming protoplasm. *n.* One of the vesicular nuclei. From a specimen preserved in chromic acid followed by alcohol.

**Fig. 4.**—Egg-like body; from a similarly preserved specimen teased.

**Fig. 5.**—Vacuolated protoplasm and large and small corpuscles; from a similar specimen.

**Fig. 6.**—Egg-like bodies from a similar specimen; one is in the process of transverse fission.

**Fig. 7.**—Portion of the protoplasm showing the wall of cavities in which egg-like bodies were embedded.

**Fig. 8.**—Corpuscle similar to those of fig. 5.

**Fig. 9.**—Vacuolated, reticular protoplasm, with a number of the characteristic vesicular nuclei embedded. From a chromic-acid-alcohol specimen, teased.

**Fig. 10.**—Vesicular nuclei of Haliphysema, showing various forms of collapse due to the action of reagents. *a, b.* Still spherical. *c.* Invaginated hemisphere. *d.* False appearance of transverse septum and fission. *e.* Lateral view of *d.*

**Fig. 11.**—Portion of the core of a specimen hardened in ½ per cent. chromic acid, followed by alcohol, then stained with haematoxylin, mounted in oil of cloves and Canada balsam, and carefully crushed whilst in the last-named medium. The vesicular nuclei, darkly stained, are seen besides smaller corpuscles. *c.* Cavity from which a vesicular nucleus has been removed. *r.* Ridges fitting into the interstices of the test.

N.B.—Figs. 3 to 11 represent the objects of 280 times the natural size, linear.
LITHAMÓBA
EXPLANATION OF PLATE XXIII,

Illustrating Professor Ray Lankester's "Description of Lithamæba discus, nov. gen. et sp., one of the Gymnomyxa."

Fig. 1.—Lithamæba discus at rest; magnified about 350 diameters.  n. nucleus; conc. concretions; f. food matters; cv. contractile vacuole.

Fig. 2.—The same specimen actively extruding pseudopodia.

Fig. 3.—Another specimen (less magnified) killed by iodine solution.

Fig. 4.—The vacuolar structure of the protoplasm, as seen under No. 10 immersion lens, in a specimen treated with osmic acid and picro-carmine.

Fig. 5.—The angular nucleus and its investing membrane after the action of dilute acetic acid.

Fig. 6.—The granular cuticle in optical section, after the action of iodine solution.

Fig. 7.—The granular cuticle, surface view, after the action of iodine solution.

Fig. 8.—A concretion isolated.
DESCRIPTION OF PLATE XXIV,

Illustrating Mr. Gibbes' Memoir on the "Structure of the Vertebrate Spermatozoon."

Fig. 1.—*S. maculata.* Fresh. Drawn with Powell and Lealand's \( \frac{1}{3} \) imm. \( \times 950 \).

Fig. 2.—*S. maculata.* Fresh. Drawn with Powell and Lealand's \( \frac{1}{3} \) new formula imm.; upper part of filament was in motion at the time.

Fig. 3.—*Triton cristatus.* Prepared in 5 per cent. chronic ammonium, and mounted in glycerin. Drawn with Ziess' F.

Fig. 4.—Spermatozoon of horse, fresh mounted in glycerin. Drawn with Powell and Lealand's \( \frac{1}{3} \) immersion. \( \times 950 \).

Fig. 5.—Spermatozoon of guinea-pig, fresh mounted in glycerin. Drawn with \( \frac{1}{3} \) immersion. \( \times 950 \).

Fig. 6.—Spermatozoon of *Salamandra maculata*, mounted in a solution of chloride of sodium \( \frac{1}{3} \) per cent., and drawn, after having been mounted forty-eight hours, with Zeiss' F.

Fig. 7.—Spermatozoon of *Triton cristatus*, taken fresh and mounted in \( \frac{1}{3} \) per cent. solution of chloride of sodium, and drawn with Powell and Lealand's \( \frac{1}{3} \) dry, after being mounted four weeks.

Figs. 8 and 9.—Spermatozoon of *S. maculata*, taken fresh and mounted in \( \frac{1}{3} \) per cent. salt solution. Drawn with Powell and Lealand's \( \frac{1}{3} \) immersion. In Fig. 8 the head and membrane have altogether disappeared, while in Fig. 9 they are scarcely touched.

Fig. 10.—Spermatozoon of *S. maculata* after immersion in a 5 per cent. solution of Sodse Bicarb. for forty-eight hours. Drawn with \( \frac{1}{10} \) of immersion.