CATALOGUE

OF THE

MICROSCOPICAL SECTION

OF THE

United States Army Medical Museum.

PREPARED UNDER THE DIRECTION OF THE SURGEON GENERAL, U. S. ARMY,

By Brevet Major EDWARD CURTIS, Assistant Surgeon, U. S. Army.

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Part First.

MOUNTED PREPARATIONS FOR THE MICROSCOPE.

ERRATA.

Page 81, third line from above, for **123** read **113.**
Page 142, first line, for **27** read **21.**
Page 142, nineteenth line from above, for **145** read **144.**
Page 142, twenty-third line from above, for **146** read **145.**

NOTE.—These preparations, with the exception of three hundred and sixty opaque injections by Professor Hyrtl, of Vienna, and a few others, are mounted on slips of glass three inches long by one wide. Each slide is labelled with the name of the object, the menstruum in which it is mounted, the date of preparation, and the Museum and Catalogue numbers of the specimen. The large majority of the specimens have been prepared in the Microscopical Department of the Museum—the greater part by Acting Assistant Surgeon J. C. W. Kennon, U. S. Army; the remainder by Assistant Surgeon Edward Curtis, U. S. Army, and Hospital Steward E. M. Schaeffer, U. S. Army. Where a specimen has not been prepared in the Museum, the name of the preparer is appended to the description.

The preparations of Professor Hyrtl consist of opaque fine injections in various colors, to show the arrangement of the capillaries in the different structures of the body. They are mounted dry in small slips of wood, having a black background, and are to be viewed by reflected light.

In the following Catalogue, the range of objectives that may be advantageously used with each preparation is given. By "low powers" is meant object glasses below an $\frac{8}{10}$; by "moderate" those between an $\frac{8}{10}$ and a $\frac{1}{4}$; by "high" those from a $\frac{1}{4}$ upwards.

Part First.

MOUNTED PREPARATIONS FOR THE MICROSCOPE.

NOTE.—These preparations, with the exception of three hundred and sixty opaque injections by Professor Hyrtl, of Vienna, and a few others, are mounted on slips of glass three inches long by one wide. Each slide is labelled with the name of the object, the menstruum in which it is mounted, the date of preparation, and the Museum and Catalogue numbers of the specimen. The large majority of the specimens have been prepared in the Microscopical Department of the Museum—the greater part by Acting Assistant Surgeon J. C. W. Kennon, U. S. Army; the remainder by Assistant Surgeon Edward Curtis, U. S. Army, and Hospital Steward E. M. Schaeffer, U. S. Army. Where a specimen has not been prepared in the Museum, the name of the preparer is appended to the description.

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I. CONNECTIVE TISSUE SYSTEM.

A. Connective Tissue Proper.

B. White Fibrous Tissue.

C. Yellow Elastic Tissue.

D. Adipose Tissue.

A. From Man. | B. From Animals. | C. Pathological.

I. CONNECTIVE TISSUE SYSTEM.

A. Connective Tissue Proper.

A. From Man.

1120, 1121 and 1615. A. 1. Three preparations of connective tissue from finger, with transparent carmine injection, showing the arrangement of the bloodvessels. Specimens **1120** and **1121** show, also, adipose tissue. For low and moderate powers.

1620. A. 2. Connective tissue from finger, with transparent carmine injection, showing the capillaries running together in groups; also, yellow elastic tissue. For low and high powers.

25. A. 3. Opaque injection (red) of the vessels of the subcutaneous connective tissue of the face. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

26. A. 4. Opaque injection (red) of the vessels of the subcutaneous connective tissue of the scrotum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **II.** A. a. 1, 7, 8, 11, 12; **VII.** H. a. 2; **VII.** H. c. 1 to 8, 10 to 14; **VII. I.** C. 1, 3, 4, 6 to 11, 15; **XI.** H. a. 2.

See also Part Second, **I.** A. a. 1; **VII. I.** C. 2, 3.

B. From Animals.

1665. B. 1. Connective tissue from kitten, showing very numerous connective tissue corpuscles, stained with carmine; also small arteries and veins. For high powers.

