

1449 VOL-38
1-21

Library of the Museum

OF

COMPARATIVE ZOÖLOGY,

AT HARVARD COLLEGE, CAMBRIDGE, MASS.

Founded by private subscription, in 1861.



Deposited by ALEX. AGASSIZ.

No.

SEP 6 1895

New Series, No. 149 (Vol. 38, Part 1).

Price 10s.

7527

AUGUST, 1895.

THE

1479
1-21

QUARTERLY JOURNAL

OF

MICROSCOPICAL SCIENCE.

EDITED BY

E. RAY LANKESTER, M.A., LL.D., F.R.S.,

*Linacre Professor of Comparative Anatomy, Fellow of Merton College, and Honorary
Fellow of Exeter College, Oxford.*

WITH THE CO-OPERATION OF

ADAM SEDGWICK, M.A., F.R.S.,

Fellow and Lecturer of Trinity College, Cambridge;

AND

W. F. R. WELDON, M.A., F.R.S.,

*Jodrell Professor of Zoology and Comparative Anatomy in University College, London;
Fellow of St. John's College, Cambridge.*

WITH LITHOGRAPHIC PLATES AND ENGRAVINGS ON WOOD.



LONDON :

J. & A. CHURCHILL, 11, NEW BURLINGTON STREET.

1895.

CONTENTS OF No. 149.—New Series.

MEMOIRS:

	PAGE
On the Variation of <i>Haliclystus octoradiatus</i> . By EDWARD T. BROWNE, B.A., University College, London. (With Plate 1)	1
The Collar-cells of <i>Heteroccela</i> . By GEORGE BIDDER. (With Plate 2)	9
The Metamorphosis of Echinoderms. By HENRY BURY, M.A., F.L.S., late Fellow of Trinity College, Cambridge. (With Plates 3—9)	45
A Criticism of the Cell-Theory; being an Answer to Mr. Sedgwick's Article on the Inadequacy of the Cellular Theory of Development. By GILBERT C. BOURNE, M.A., F.L.S., Fellow of New College, Oxford	137

DEC 24 1895

New Series, No. 150 (Vol. 38, Part 2).

Price 10s.

7527

NOVEMBER, 1895.

THE
QUARTERLY JOURNAL
OF
MICROSCOPICAL SCIENCE.

EDITED BY

E. RAY LANKESTER, M.A., LL.D., F.R.S.,

*Linacre Professor of Comparative Anatomy, Fellow of Merton College, and Honorary
Fellow of Exeter College, Oxford.*

WITH THE CO-OPERATION OF

ADAM SEDGWICK, M.A., F.R.S.,

Fellow and Lecturer of Trinity College, Cambridge;

AND

W. F. R. WELDON, M.A., F.R.S.,

*Jodrell Professor of Zoology and Comparative Anatomy in University College, London;
late Fellow of St. John's College, Cambridge.*

WITH LITHOGRAPHIC PLATES AND ENGRAVINGS ON WOOD.



LONDON :

J. & A. CHURCHILL, 11, NEW BURLINGTON STREET.

1895.

CONTENTS OF No. 150.—New Series.

MEMOIRS :

	PAGE
On the Distribution of Assimilated Iron Compounds, other than Hæmoglobin and Hæmatins, in Animal and Vegetable Cells. By A. B. MACALLUM, B.A., M.B., Ph.D., Associate-Professor of Physiology, University of Toronto. (With Plates 10—12)	175
On the Structural Changes in the Reproductive Cells during the Spermatogenesis of Elasmobranchs. (From the Huxley Research Laboratory, Royal College of Science, London.) By J. E. S. MOORE, A.R.C.S. (With Plates 13—16)	275
Notes on the Fecundation of the Egg of <i>Sphærechinus granularis</i> , and on the Maturation and Fertilisation of the Egg of <i>Phallusia mammillata</i> . By M. D. HILL, B.A.Oxon. (With Plate 17)	315
Further Remarks on the Cell-theory, with a Reply to Mr. Bourne. By ADAM SEDGWICK, F.R.S.	331

MAR 1 1896

9524

New Series, No. 151 (Vol. 38, Part 3).

Price 10s.

JANUARY, 1896.

THE
QUARTERLY JOURNAL
OF
MICROSCOPICAL SCIENCE.

EDITED BY

E. RAY LANKESTER, M.A., LL.D., F.R.S.,

Linacre Professor of Comparative Anatomy, Fellow of Merton College, and Honorary Fellow of Exeter College, Oxford; Corresponding Member of the Imperial Academy of Sciences of St. Petersburg, and of the Academy of Sciences of Philadelphia.

WITH THE CO-OPERATION OF

ADAM SEDGWICK, M.A., F.R.S.,

Fellow and Lecturer of Trinity College, Cambridge;

AND

W. F. R. WELDON, M.A., F.R.S.,

Jodrell Professor of Zoology and Comparative Anatomy in University College, London; late Fellow of St. John's College, Cambridge.

WITH LITHOGRAPHIC PLATES AND ENGRAVINGS ON WOOD.



LONDON :

J. & A. CHURCHILL, 11, NEW BURLINGTON STREET.

1896.

CONTENTS OF No. 151.—New Series.

MEMOIR:

	PAGE
The Development of <i>Asterina gibbosa</i> . By E. W. MacBRIDE, Fellow of St. John's College; Demonstrator in Animal Morphology in the University of Cambridge. (With Plates 18—29) . . .	339

4524

New Series, No. 152 (Vol. 38, Part 4).

Price 10s.

FEBRUARY, 1896.

THE
 QUARTERLY JOURNAL
 OF
 MICROSCOPICAL SCIENCE.

EDITED BY

E. RAY LANKESTER, M.A., LL.D., F.R.S.,

Linacre Professor of Comparative Anatomy, Fellow of Merton College, and Honorary Fellow of Exeter College, Oxford; Corresponding Member of the Imperial Academy of Sciences of St. Petersburg, and of the Academy of Sciences of Philadelphia; Foreign Member of the Royal Bohemian Society of Sciences.

WITH THE CO-OPERATION OF

ADAM SEDGWICK, M.A., F.R.S.,

Fellow and Lecturer of Trinity College, Cambridge;

AND

W. F. R. WELDON, M.A., F.R.S.,

Jodrell Professor of Zoology and Comparative Anatomy in University College, London; late Fellow of St. John's College, Cambridge.

WITH LITHOGRAPHIC PLATES AND ENGRAVINGS ON WOOD.



LONDON :

J. & A. CHURCHILL, 11, NEW BURLINGTON STREET.

1896.

CONTENTS OF No. 152.—New Series.

MEMOIRS:

	PAGE
The Early Development of <i>Amia</i> . By BASHFORD DEAN, Ph.D., Columbia College. (With Plates 30—32)	410
On <i>Kynotus cingulatus</i> , a new Species of Earthworm from Imerina in Madagascar. By W. BLAXLAND BENHAM, D.Sc.Lond., Hon. M.A.Oxon., Aldrichian Demonstrator in Comparative Ana- tomy in the University of Oxford. (With Plates 33 and 34)	445
Notes on the Ciliation of the Ectoderm of the Amphibian Embryo. By RICHARD ASSHETON, M.A. (With Plate 35)	465
Ontogenetic Differentiations of the Ectoderm in <i>Necturus</i> . Study II. —On the Development of the Peripheral Nervous System. By JULIA B. PLATT. (With Plates 36—38)	485
INDEX	549
TABLE OF CONTENTS.	

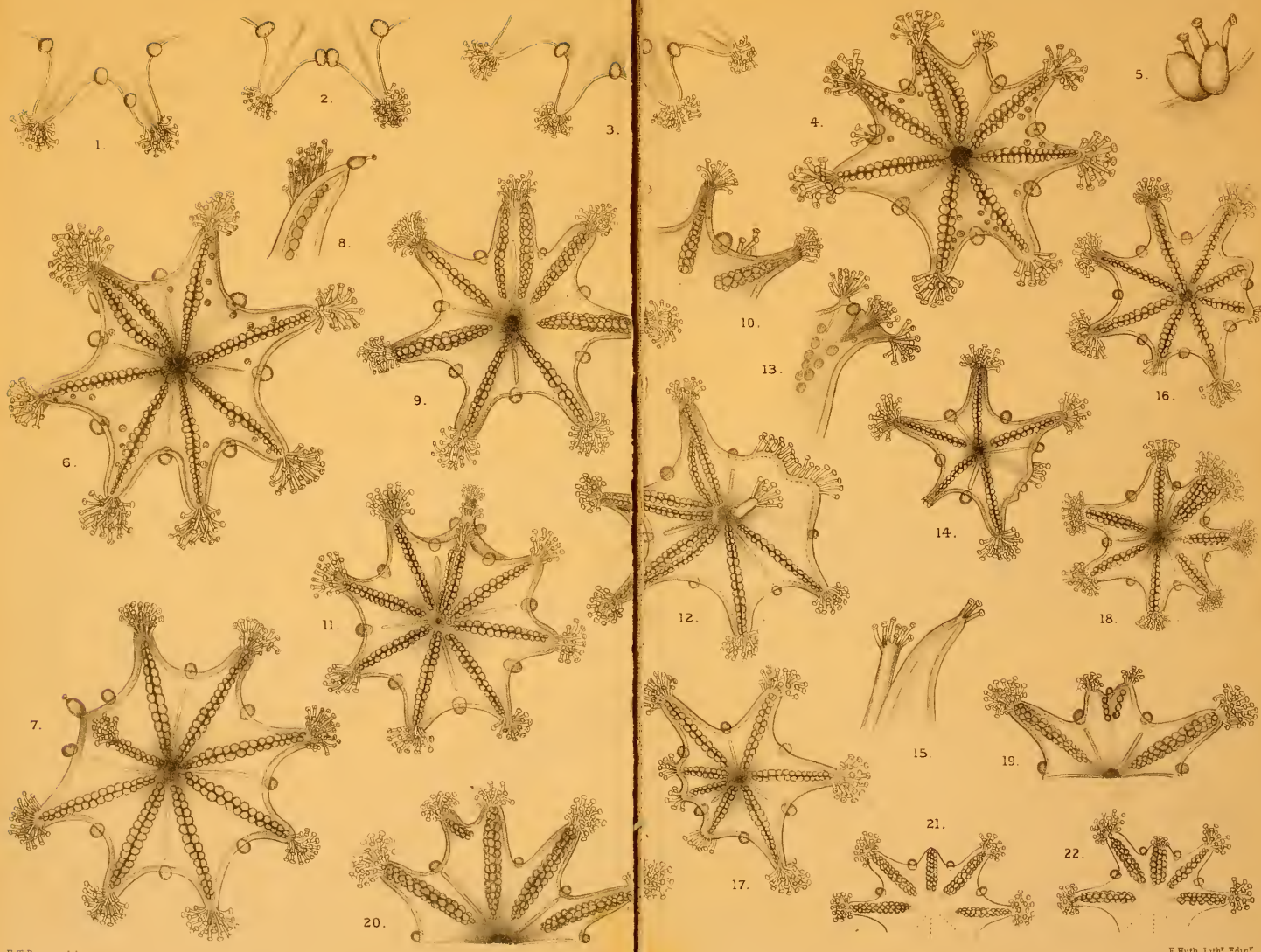


Fig. 1.



Fig. 2.



Fig. 3.



(x 2500)

Fig. 4.



Fig. 6.



Fig. 5.



Fig. 7.



Fig. 11^b



Fig. 11^c



Fig. 20.



Fig. 22.



Fig. 21.



Fig. 19.



Fig. 18.

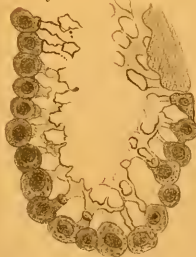


Fig. 10.



Fig. 11^a



Fig. 12.



Fig. 9.



Fig. 15.



Fig. 16.

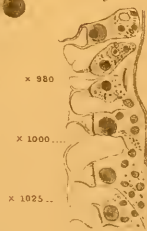


Fig. 17.



Fig. 8.



Fig. 13.

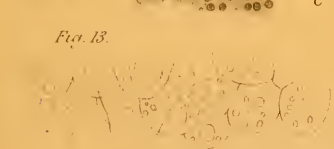
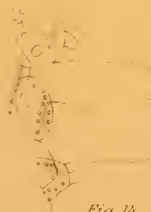
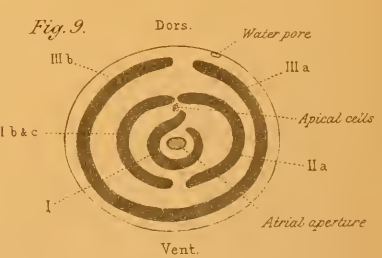
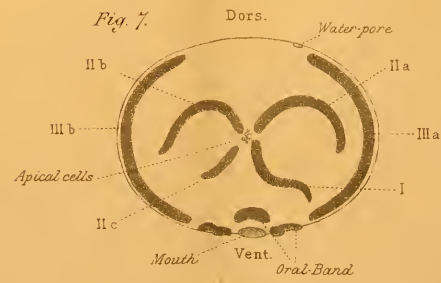
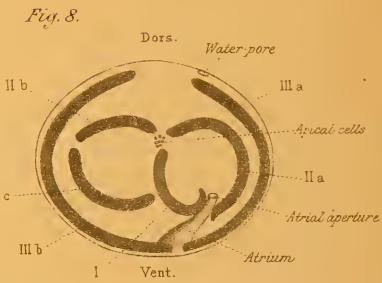
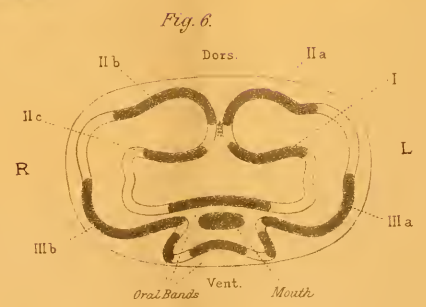
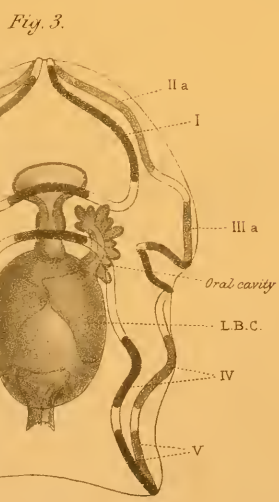
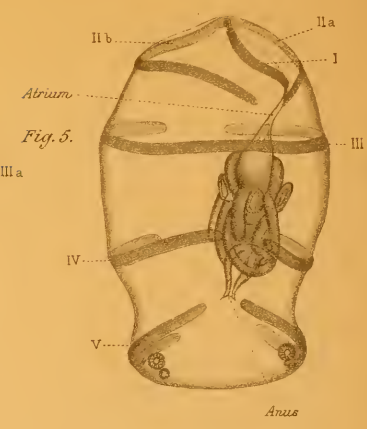
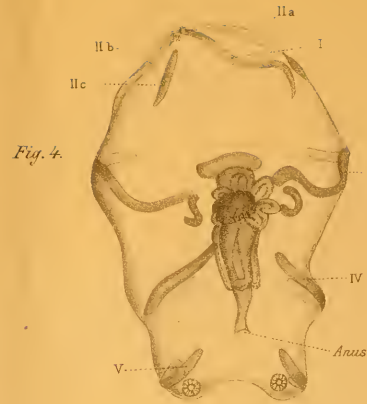
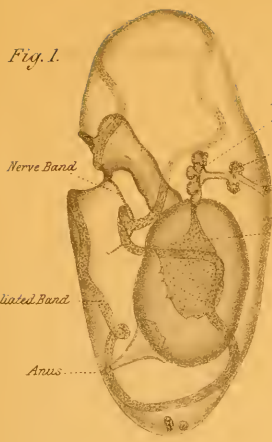


Fig. 13^a



Fig. 14.