1633. B. 2. Connective tissue of caterpillar, stained with carmine. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

For other illustrations, see **II.** A. b. 1; **III.** B. b. 6, 15 (Specimen **1971**); **V.** C. b. 4; **VI.** E. b. 5; **VII.** B. b. 2, 3; **VII.** H. b. 8, 13; **VII.** O. b. 1, 3 to 6; **VII.** P. b. 1; **VII.** Q. b. 1; **IX.** A. b. 27; **XII.** A. b. 1, 2.

C. Pathological.

See **II.** A. c. 1, 2; **VII.** H. c. 1 to 14; **VII. I.** C. 1, 2, 4 to 8, 12 to 23; **XIV.** B. a. 3.

See also Part Second, **I.** A. c. 1; **VII.** H. c. 4.

B. White Fibrous Tissue.

B. From Animals.

1267. B. 1. Fibrous tissue from tendo Achillis of cat and kitten, showing in the specimen from the cat the fibrillated structure of the tissue, and in that from the kitten very numerous elongated nuclei stained with carmine ("germinal matter" of Beale).
Dr. Lionel S. Beale, London, England.

For other illustrations, see **III.** C. b. 1, 2.

C. Yellow Elastic Tissue.

A. From Man.

See **I.** A. a. 2; **VIII.** C a. 3; **XIV.** B. a. 3.

B. From Animals.

See **VIII.** B. b. 1, 2.

D. Adipose Tissue.

A. From Man.

24. A. 1. Opaque injection (red) of the vessels in a perpendicular section through the panniculus adiposus of the palm of the hand. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

353. A. 2. Opaque injection (yellow) of the vessels of adipose tissue. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **I.** A. a 1; **II.** A. a. 1, 7, 8; **II.** D. a. 2; **III.** B. c. 2.

See also Part Second, **II.** A. a. 1.

B. From Animals.

See **II.** A. b. 9; **III.** B. b. 11; **III.** B. c. 4; **V.** C. b. 3; **VI.** E. b. 4; **VII.** O. b. 1 to 5; **VII.** P. b. 1; **VII.** Q. b. 1.

II. EXTERNAL TEGUMENTARY SYSTEM.

A. Skin.

B. Nails, Claws and Hoofs.

C. Hairs.

D. Cutaneous Glands.

A. From Man. | B. From Animals. | C. Pathological.

II. EXTERNAL TEGUMENTARY SYSTEM.

A. Skin.

A. From Man.

1203 to 1206. A. 1. Series of four perpendicular sections of scalp of negro, stained with red aniline, showing very beautifully all the structures of the scalp, their arrangement and minute anatomy. For low and high powers.
See Part Second, **II.** A. a. I to 4.

1627, 1629 and 530. A. 2. Three preparations of scalp of human fœtus, stained with carmine, showing the skin and young hair bulbs at the period when they consist entirely of cells. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1142 to 1148. A. 3. Series of seven perpendicular sections of skin from ala of nose of negro, showing the general arrangement of the structures of the skin, especially the size and character of the sebaceous glands. For low powers.

1224 & 1225. A. 4. Two perpendicular sections of skin from axilla of negro, showing the large sudoriparous glands of this region and their position beneath the cutis. For low powers.

1172. A. 5. Perpendicular section of skin from sole of foot, showing the spiral course of the sweat ducts through the thick epidermis. For low powers.

1173 & 1174. A. 6. Two perpendicular sections of skin from sole of foot, showing the relative thickness of the cutis and epidermis and the sudoriparous glands and their ducts. For low powers.
These specimens make beautiful objects for the polariscope.
See Part Second, **II.** A. a. 5.

1192 to 1195. A. 7. Four perpendicular sections of skin from sole of foot, faintly stained with red aniline, showing the general arrangement and minute anatomy of the various structures of the skin. For low and moderate powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1207. A. 8. Perpendicular section of skin and subcutaneous tissue, stained with carmine, showing very beautifully the general arrangement and minute anatomy of the various structures. For high and low powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1196 to 1201. A. 9. Six perpendicular sections of epidermis from sole of foot, stained with carmine, showing the cellular structure of this tissue. For moderate powers.