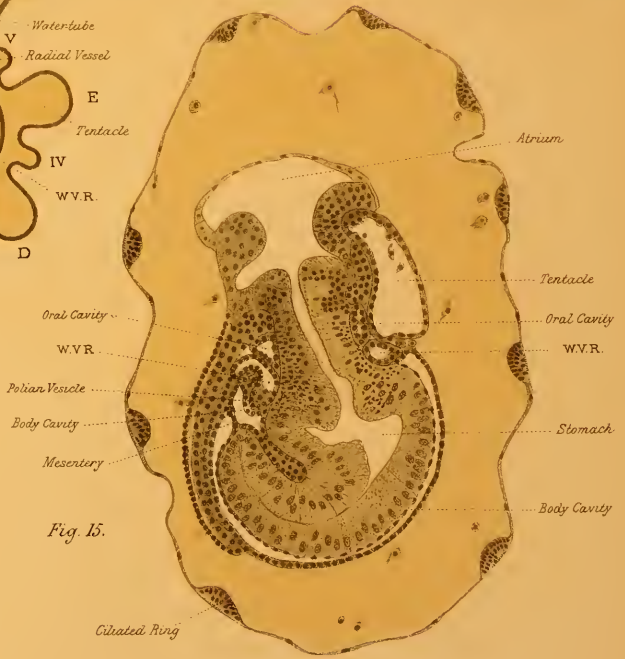
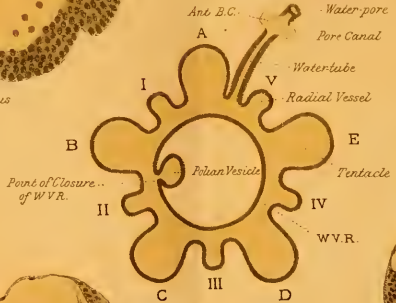
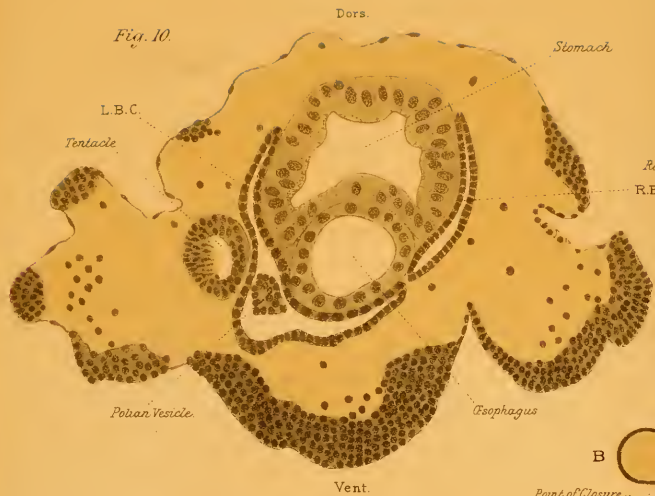


Fig. 16.

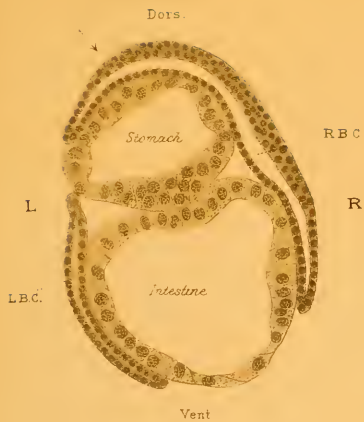


Fig. 17.

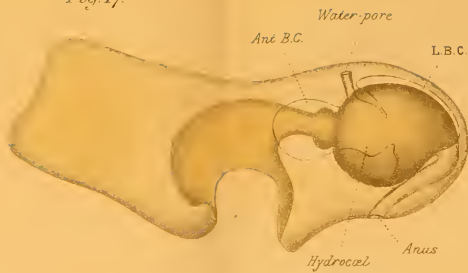


Fig. 18.

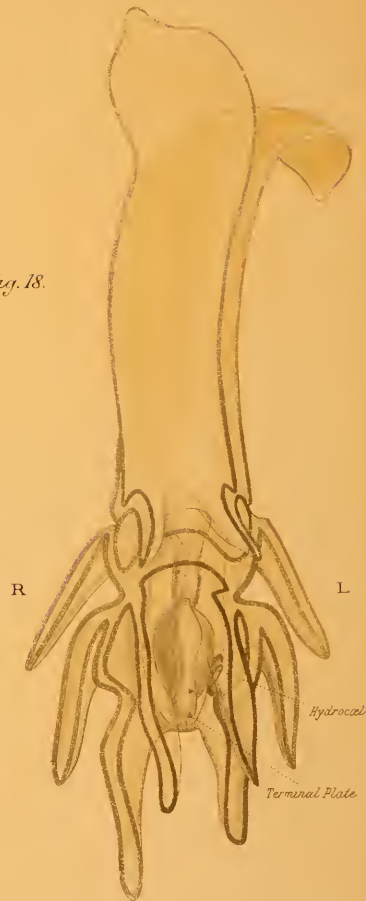


Fig. 19.

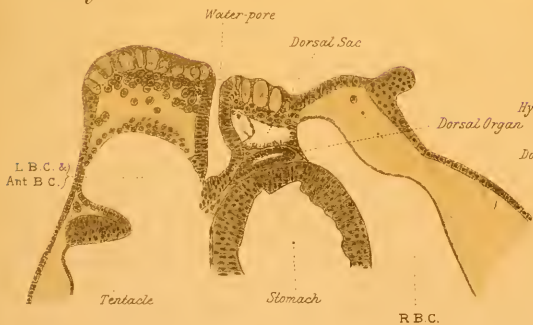


Fig. 20.



Fig. 21.



Fig. 22.



Fig. 25.

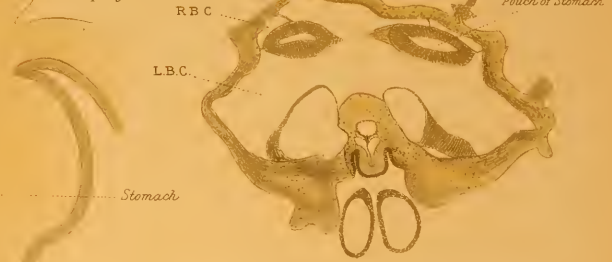


Fig. 26.

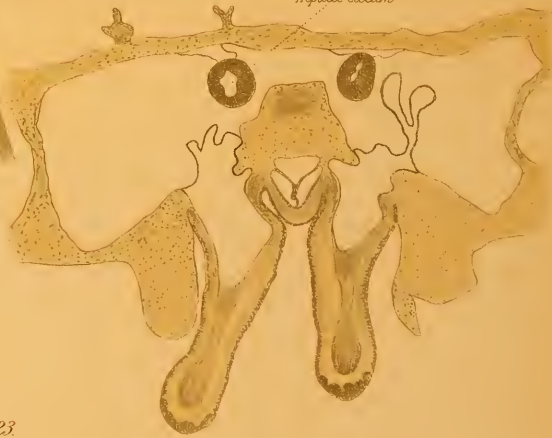


Fig. 24.

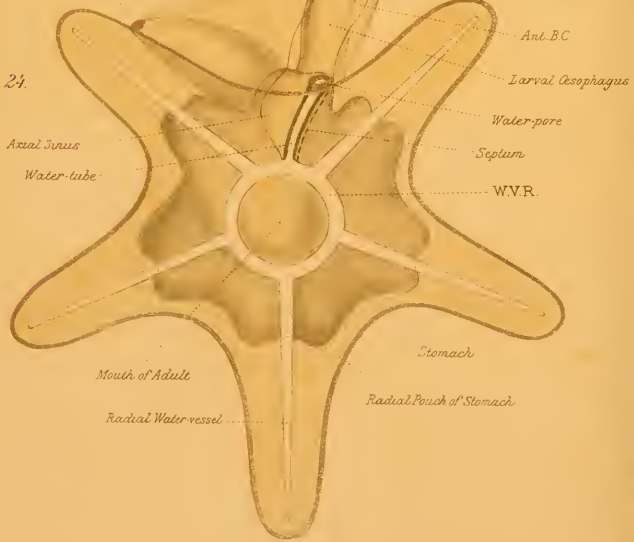


Fig. 23.

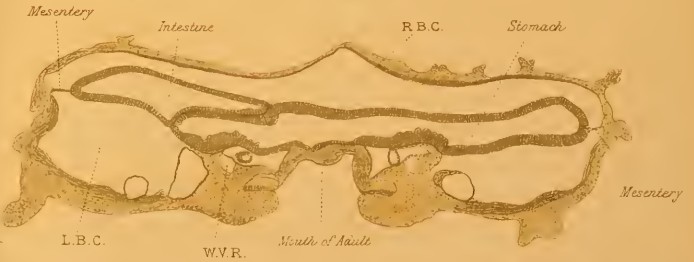


Fig. 27.

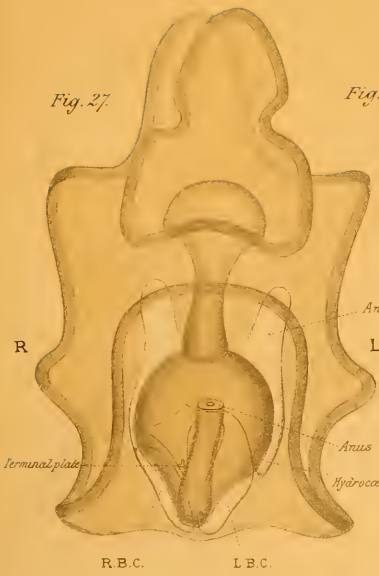


Fig. 28.

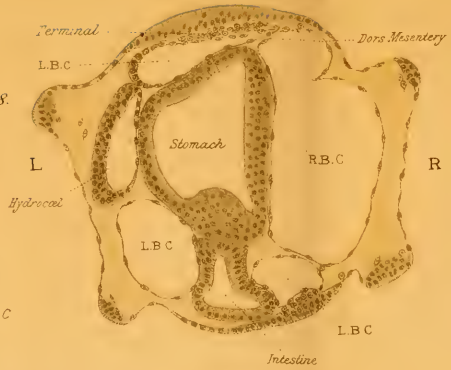


Fig. 29.

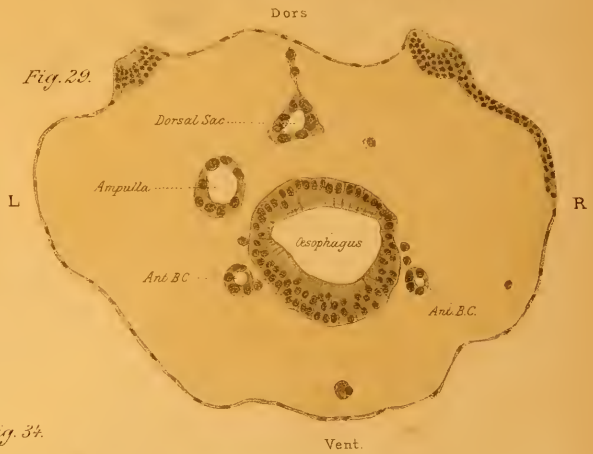


Fig. 32.

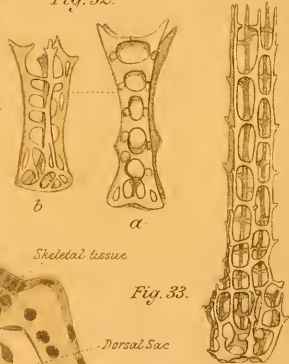


Fig. 34.

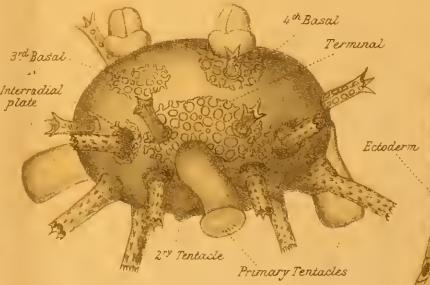


Fig. 30.

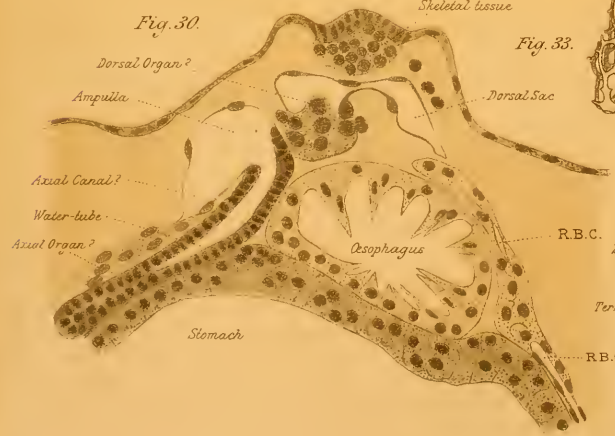


Fig. 33.



Fig. 31.



Fig. 35.

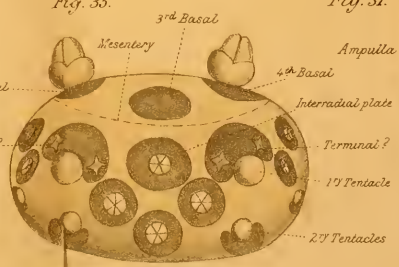


Fig. 36.

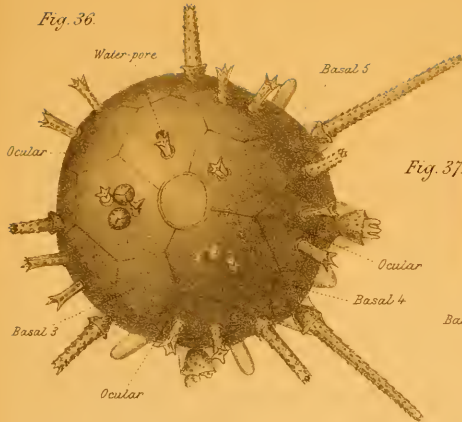


Fig. 37.



Fig. 38.

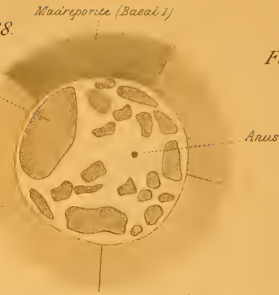


Fig. 40.

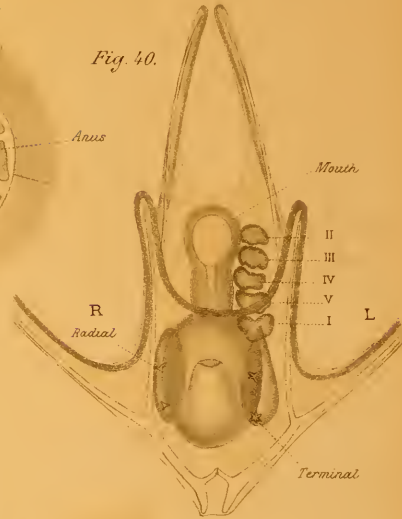


Fig. 39.

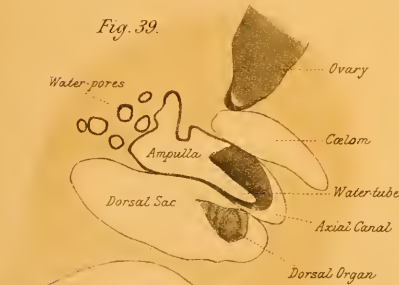


Fig. 39.



Fig. 42.



Fig. 41.

Fig. 43.

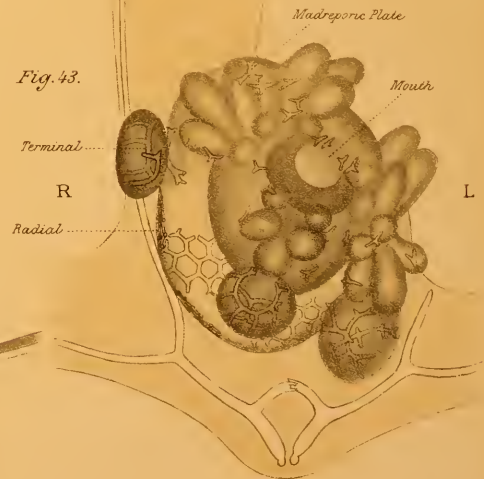


Fig. 44.

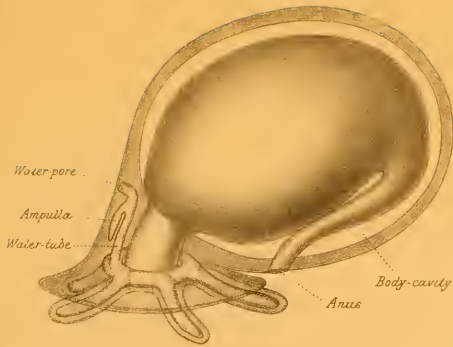


Fig. 45.