1170. A. 10. Horizontal section of epidermis from sole of foot, exposing its inner surface, showing the depressions in the epidermis corresponding to the papillæ of the corium, and their arrangement in rows. For low powers.

1983 to 2002. A. 11. Twenty perpendicular sections of skin from under surface of finger, with transparent Prussian blue injection and carmine staining; showing the general arrangement and minute anatomy of all the structures of the skin. The staining defines beautifully the cellular elements of the rete mucosum, the connective tissue of the cutis vera and the sudoriparous glands. Specimens **1998** to **2002** show also several tactile corpuscles of Meissner in the papillæ. For low and high powers.

2003 to 2011. A. 12. Nine preparations, same as **A. 11**, embracing but little of the cutis vera. Specimens **2009** to **2011** show tactile corpuscles.

2013 & 2029. A. 13. Two perpendicular sections of skin from under surface of toe, with transparent carmine injection, showing the arrangement of the capillaries in the several structures of the skin. For low powers.

1171. A. 14. Surface of corium from finger, with opaque injection (red), showing the arrangement of the capillaries of the papillæ. For low powers.

1. A. 15. Opaque injection (red) of the vessels of skin from forehead. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

2. A. 16. Opaque injection (white) of the vessels of skin from vertex, from a new-born child; seen from below. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

3. A. 17. Opaque injection (red) of the vessels of skin from vertex, from an adult; seen from above. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

4. A. 18. Opaque injection (red) of the vessels in a perpendicular section through the mons veneris, showing a few hair roots. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

5. A. 19. Opaque injection (red) of the vessels of skin from between the eyebrows. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

6. A. 20. Opaque injection (red) of the vessels of skin from lower eyelid. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

7. A. 21. Opaque injection (red) of the vessels of skin from upper eyelid. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

8. A. 22. Opaque injection (red) of the vessels of skin from cheek. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

9. A. 23. Opaque injection (red) of the vessels of skin from the chin. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

10. A. 24. Opaque injection (red) of the vessels of skin from upper lip; external surface. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

11. A. 25. Opaque injection (red) of the vessels of skin from perineum, showing the apertures of numerous sebaceous glands. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

12. A. 26. Opaque injection (red) of the vessels of skin from back of hand. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

13. A. 27. Opaque injection (red) of the vessels of skin from palm of hand. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

14. A. 28. Opaque injection (red) of the vessels of skin from concha of the ear. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

15. A. 29. Opaque injection (red) of the vessels of skin from back of finger. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

16. A. 30. Opaque injection (red) of the vessels of skin from back of toe. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

17. A. 31. Opaque injection (red) of the vessels of skin from apex of index finger. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

18. A. 32. Opaque injection (red) of the vessels of skin from apex of great toe. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

19. A. 33. Opaque injection (red) of the vessels of skin from apex of little toe. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

20. A. 34. Opaque injection (red) of the vessels of skin from sole of foot of a young girl. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

21. A. 35. Opaque injection (red) of the vessels of skin from sole of foot of gypsy who never wore boots. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **II.** B. A. f.

B. From Animals.

1087 to 1094. B. 1. Eight perpendicular sections of skin of rat, stained (except specimen **1091**) with carmine, showing the general arrangement and minute anatomy of the structures of the skin; also the characteristics of the hair of the rat. For low and high powers.

1257 & 1258. B. 2. Two preparations of skin of frog, with transparent Prussian blue injection (nearly faded) and carmine staining, showing the arrangement of the capillaries, pigment cells, cutaneous follicles, and, in specimen **1258**, the hexagonal nucleated cells of the epidermis. For low and high powers.

1259, 1260 and 372 to 374. B. 3. Five preparations of skin of frog, with transparent carmine injection, showing the arrangement of the capillaries and pigment cells. For low powers.

1255 & 1256. B. 4. Two preparations of skin of toad, with transparent Prussian blue injection (nearly faded) and carmine staining, showing the arrangement of the capillaries, pigment cells, cutaneous follicles, and, in specimen **1256**, the hexagonal nucleated cells of the epidermis. For low and high powers.

1266. B. 5. Skin of tree toad *(Hyla viridis)*, with transparent Prussian blue injection (nearly faded) and carmine staining, showing capillaries, pigment cells and cutaneous follicles. For low and high powers.
Dr. Lionel S. Beale, London, England.

1264. B. 6. Portions of young and old cuticle of newt, stained with carmine, showing the young tissue almost entirely composed of cells and the old tissue composed of polygonal epithelial scales with large nuclei. For high powers.
Dr. Lionel S. Beale, London, England.

1611. B. 7. Skin of snake *(Coluber natrix)*, showing the lozenge-shaped scales, the orifices for the bloodvessels at the angles of the scales, and the arrangement of the pigment. For low powers.
Assistant Surgeon J. S. Billings, U. S. Army.

403. B. 8. Skin of snake, with opaque injection (blue), showing the arrangement of the bloodvessels. For low powers.
Dr. S. A. Jones, Englewood, N. J.

1262. B. 9. Perpendicular section of skin of mouse, showing the position and relation of the hairs and hair follicles. For low and moderate powers.

2012. B. 10. Entire foot of frog, with transparent carmine injection, showing the arrangement of the capillaries in the web between the toes. For low powers.

30. B. 11. Opaque injection (red) of the vessels of the papillæ tactus from toe of lion. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

31. B. 12. Opaque injection (red) of the vessels of the papillæ tactus from sole of foot of bear. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

32. B. 13. Opaque injection (red) of the vessels of skin from near the ankle joint of calf. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

33. B. 14. Opaque injection (red) of the vessels of skin from near the ankle joint of tapir. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

34. Opaque injection (red) of the vessels of skin from near the ankle joint of horse. For low powers.
B. 15. Prof. Joseph Hyrtl, Vienna, Austria.

39. Opaque injection (red) of the vessels of skin from sole of foot of *Ardea cinerea*. For low powers
B. 16. Prof. Joseph Hyrtl, Vienna, Austria.

40. Opaque injection (yellow) of the vessels of skin of *Rana esculenta*. For low powers.
B. 17. Prof. Joseph Hyrtl, Vienna, Austria.

41. Opaque injection (yellow) of the vessels of skin of *Salamandra maculosa*. For low powers.
B. 18. Prof. Joseph Hyrtl, Vienna, Austria.

42. Opaque injection (yellow) of the vessels of skin of *Triton Alpestris*. For low powers.
B. 19. Prof. Joseph Hyrtl, Vienna, Austria.

43. Opaque injection (red) of the vessels of skin of *Bombinator igneus*. For low powers.
B. 20. Prof. Joseph Hyrtl, Vienna, Austria.

44. Opaque injection (yellow) of the vessels of foot of *Triton cristatus;* seen from above. For low powers.
B. 21. Prof. Joseph Hyrtl, Vienna, Austria.

45. Opaque injection (yellow) of the vessels of skin of *Proteus anguineus;* seen from below. For low powers.
B. 22. Prof. Joseph Hyrtl, Vienna, Austria.

339. Opaque injection (red) of the vessels of erectile caruncula in neck of *Meleager*. For low powers.
B. 23. Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **XII.** A. B. 1, 2.

C. Pathological.

863 to 875. Series of thirteen perpendicular sections of human skin of leg from a case of variola; stained with carmine.
C. 1. This series consists of sections through a fully-developed variolous pustule, from the thickened skin near the margin of the pustule to its centre, and shows the following pathological conditions: First, a hypertrophy of the papillæ of the corium near the margin of the pustule, and thickening of the rete mucosum of the epidermis by cell-multiplication. Secondly, a separation of the horny layer of the epidermis from the rete mucosum; the cavity so formed being filled (in the specimens) by the coagulated contents of the pustule. Thirdly, the appearance of a lining membrane to this cavity, formed of flattened epithelial cells similar to those of the free surface of healthy epidermis. At this stage the papillæ of the corium are shorter than natural and blunted at their apices, and active cell-multiplication is seen in the connective tissue of the corium. Finally, near the centre of the pustule the under portion of the lining wall of the cavity gives way, the rete mucosum degenerates into a mass of ill-defined cells and granules, and the corium suffers a superficial ulceration, all signs of papillæ being gone. For low and high powers.