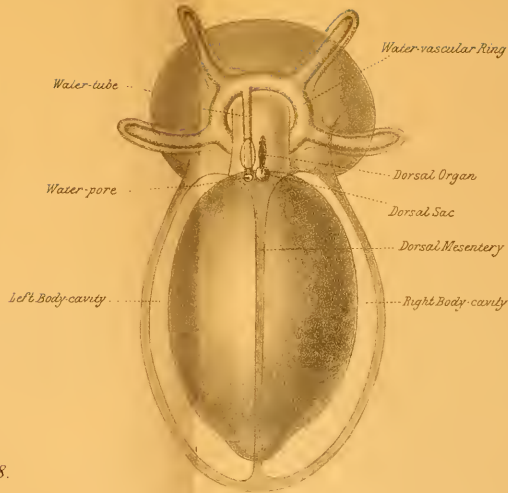


Fig. 46.

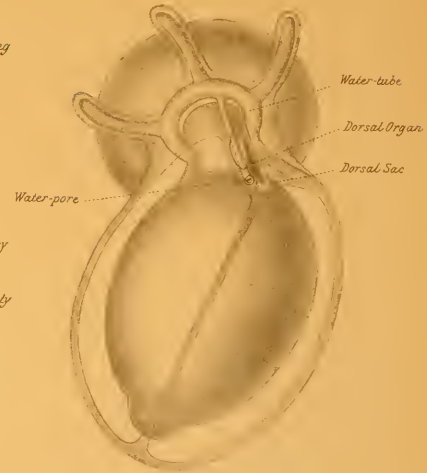


Fig. 47.

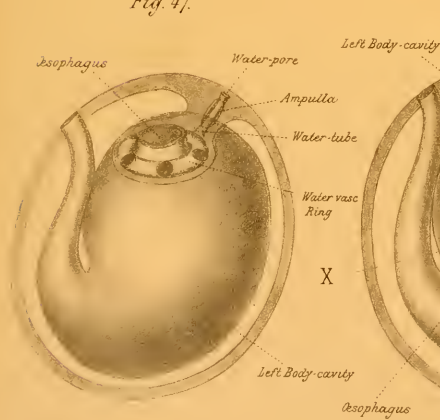


Fig. 48.

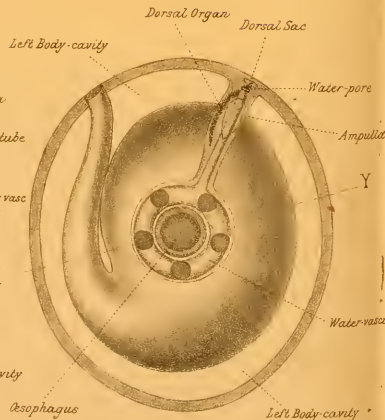


Fig. 49.

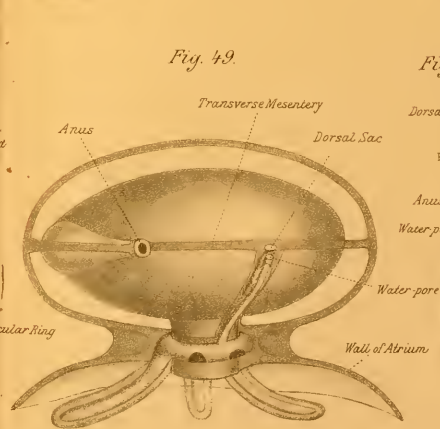
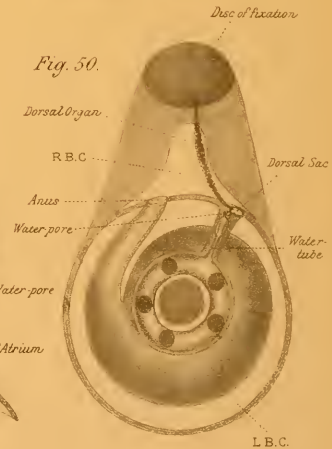
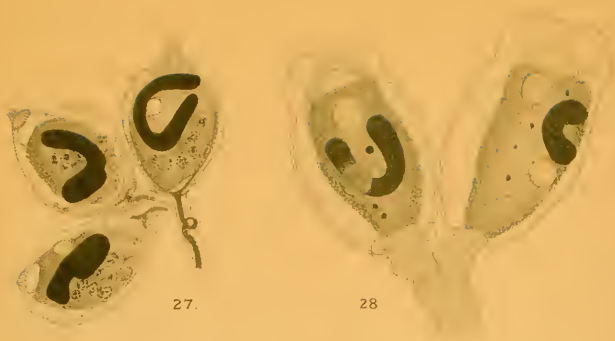


Fig. 50.









27.

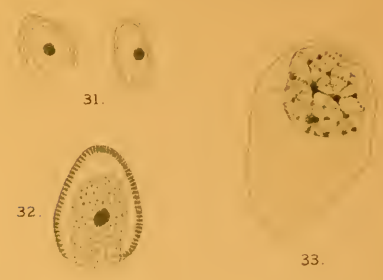
28.



sp

n

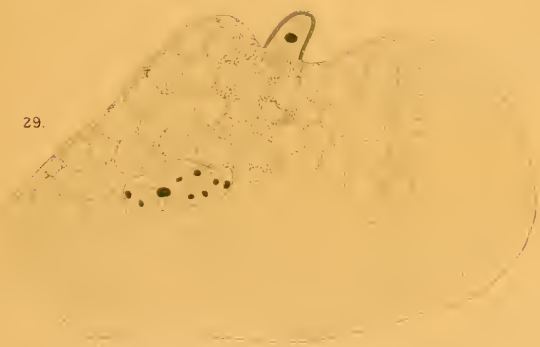
30.



31.

32.

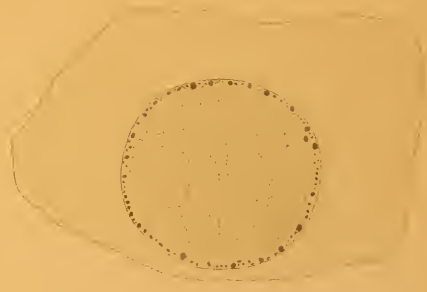
33.



29.



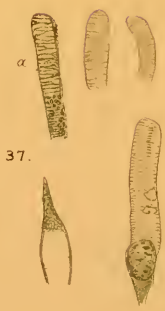
34.



35.



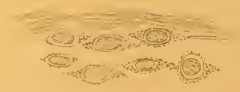
36.



37.



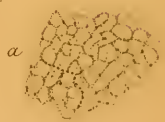
38.



39.



40.



a



a

41.



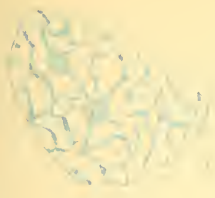
b

43.



42.

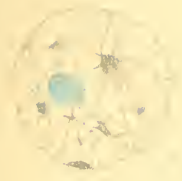




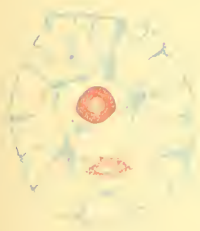
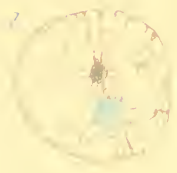
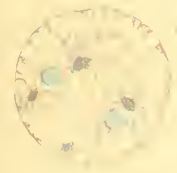
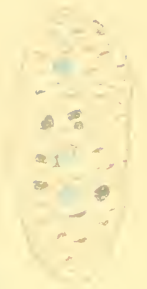
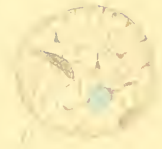
A+



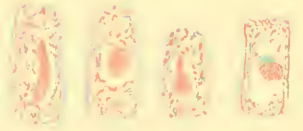
+



B+



C+



D+



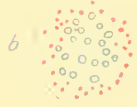
50



b



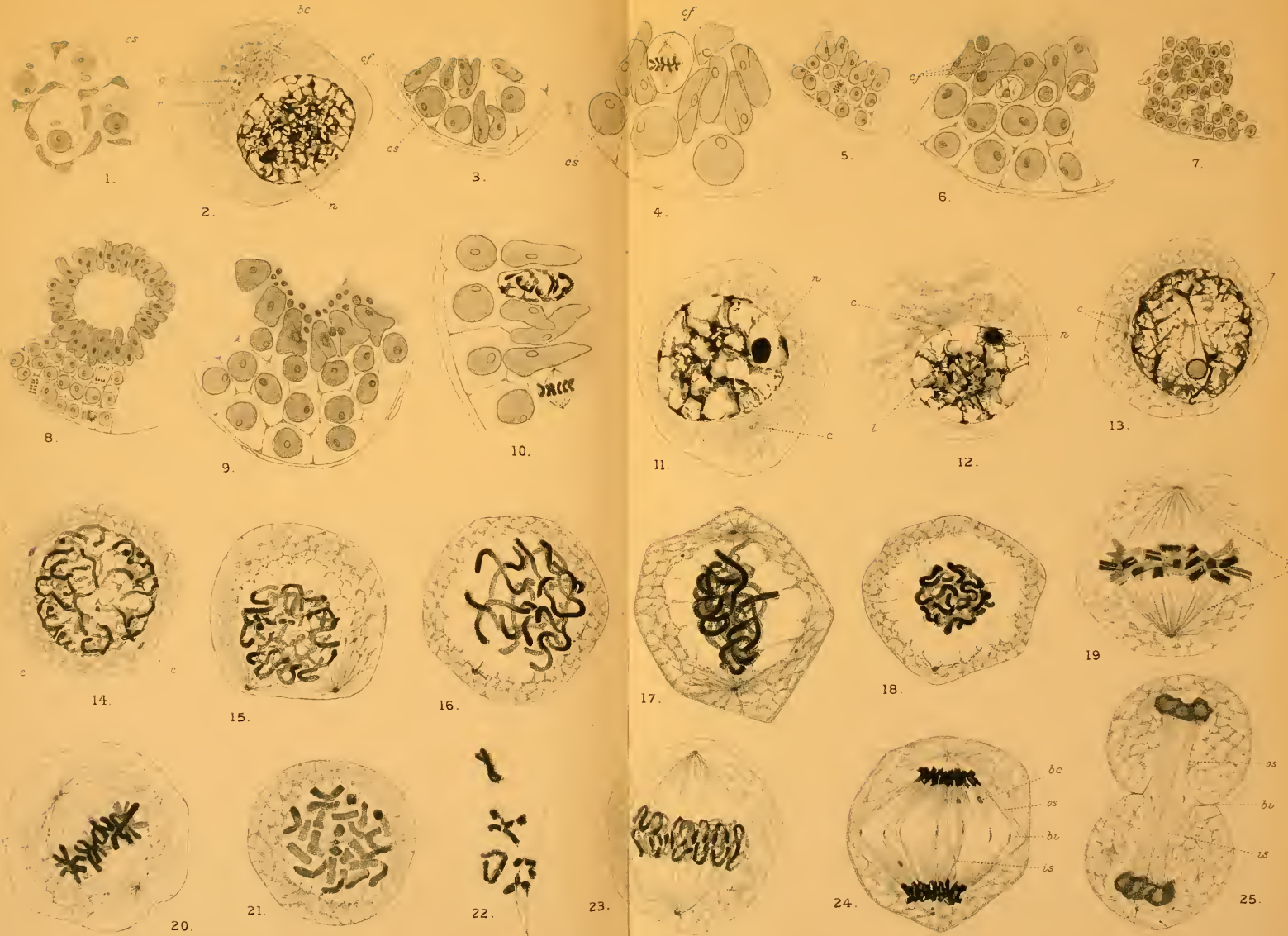
c

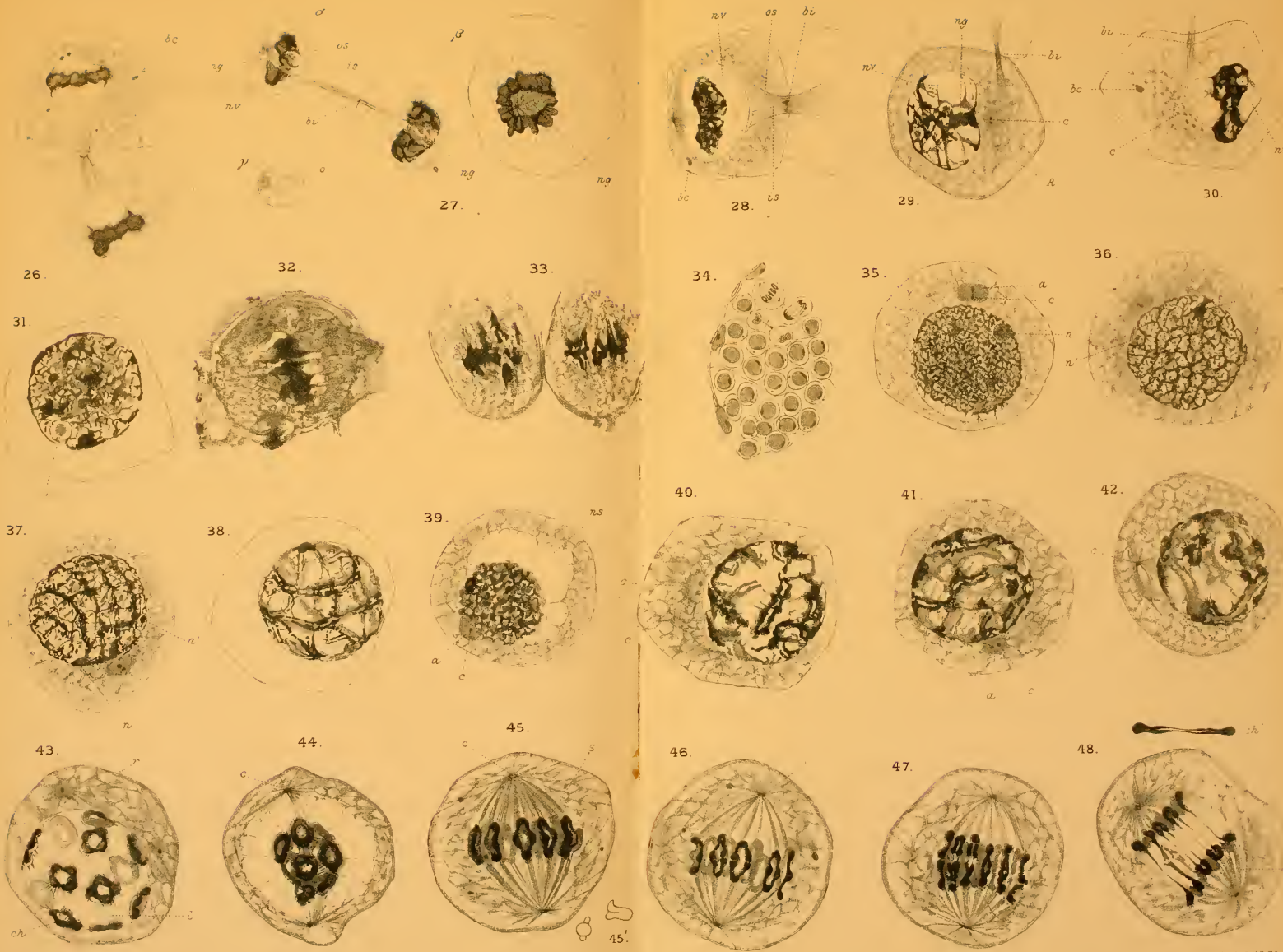


d

52

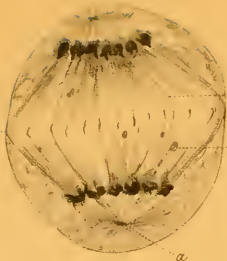




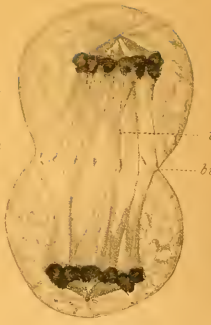




49.



50.



51.



52.



53.