876 to 887. Series of twelve perpendicular sections of human skin of leg, from same case as **C. 1**, stained with
C. 2. carmine. These sections pass through the central portion of a pustule, showing conditions similar to those above described, and also a thinning and final rupture of the horny layer of the epidermis at the apex of the pustule. For low and high powers.

358. Opaque injection (yellow) of the vessels of cicatricial tissue from an arm stump. For low powers.
C. 3. Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **XIV.** B. A. 3.

B. Nails, Claws and Hoofs.

A. From Man.

2014. A. 1. Perpendicular section, cut longitudinally, of posterior portion of nail and bed of nail from finger, with transparent carmine injection, showing the relations of the nail to the structures of the skin and the arrangement of the capillaries in the bed of the nail. For low powers.

2015. A. 2. Same as A. 1, but embracing only a portion of the body of the nail and its bed.

22. A. 3. Opaque injection (red) of the vessels of matrix of nail of thumb. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

23. A. 4. Opaque injection (red) of the vessels of matrix of nail of great toe. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

35. B. 1. Opaque injection (red) of the vessels of matrix of hoof of horse; anterior zone with pyramidal papillæ. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

36. B. 2. Opaque injection (red) of the vessels of matrix of hoof of horse; posterior zone with longitudinal folds. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

37. B. 3. Opaque injection (red) of the vessels of matrix of hoof of bull; anterior zone. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

38. B. 4. Opaque injection (red) of the vessels of matrix of hoof of bull; posterior zone. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Hairs.

A. From Man.

411 to 413. A. 1. Three preparations of hair from head of white child, mounted in balsam, showing only the delicate longitudinal striation of the cortical substance. For moderate and high powers.

414 & 415. A. 2. Two preparations of the same hair as A. 1, mounted in water, showing the transverse ridges produced by the overlapping edges of the epidermic scales. For moderate and high powers.
See Part Second, II. C. A. 1.

1270 to 1272. A. 3. Three preparations of hair from head of adult white male, showing the structure of the cuticle and cortical substance as developed by the action of caustic soda. For moderate and high powers.

1273 & 1274. A. 4. Two preparations of hair from head of adult negro male, after treatment with caustic soda. The intense blackness of the hair prevents any points of structure being made out. For low powers.

1275 & 1276. A. 5. Two preparations of eyelashes of adult negro male, after treatment with caustic soda. For low powers.

1279 to 1281. A. 6. Three preparations of hair from head of adult white male, after boiling in sulphuric acid, showing the fibre cells of the cortex. For moderate and high powers.

1613 & 1614. A. 7. Two preparations of hair from beard of white male, showing hairs with medullary substance. For moderate and high powers.

1284 to 1286. A. 8. Three preparations of transverse sections of hair from head of white adult male, showing the different sizes and shapes of the hairs and the relative thickness of the various structures composing the hair. For moderate and high powers.

1287 & 1288. A. 9. Two preparations of transverse sections of hair from pubes of white adult male, similar in character to A. 8.

See Part Second, **II.** C. A. 2.

1289 & 1290. A. 10. Two preparations of transverse sections of hair from head of adult male mulatto, similar in character to A. 8.

1175 to 1177. A. 11. Three preparations of hair from head of male mummy from Egypt; the hairs are perfectly preserved. For moderate and high powers.

1178 to 1180. A. 12. Three preparations of hair from head of female mummy from Egypt, similar to A. 11.

1181 to 1183. A. 13. Three preparations of false hair found braided in with the hair of A. 12.

For other illustrations, see **II.** A. A. 1, 2; **XI.** II. A. 1, 2.

See also Part Second, **II.** A. A. 1, 2.

B. From Animals.

1293 & 1294. B. 1. Two preparations of hair from body of mouse. For moderate and high powers.

1295. B. 2. Whiskers of mouse. For moderate and high powers.

1296. B. 3. White hairs of cat. For moderate and high powers.

See Part Second, **II.** C. B. 2.

1297 & 1298. B. 4. Two preparations of whiskers of cat. For moderate and high powers.

1350 to 1395. B. 5. Series of forty-six preparations of hair of various species of bat, taken both from the back and belly. For moderate and high powers. The following are the species:

Vespertilio nitidus.....(Specimens **1350** to **1353.**)
Vespertilio lucifugus.....(Specimens **1354** to **1357.**)
Nycticejus crepuscularis.....(Specimens **1358** to **1361.**)
Antrozous pallidus.....(Specimens **1362** to **1365.**)
Nyctinomus nasutus.....(Specimens **1366** to **1369.**)
Scotophilus hesperus.....(Specimens **1370** to **1373.**)
Lasiurus noveboracensis.....(Specimens **1374** to **1377.**)
Lasiurus cinereus.....(Specimens **1378** to **1381.**)
Scotophilus noctivagans.....(Specimens **1382** and **1383.**)
Scotophilus fuscus.....(Specimens **1384** to **1387.**)
Vespertilio subulatus.....(Specimens **1388** to **1391.**)
Macrotis Californicus.....(Specimens **1392** to **1395.**)

See Part Second, **II.** C. B. 3.

For other illustrations, see **II.** A. B. 1, 9; **XII.** A. B. 1, 2; **XVI.** B. 1.

See also Part Second, **II.** C. B. 1; **XVI.** B. 1.

C. Pathological.

1401. C. 1. Hair and part of follicle from human leg in morbus pillaris, showing the hair coiled up within the follicle. For moderate and high powers.

D. Cutaneous Glands.

A. From Man.

1229 to 1231. A. 1. Three preparations of sudoriparous glands from axilla of negro, showing the large size of the glands and their convoluted structure For low powers.

1268 & 1432. A. 2. Two preparations of sudoriparous glands and adipose tissue from finger, with transparent carmine injection, showing the arrangement of the bloodvessels. For low and moderate powers.

For other illustrations, see **II.** A. A. 1, 3, 5, 6, 7, 8, 11; **II.** A. C. 1, 2.
See also Part Second, **II.** A. A. 1, 3, 5.

B. From Animals.

47. B. 1. Opaque injection (yellow) of the vessels of cutaneous glands, from leg of *Salamandra maculosa*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

48. B. 2. Opaque injection (yellow) of the vessels of cutaneous glands of *Bufo vulgaris*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **XII.** A. B. 1, 2.

III. MUSCULAR SYSTEM.

A. Smooth Muscle.

B. Striped Muscle.

C. Tendons.

D. Aponeuroses and Fasciæ.

E. Bursæ.

A. From Man. | B. From Animals. | C. Pathological.

III. MUSCULAR SYSTEM.

A. Smooth Muscle.

A. From Man.

See **II.** A. A. 1; **VII.** H. A. 2; **VII.** H. C. 1 to 14; **VII.** I. C. 1 to 10, 12 to 23; **X.** M. C. 1; **XIV.** B. A. 1, 2.
See also Part Second, **II.** A. A. 3, 4.

B. From Animals.

1119. B. 1. Muscular coats of intestine of mouse, showing the individual smooth muscular fibres, with their nuclei stained with carmine. For high powers.

1312. B. 2. Same as **B. 1**, with transparent Prussian blue injection. For high powers.

1973 & 1974. B. 3. Two preparations, similar to **B. 2**, from kitten.

For other illustrations, see **VII.** G. B. 3; **VII.** H. B. 8, 13.