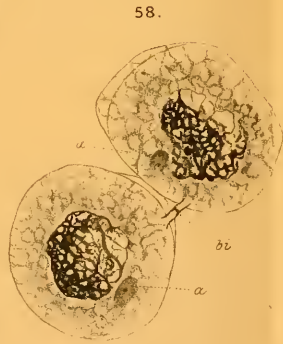
54.



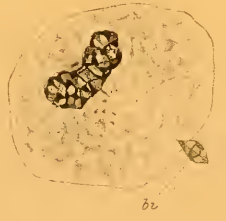
55.



56.



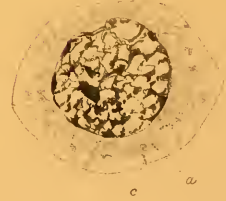
57.



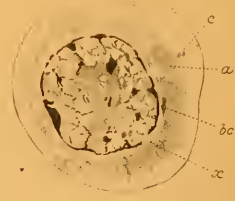
58.



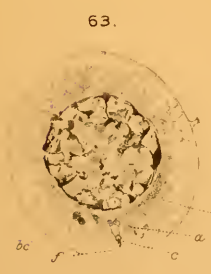
59.



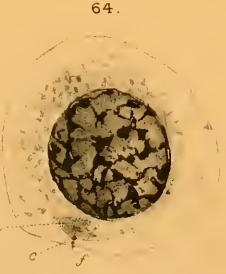
60.



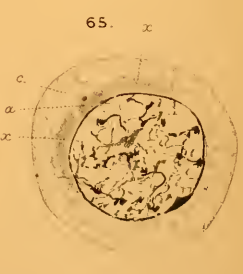
61.



62.



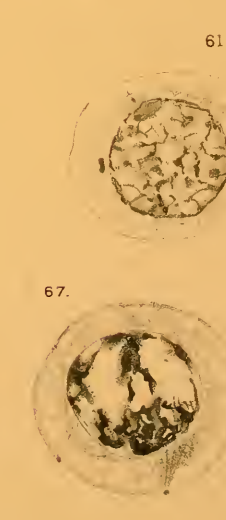
63.



64.



65.



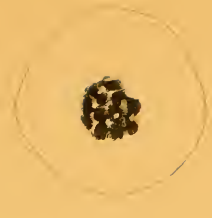
66.



67.



69.



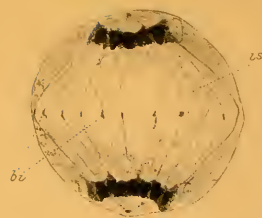
70.



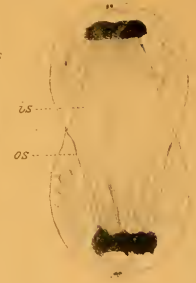
71.



72.



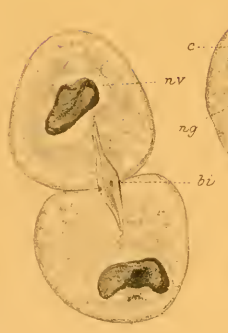
73.



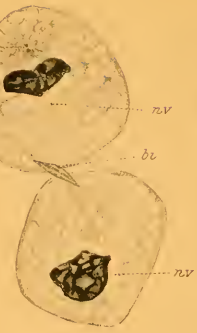
74.



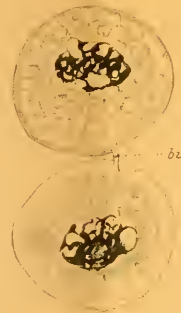
75.



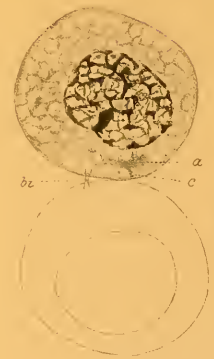
76.



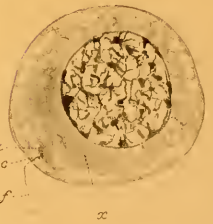
77.



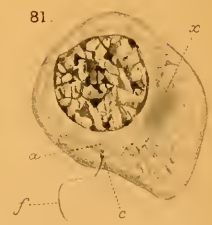
78.



79.



80.



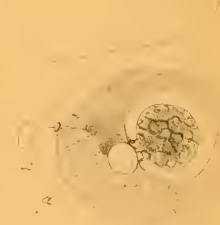
81.



82.



83.



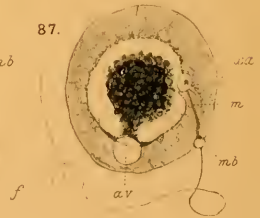
84.



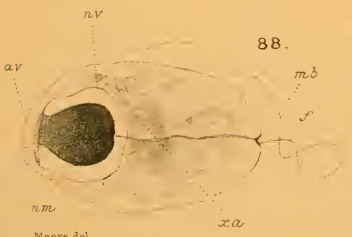
85.



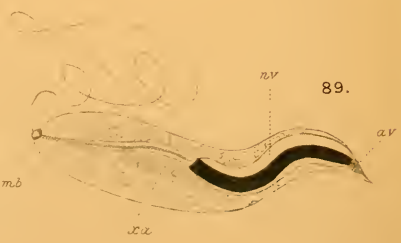
86.



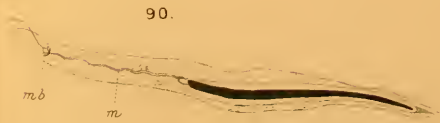
87.



88.



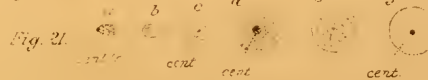
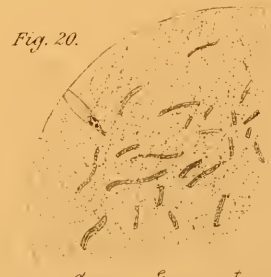
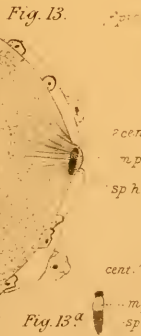
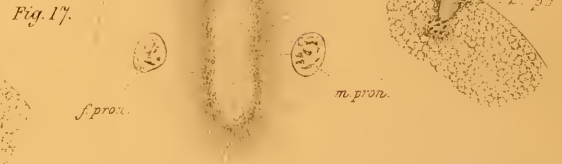
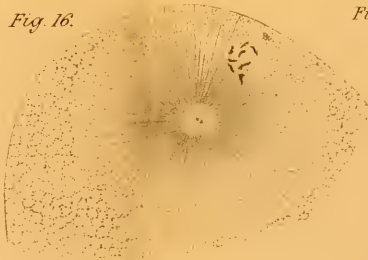
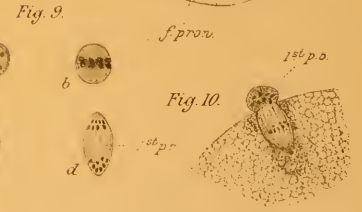
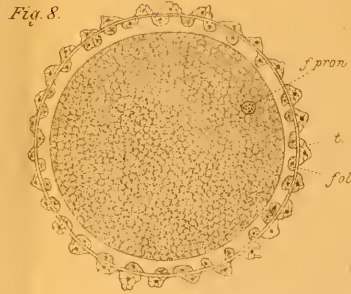
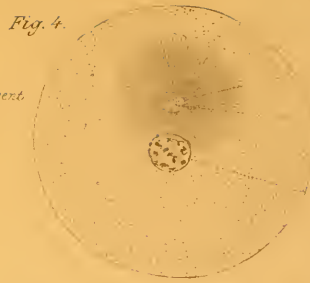
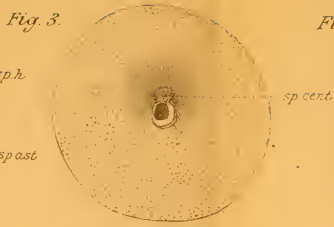
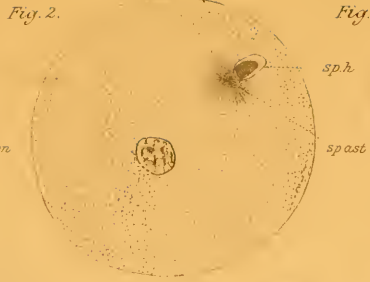
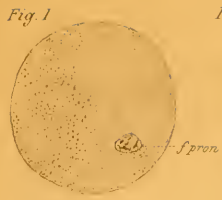
89.



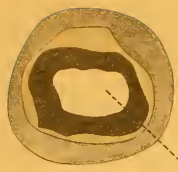
90.



91.