B. Striped Muscle.

A. From Man.

27. A. 1. Opaque injection (red) of the vessels of the platysma myoides muscle. For low powers. Prof. Joseph Hyrtl, Vienna, Austria.

314. A. 2. Opaque injection (red) of the vessels of the diaphragm. For low powers. Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **III.** B. C. 2; **IV.** B. A. 16; **XI.** H. A. 2.

B. From Animals.

508 & 509. B. 1. Two preparations of striped muscle from cat, with transparent carmine injection, showing the individual muscular fibres with the transverse striæ, and the arrangement of the long capillary loops. For high powers.

1100. B. 2. Same as **B. 1.**, but does not show well the striæ on the muscular fibres.

1138 & 1139. B. 3. Two preparations of striped muscle of kitten, with transparent Prussian blue injection and carmine staining, showing the nuclei of the sarcolemma stained, and the arrangement of the capillaries; also the minute anatomy of small bloodvessels For high powers.

1140. B. 4. Same as **B. 3.** The injection and staining have faded to a great extent. Shows beautifully the individual muscular fibres with their transverse striæ, also a nerve trunk subdividing over the muscle. For high powers.

888 to 902. B. 5. Fifteen preparations, same as **B. 3.** The injection and staining are very brilliant, and the specimens show the individual muscular fibres with striæ and nuclei, the minute anatomy of bloodvessels, and the arrangement of the capillary loops. For high powers.

1651 to 1661. B. 6. Eight preparations of striped muscle of kitten, stained with carmine, showing most beautifully the striæ on the fibres and the nuclei of the sarcolemma; also connective tissue, bloodvessels and nerves. Specimens **1656** and **1661** show a portion of a good-sized nerve trunk. Specimen **1661** shows also the sarcolemma drawn beyond the extremities of the muscular fibres, with nuclei still attached. For high powers.

1184 to 1191. B. 7. Eight preparations of striped muscle of mouse, with transparent Prussian blue injection and carmine staining, showing the striated fibres and nuclei and the arrangement of the capillary loops; and, in specimen **1187,** the anatomy of small bloodvessels. For high powers.

471 to 478. B. 8. Five preparations of striped muscle of mouse, with transparent carmine injection and blue staining, showing the arrangement of the capillary loops, and, faintly, the striæ on the muscular fibres. For moderate and high powers.

533. B. 9. Portion of diaphragm of mouse, showing striated muscular fibres and a branching nerve trunk. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1618. B. 10. Same as **B. 9**, with carmine staining of the nuclei of the sarcolemma; shows very beautifully the structure of a small artery and vein. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1101 to 1108. B. 11. Eight preparations of striped muscle of mouse, with transparent Prussian blue injection (faded in many of the specimens) and carmine staining, showing very beautifully striated muscular fibres, nuclei of the sarcolemma, bloodvessels, nerves and adipose tissue. Specimen **1104** is particularly rich in nerves. For high powers.
See Part Second, **III.** B. B. 3, 4.

1095 to 1099. B. 12. Five preparations of striped muscle of chicken, with transparent carmine injection, showing the striated muscular fibres and the arrangement of the capillaries. For high powers.
See Part Second, **III.** B. B. 1, 2.

1226 to 1228. B. 13. Three preparations of striped muscle of chicken, similar to **B. 12.**

1123 to 1128. B. 14. Six preparations of striped muscle of tadpole, stained with carmine, showing the striated muscular fibres and the nuclei of the sarcolemma. For high powers.

1967 to 1971. B. 15. Five preparations of striped muscle of kitten with transparent Prussian blue injection and carmine staining, showing the striæ of the muscular fibres, the nuclei of the sarcolemma, and the arrangement of the capillaries. Specimen **1971** shows also the minute anatomy of connective tissue. For high powers.

2016 to 2021. B. 16. Six preparations, same as **B. 15**

2022. B. 17. Occipito-frontalis muscle of kitten, with transparent carmine injection, showing the arrangement of the bloodvessels. For low powers.