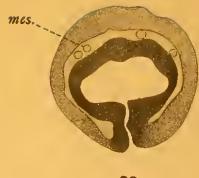




20



21



22



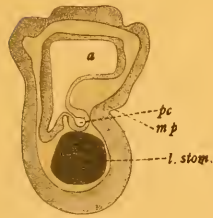
23



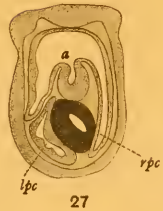
24



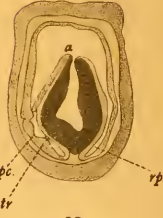
25



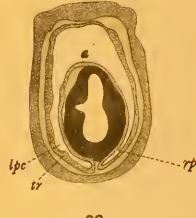
26



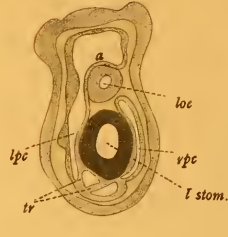
27



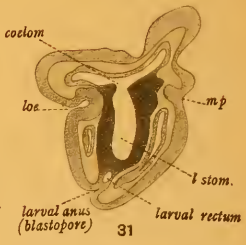
28



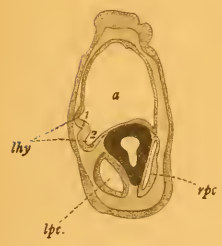
29



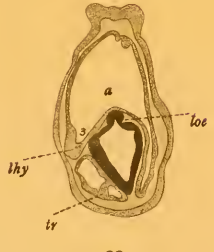
30



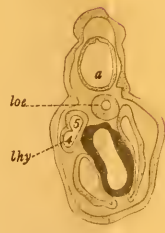
31



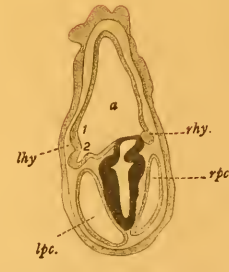
32



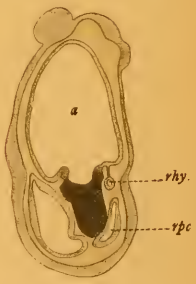
33



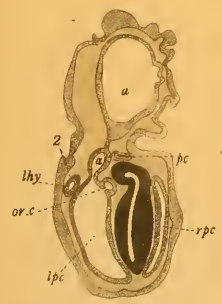
34



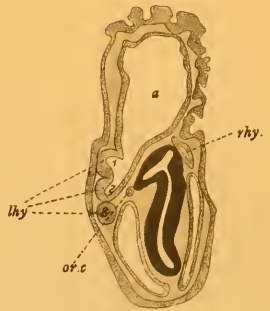
35



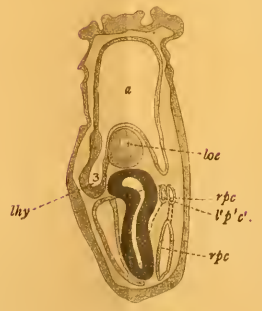
36



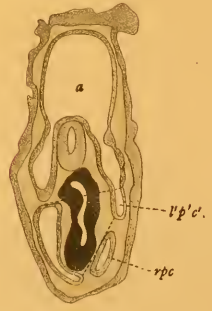
37



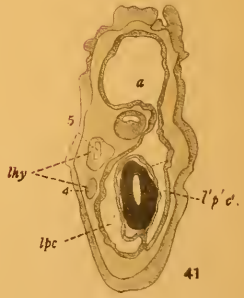
38



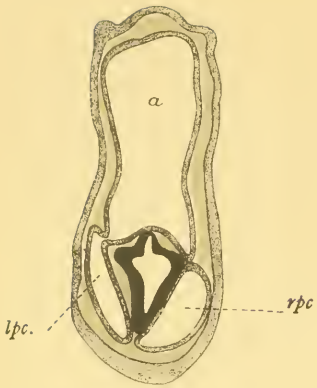
39



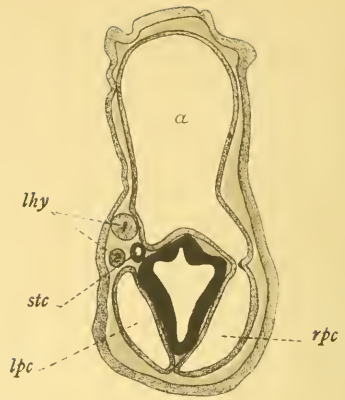
40



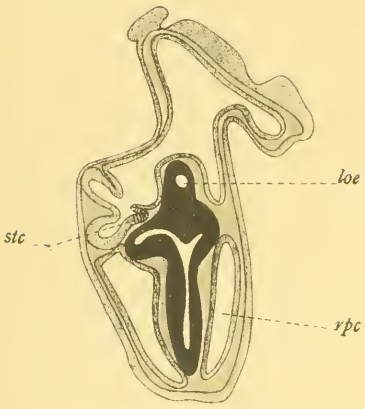
41



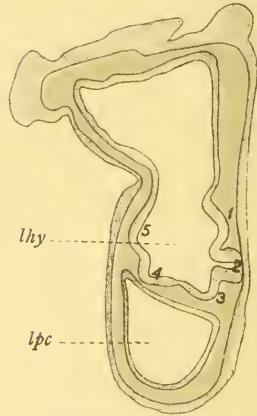
42



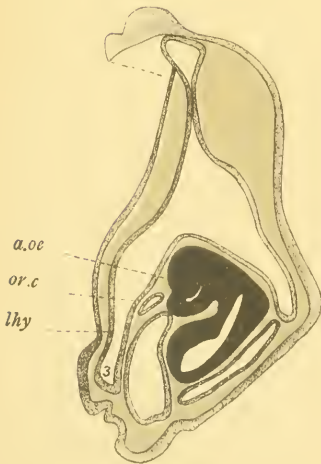
43



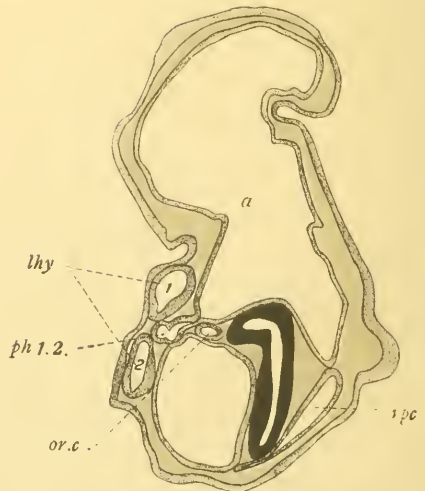
46



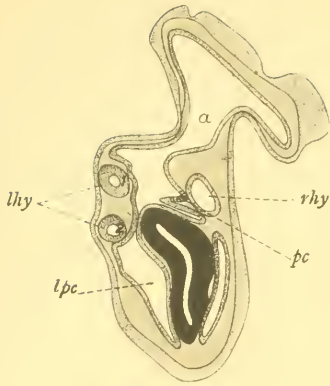
47



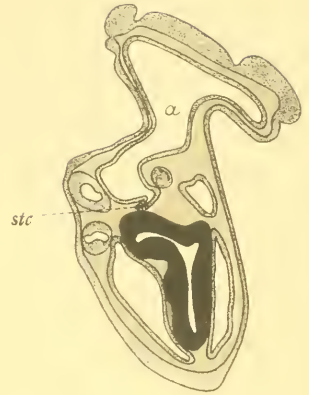
50



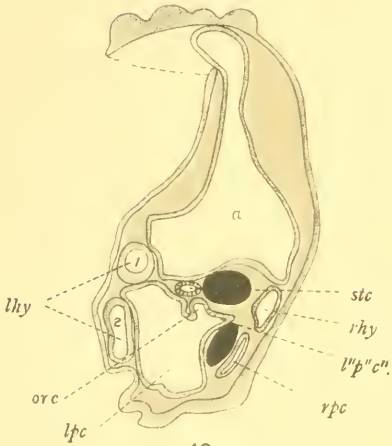
51



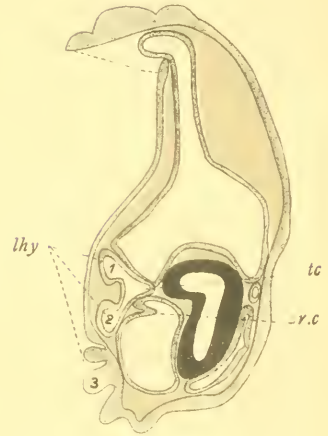
44



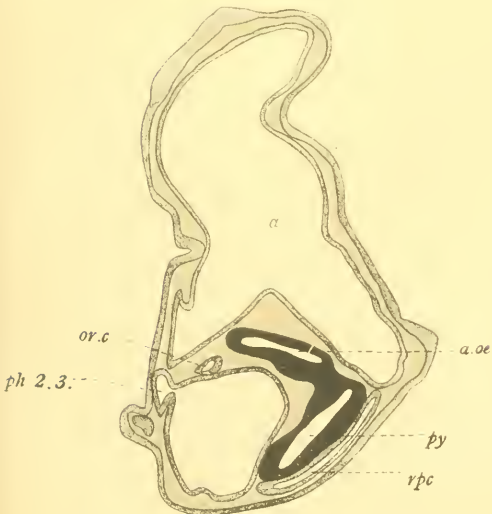
45



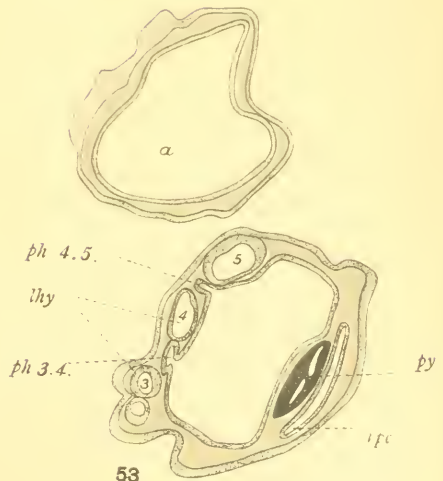
48



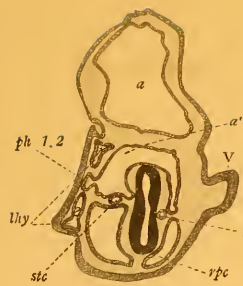
49



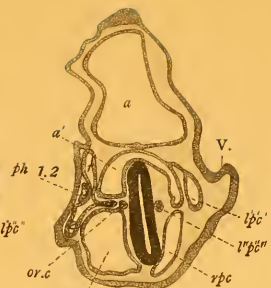
52



53



54



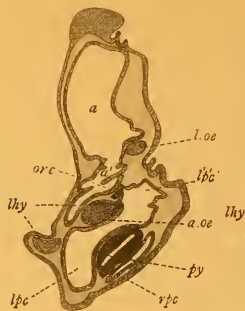
55



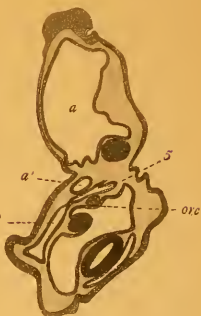
56



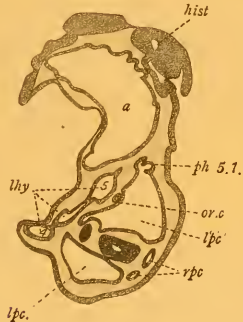
57



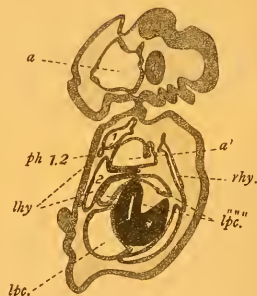
58



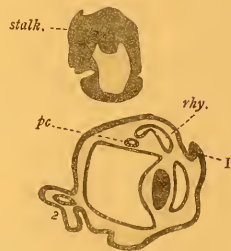
59



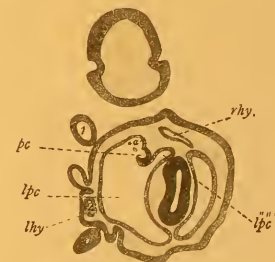
60



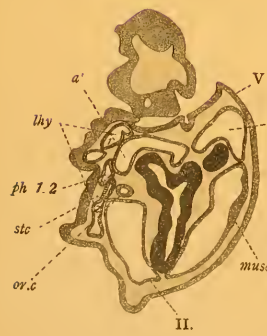
61



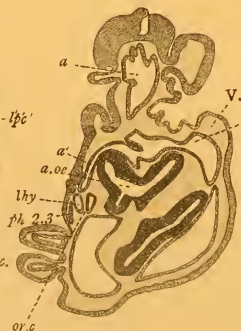
62



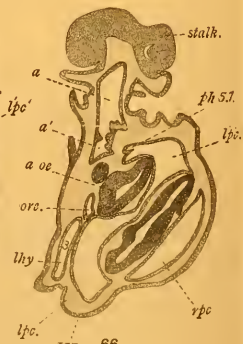
63



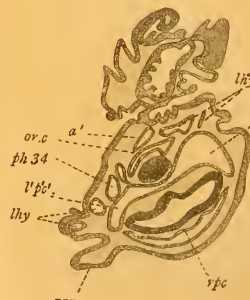
64



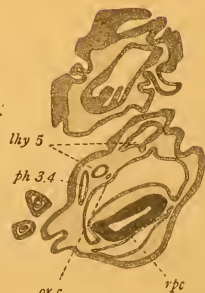
65



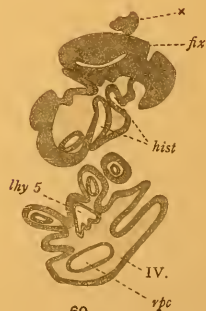
66



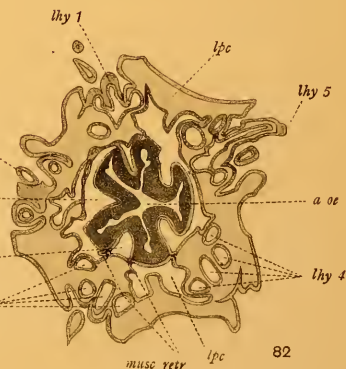
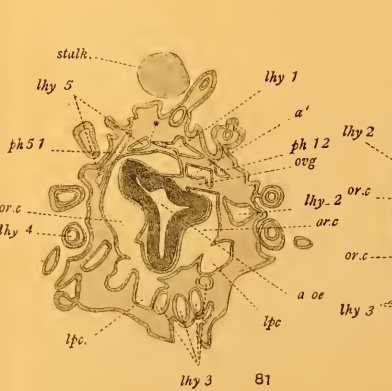
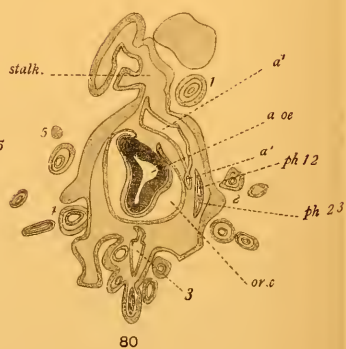
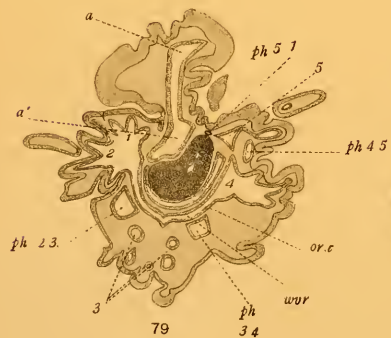
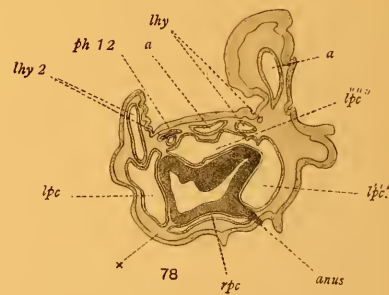
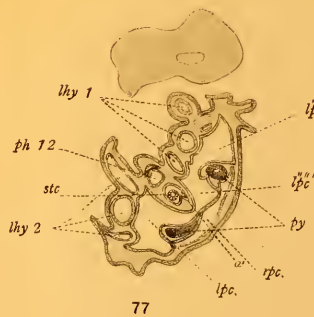
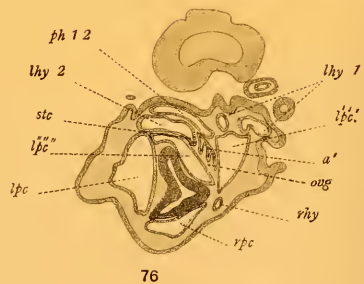
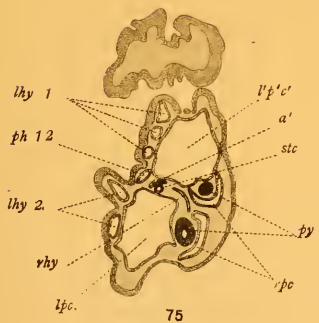
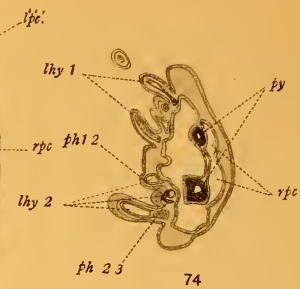
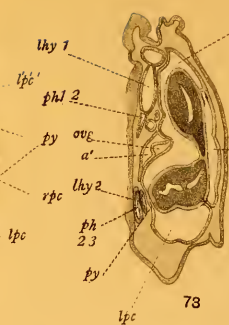
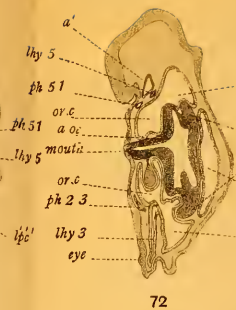
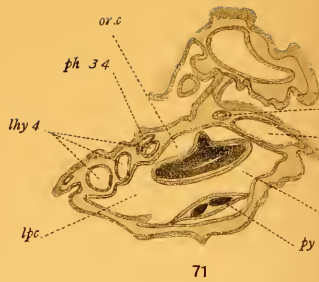
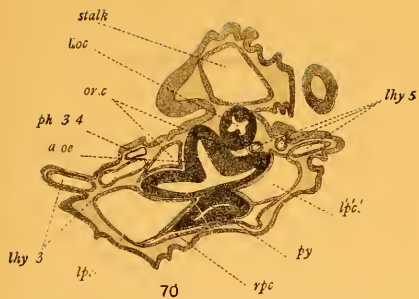
67

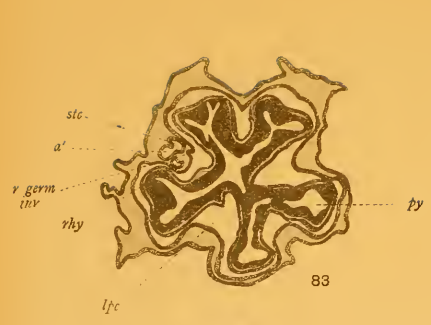


68

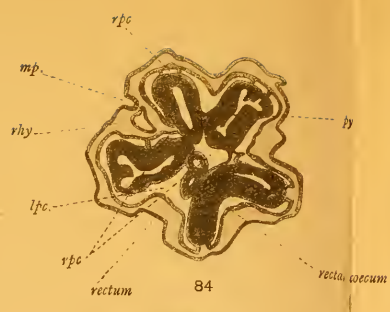


69

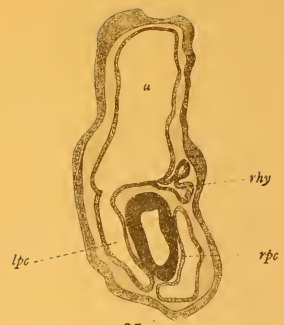




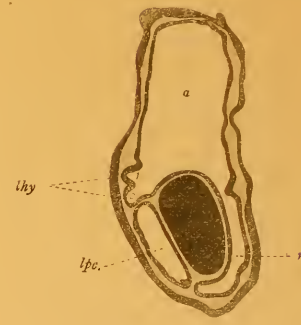
83



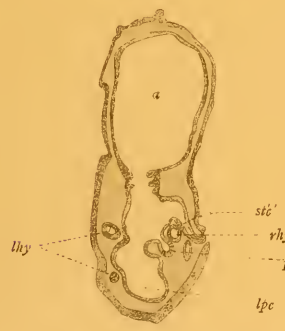
84



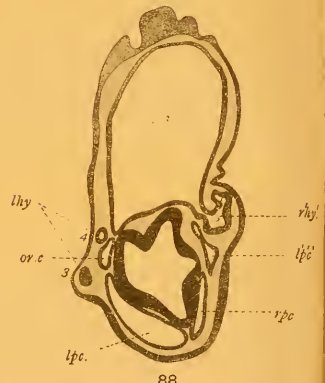
85



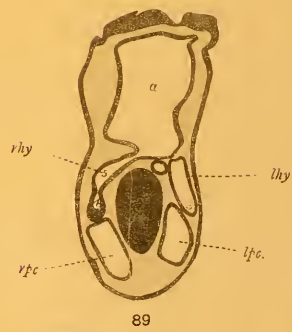
86



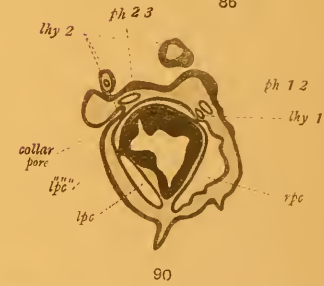
87



88



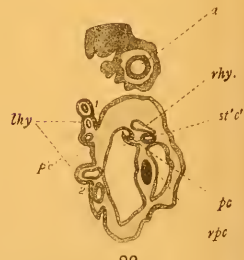
89



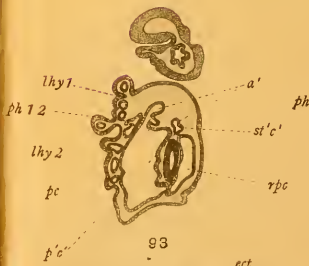
90



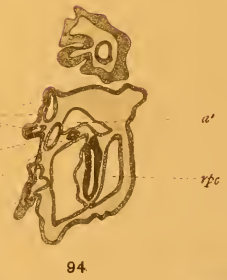
91



92



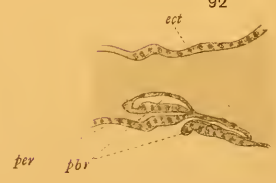
93



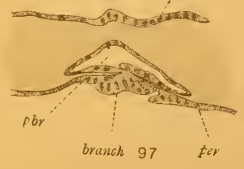
94



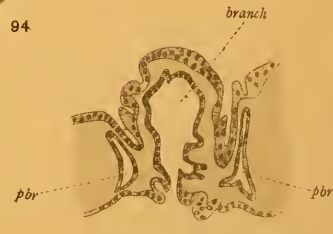
95



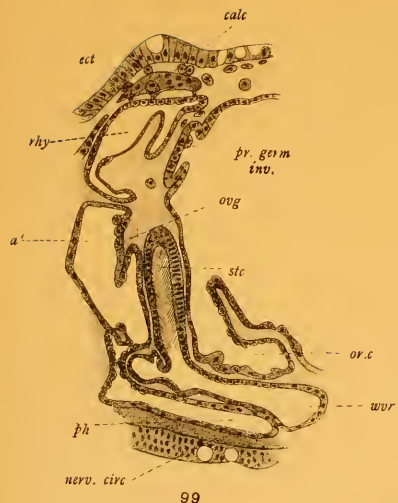
96



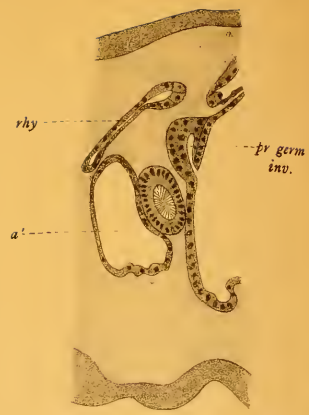
97



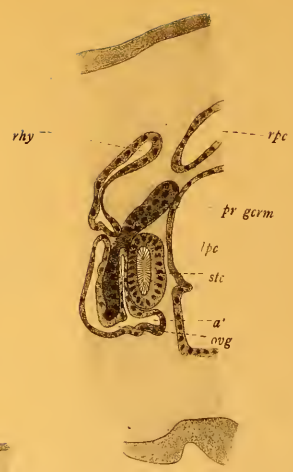
98



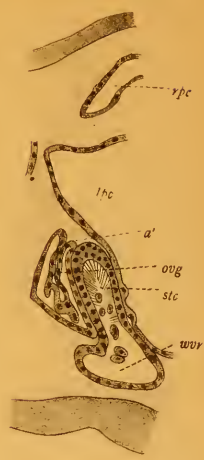
99



100



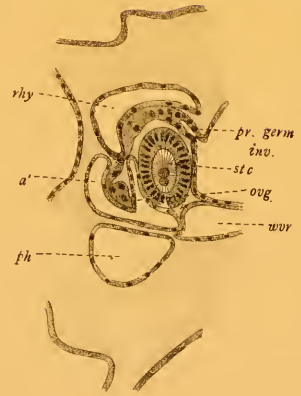
101



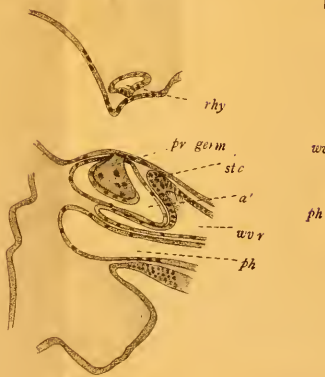
102



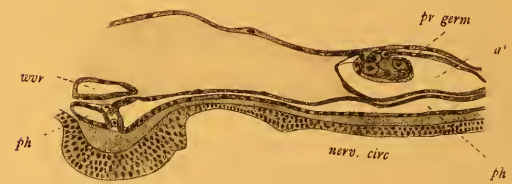
103



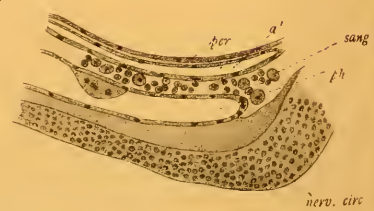
104



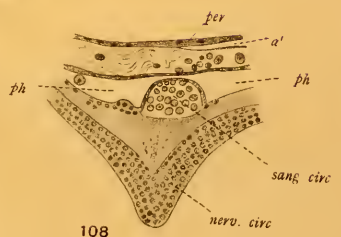
105



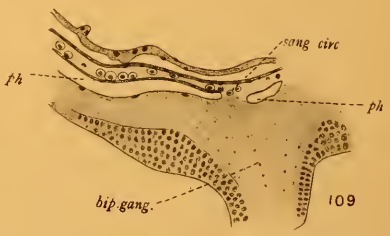
106



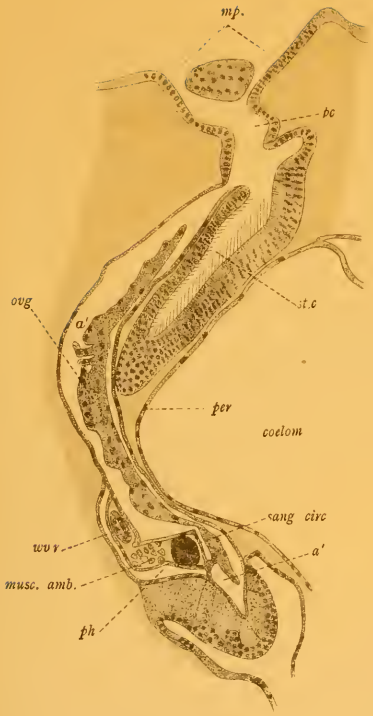
107



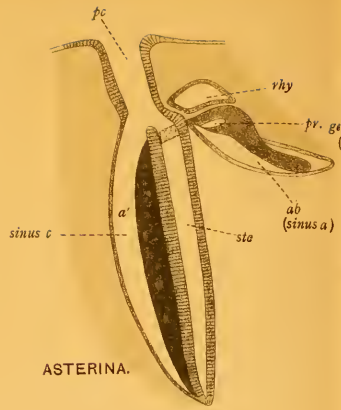
108



109

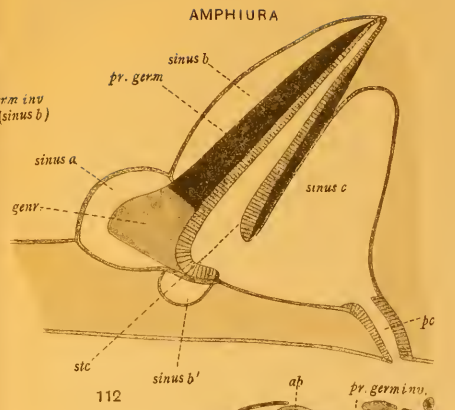


110

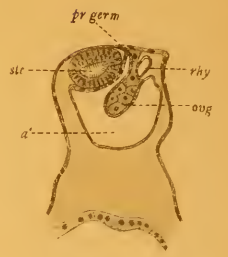


ASTERINA.

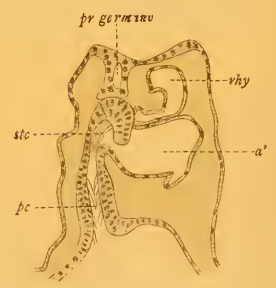
111



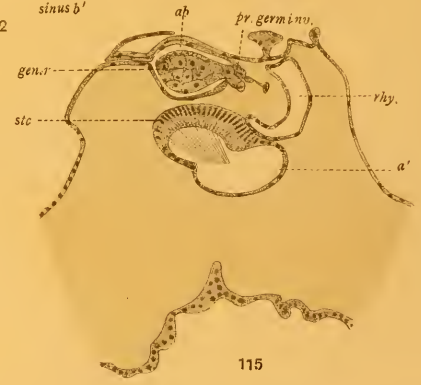
112



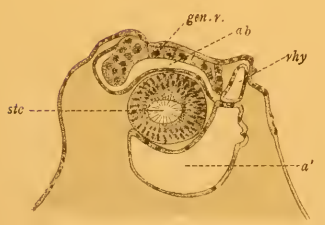
113



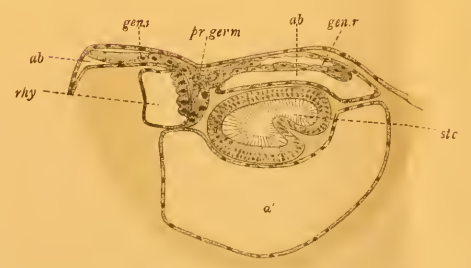
114



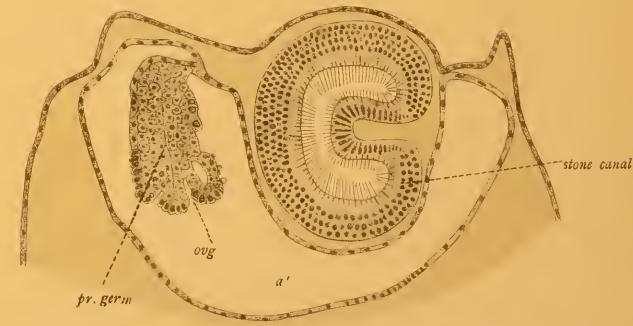
115



116



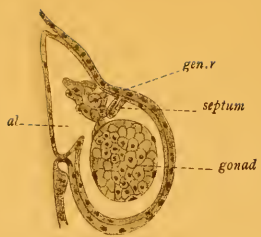
117



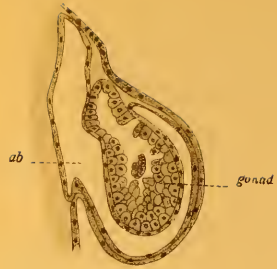
118



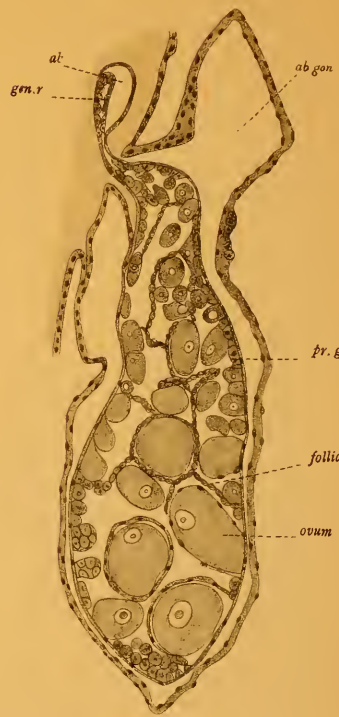
119



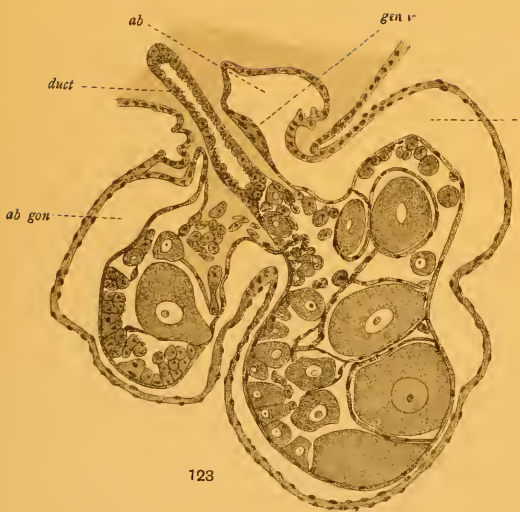
120



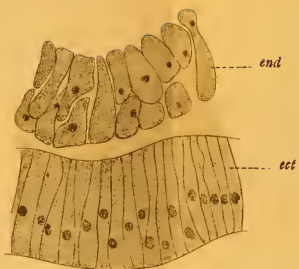
121



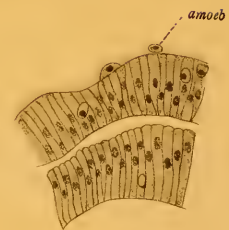
122



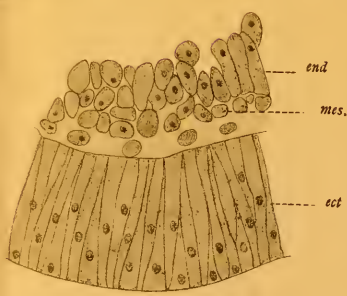
123



124



126



125



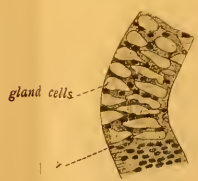
127



128



129



130



131

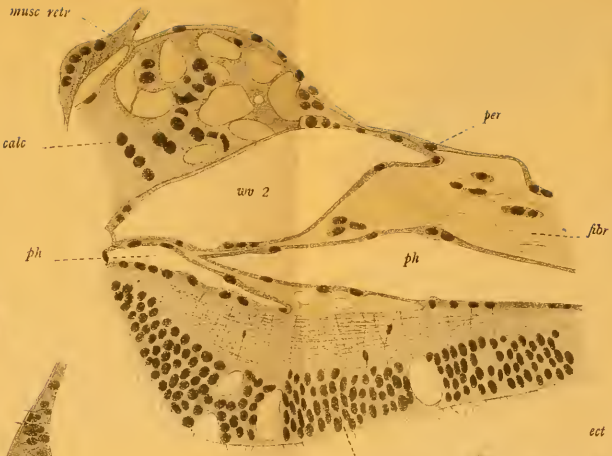


132





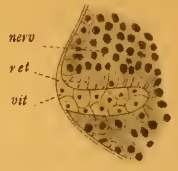
140



141



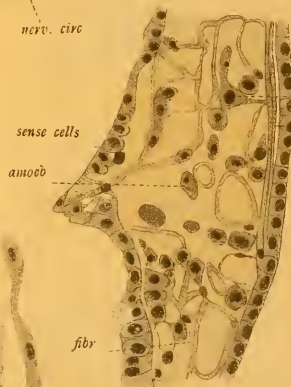
142



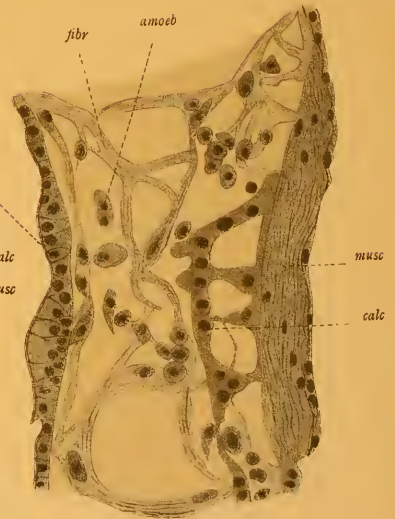
143



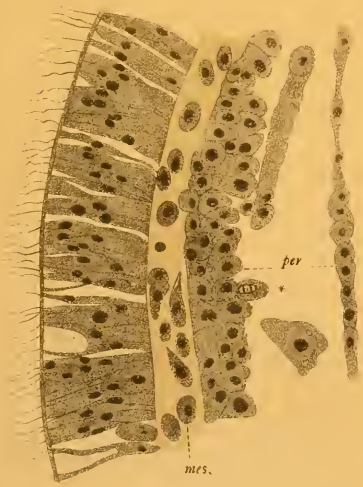
148



146



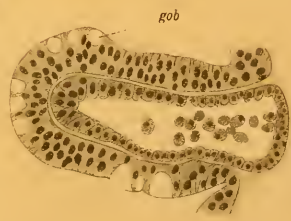
147



144



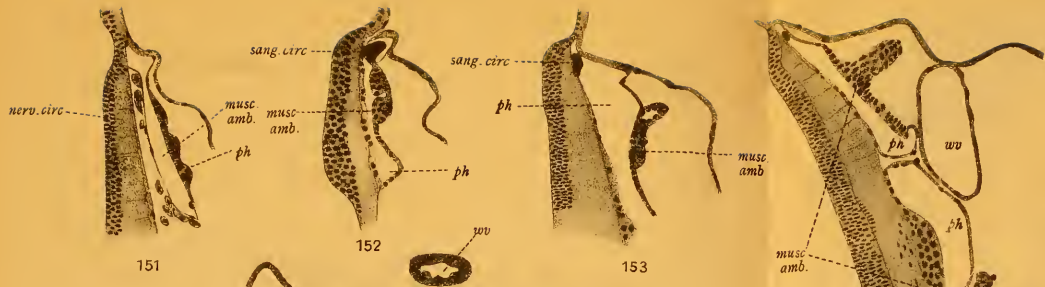
145



149



150



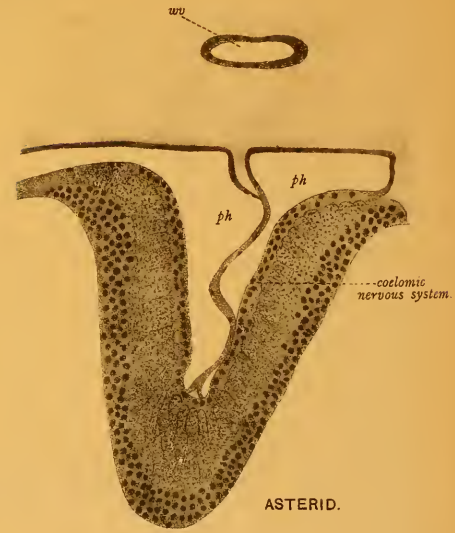
151

152

153

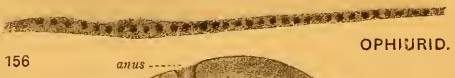


154



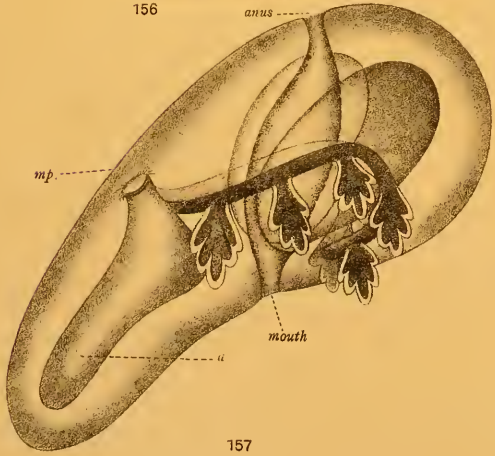
ASTERID.

155

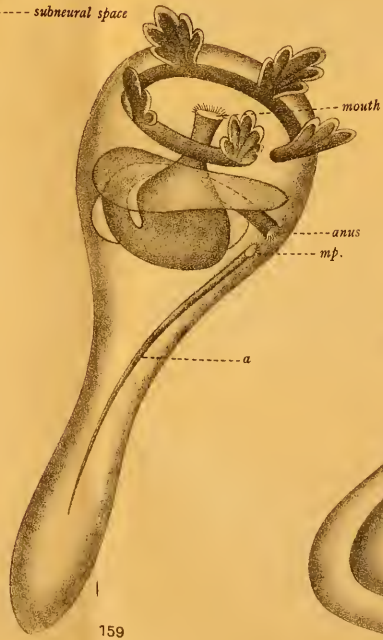


156

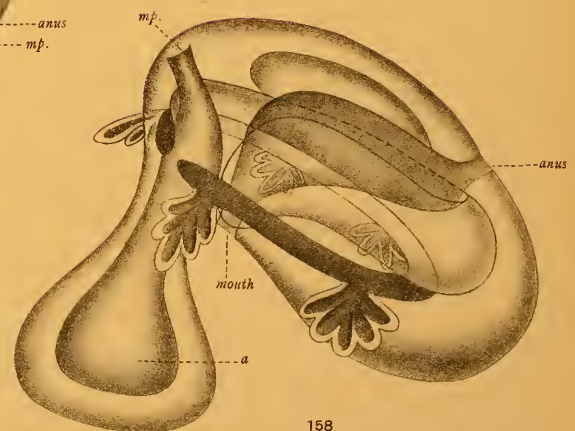
OPHIURID.



157



158



159



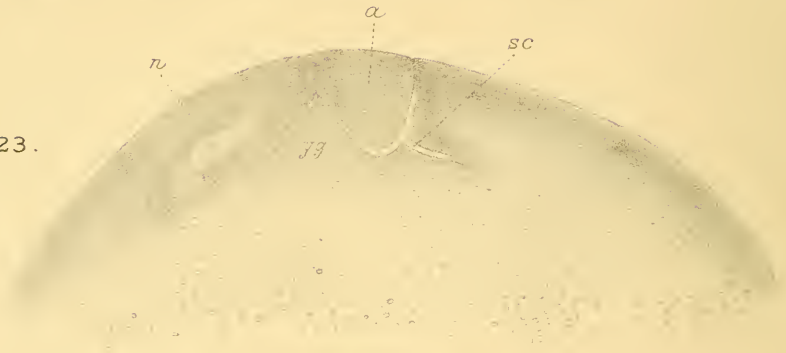
21.



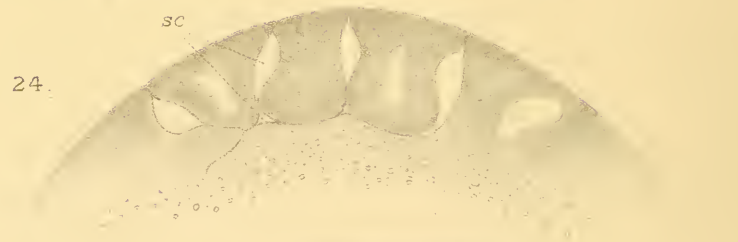
22.



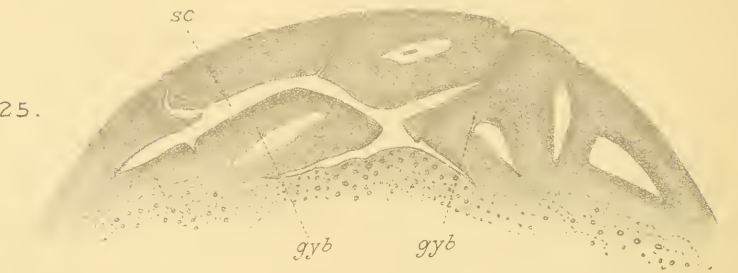
23.



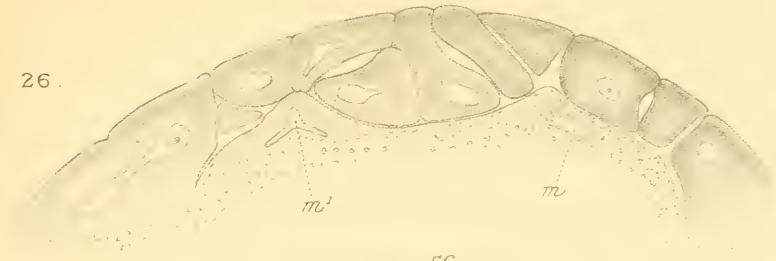
24.



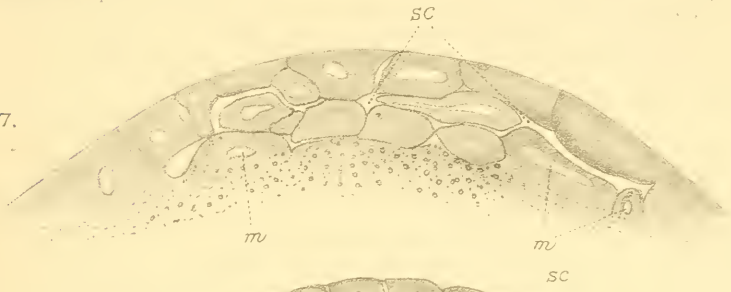
25.



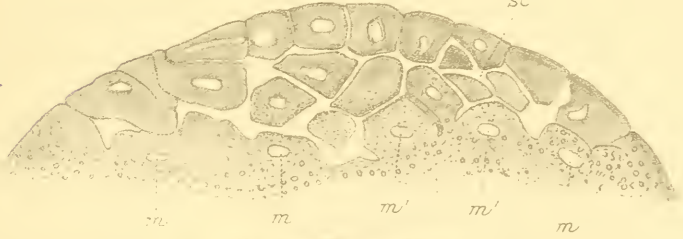
26.



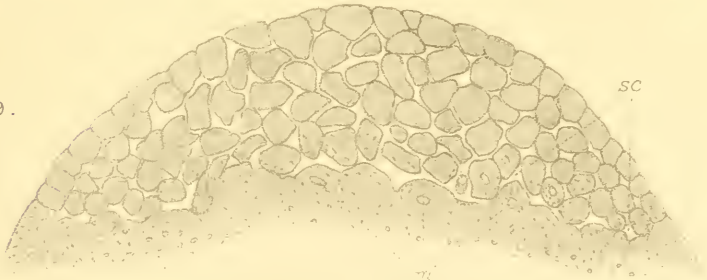
27.



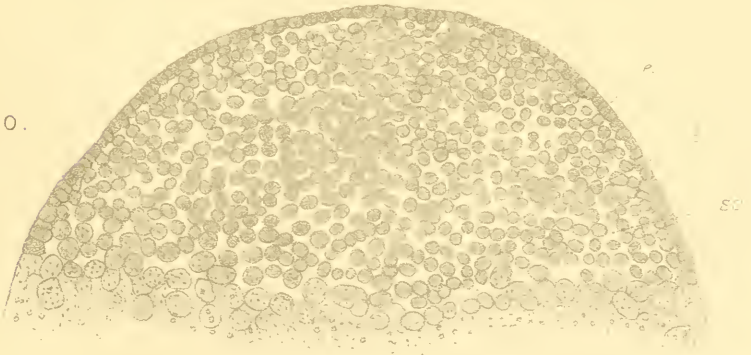
28.

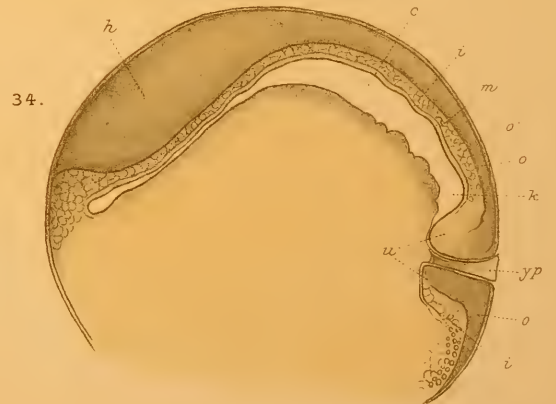
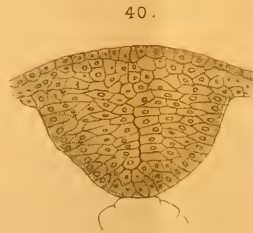
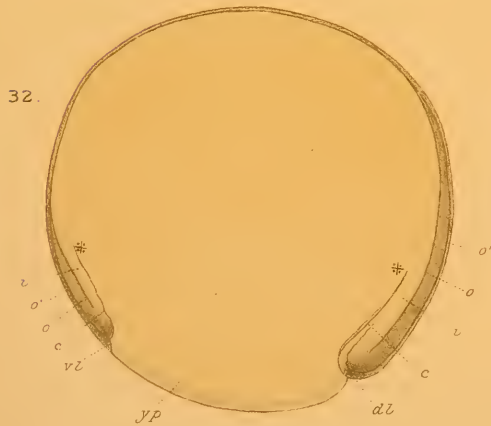
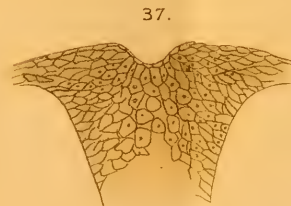
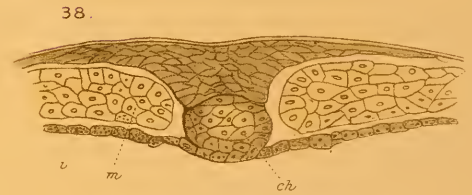
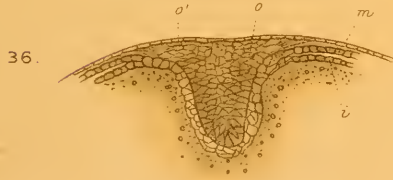
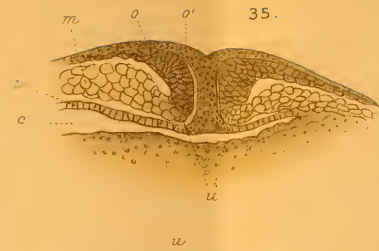
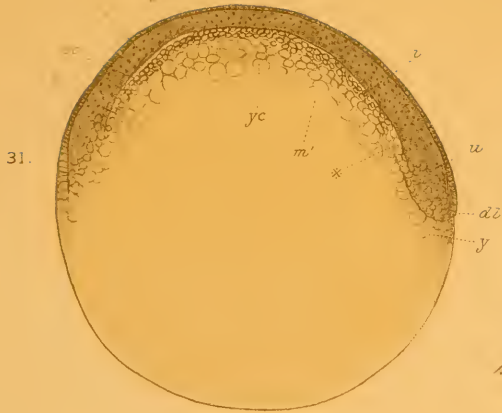


29.



30.





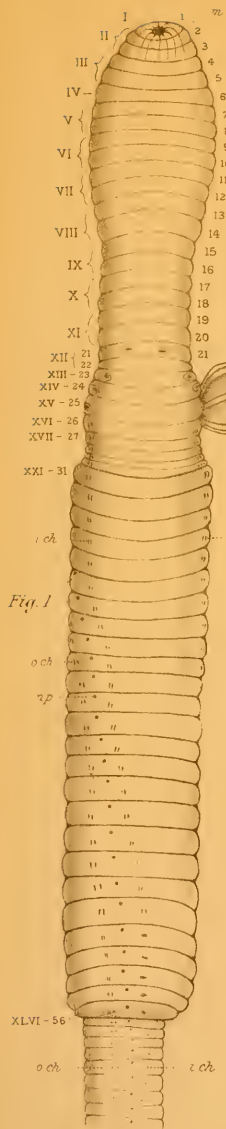


Fig. 1

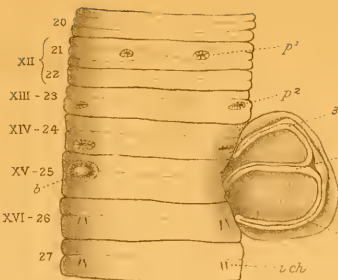


Fig. 2.



Fig. 3.

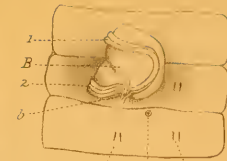


Fig. 4.

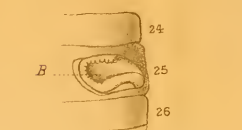


Fig. 5.

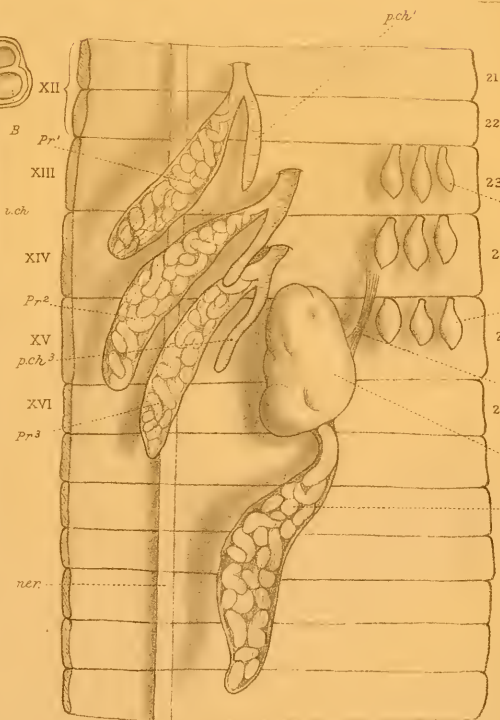


Fig. 7.



Fig. 8.

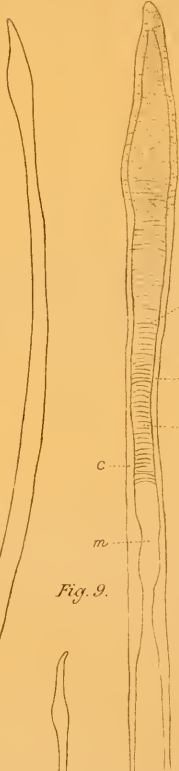


Fig. 9.



Fig. 10.

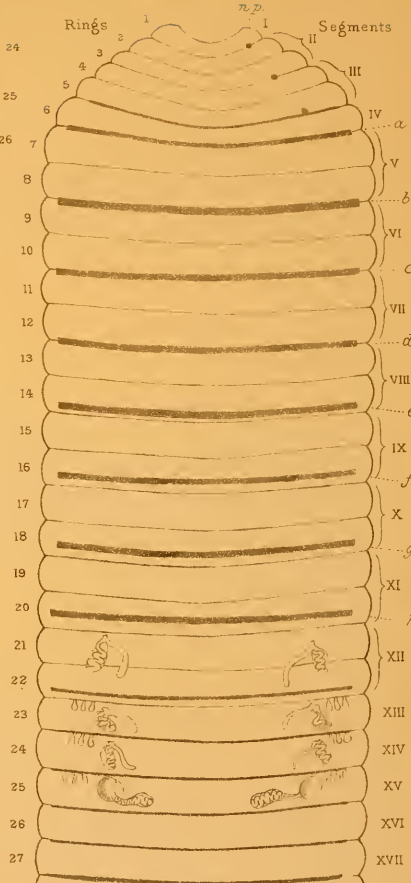


Fig. 6.



Fig. 12.

Fig. 13.



Fig. 14



Fig. 15.



Fig. 16.



Fig. 19.



Fig. 17.



Fig. 18.

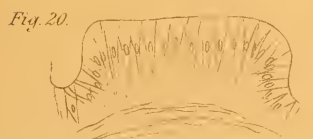


Fig. 20.

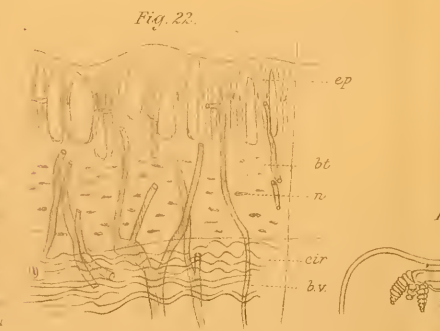


Fig. 22.



Fig. 21.

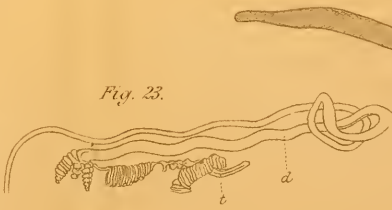


Fig. 23.

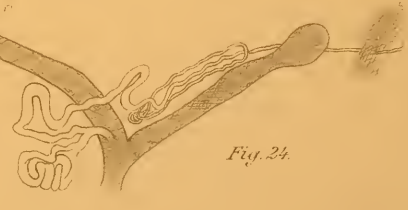
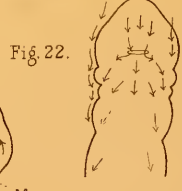
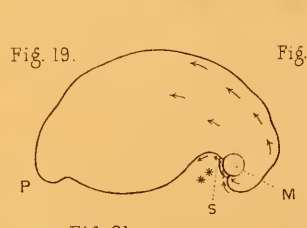
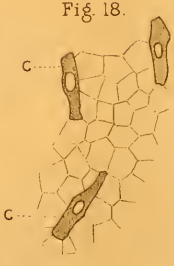
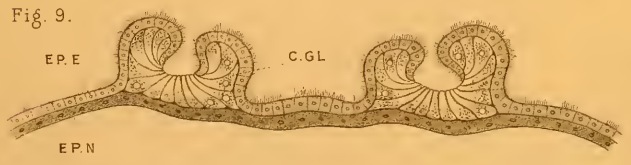
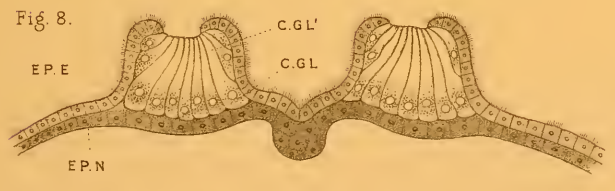
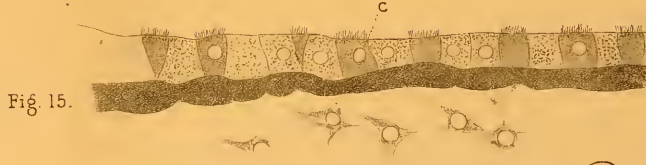
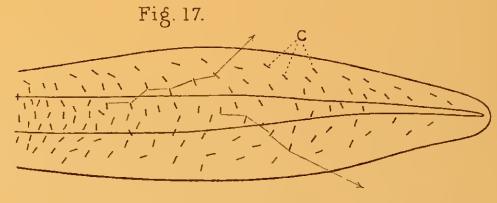
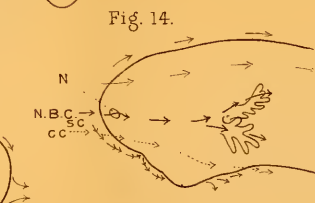
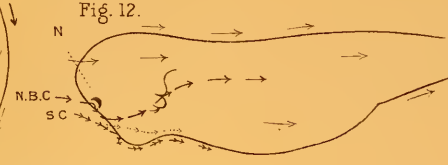
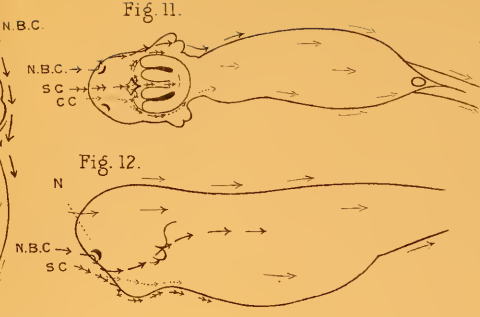
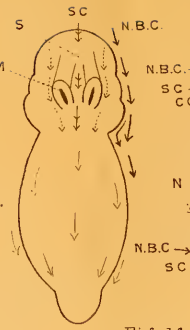
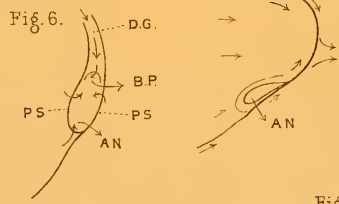
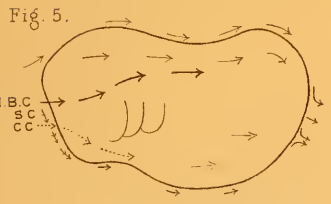
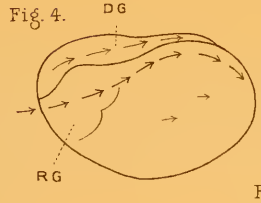
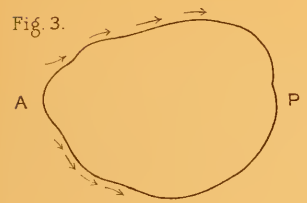
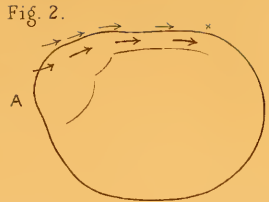
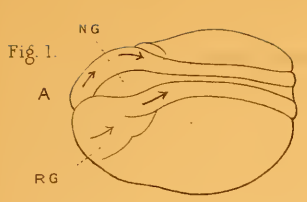


Fig. 24.



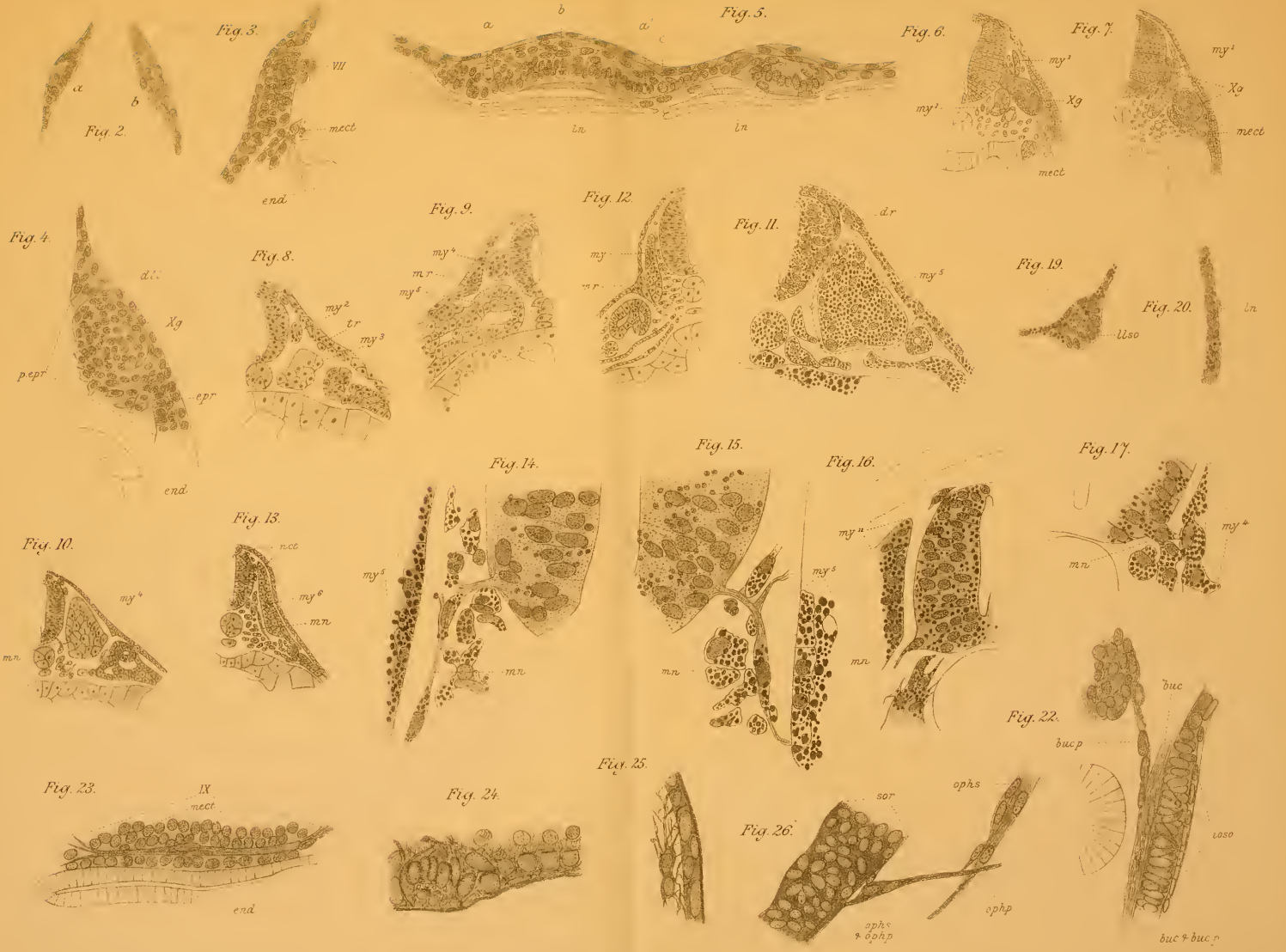


Fig. 27.

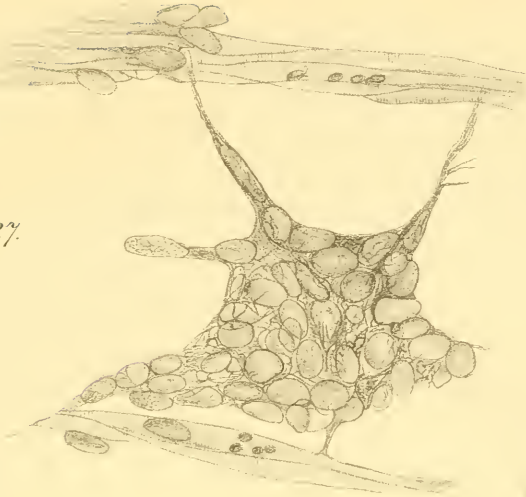


Fig. 28.



Fig. 29.

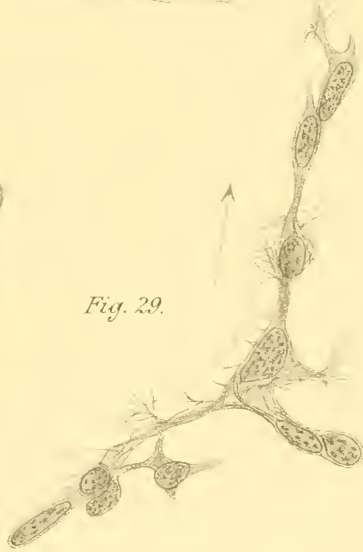
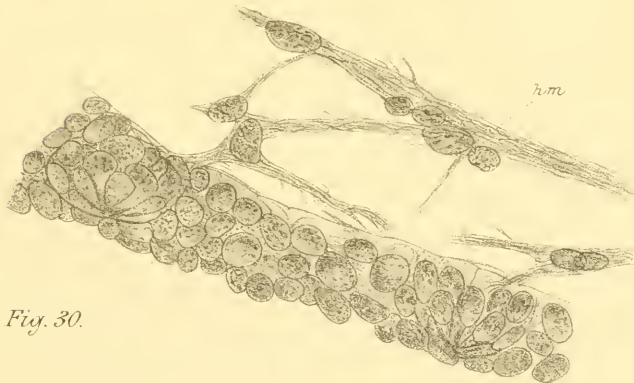


Fig. 30.



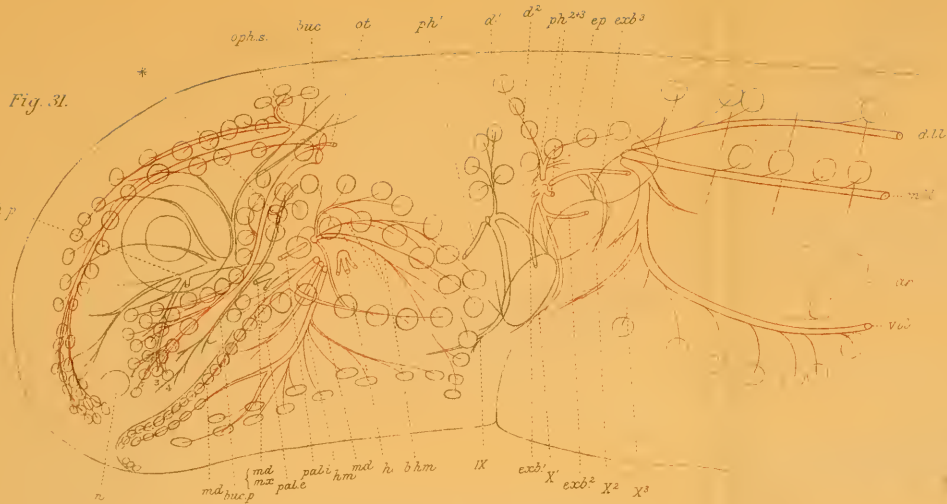


Fig. 31.

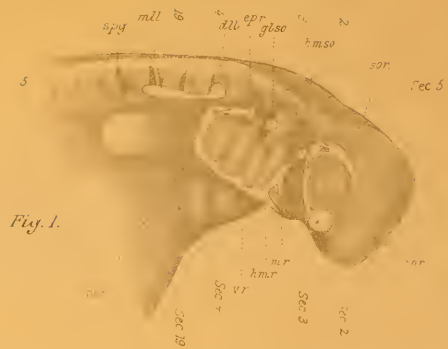


Fig. 1.

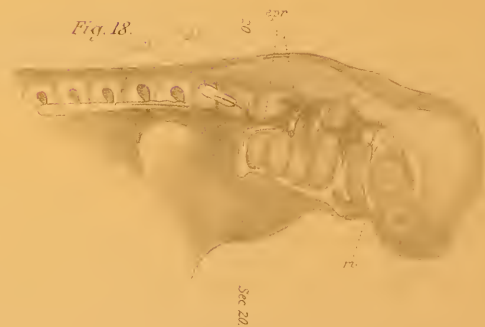


Fig. 18.

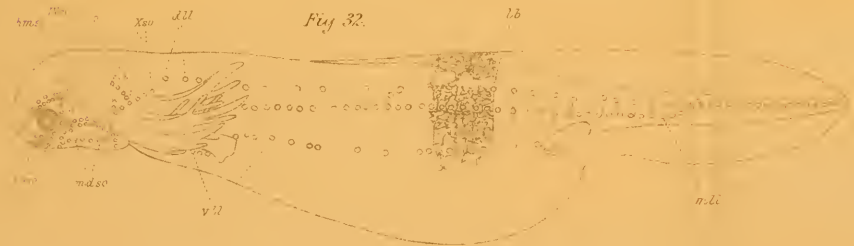


Fig. 32.

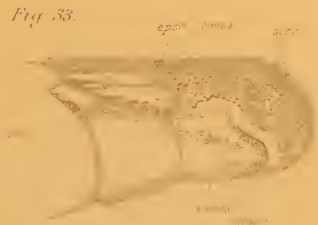


Fig. 33.

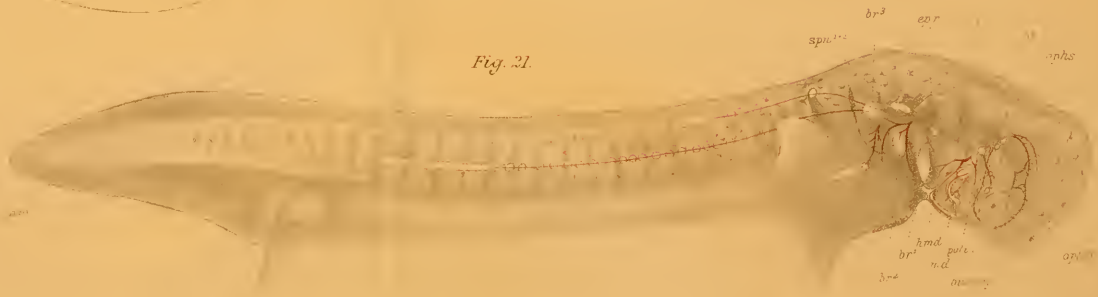


Fig. 21.





3 2044 106 275 407