2045. B. 18. Same as **B. 15**; the staining is not so brilliant.

318. B. 19. Opaque injection (yellow) of the vessels of the mylo-hyoid muscle of *Salamandra.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

319. B. 20. Opaque injection (yellow) of the vessels of the mylo-hyoid muscle of *Python reticulatus.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

320. B. 21. Opaque injection (yellow) of the vessels of the mylo-hyoid muscle of *Rana temporaria.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

321. B. 22. Opaque injection (yellow) of the vessels of the constrictor faucium muscle of *Aspius rapax.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **II.** A. B. 1; **IV.** B. B. 7; **V.** A. B. 1; **VI.** E. B. 3; **VII.** C. B. 2, 7, 8; **VII.** C. C. 1; **VII.** F. B. 1; **XII.** A. B. 1, 2.

C. Pathological.

1232 to 1242 and 1669 to 1674. C. 1. Seventeen preparations of human striped muscle infested with the *Trichina spiralis*, showing the parasites, some enclosed in a cyst between the muscular fibres, and some not yet encysted. For moderate and high powers.

479 to 495. C. 2. Seventeen preparations, same as **C. 1**, stained with carmine, showing the parasites, and also bloodvessels, nerves and adipose tissue. For moderate and high powers.

1111 to 1115. C. 3. Five preparations of striped muscle of rat infested with trichinæ, with transparent carmine injection, showing the parasites encysted and the arrangement of the capillaries of the muscle. For moderate and high powers.

1109. C. 4. Striped muscle of mouse infested with trichinæ, showing the parasites encysted: also the ramifications of nerve fibres over the muscle, and adipose tissue. For moderate and high powers.

1116 to 1118. C. 5. Three preparations, same as **C. 4**, but stained with carmine.
See Part Second, **XV.** A. B. 1 to 3.

1561. C. 6. Striped muscle of hog infested with trichinæ, showing the encysted parasites in very great numbers. For moderate powers.
Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

C. Tendons.

A. From Man.

1141. A. 1. Small tendon from finger, with transparent carmine injection, showing the arrangement of the bloodvessels around the tendon. For low powers.

323. A. 2. Opaque injection (red) of the vessels of tendo Achillis. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1037 to 1039. B. 1. Three preparations of tendon of rat with carmine staining and transparent Prussian blue injection (nearly faded), showing the structure of the fibrous tissue composing the tendon. The elongated nuclei are rendered distinct by the staining. For high powers.

1041. B. 2. Tendon of cat, prepared same as **B. 1.**, and illustrating the same points.

For other illustrations, see **I.** B. B. 1.

D. Aponeuroses and Fasciæ.

A. From Man.

324. A. 1. Opaque injection (red) of the vessels of sheath of tendo Achillis. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

326. A. 2. Opaque injection (red) of the vessels of the fascia lata. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

E. Bursæ.

B. From Animals.

195. B. 1. Opaque injection in two colors (arteries white, veins green) of bursa from *Dromaius* of New Holland. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

IV. OSSEOUS SYSTEM.

A. Cartilage and Perichondrium.

B. Bone.

C. Periosteum.

D. Medullary Substance.

E. Ligaments.

F. Synovial Membranes.

A. From Man. | B. From Animals. | C. Pathological.

IV. OSSEOUS SYSTEM.

A. Cartilage and Perichondrium.

A. From Man.

1051. A. 1. Section of cartilage from unossified portion of condyle of femur of boy. The cartilage cells have shrunk so as to leave wide interspaces between the cell proper and the capsule. For high powers.

1052. A. 2. Same as **A. 1**, cut in the immediate vicinity of newly-formed bone, showing active multiplication by division of the cartilage cells. Here, too, the cells have shrunk from the capsules. For high powers.

534. A. 3. Section of cartilage from head of tibia, from a seven months' fœtus, stained with carmine, showing the very numerous cells of the young cartilage. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1015 & 1016. A. 4. Two sections of cartilage from wrist joint of child, with transparent carmine injection, showing the capillaries of the young cartilage. For moderate powers.

For other illustrations, see **IV.** B. A. 16 to 18.

B. From Animals.

1018. B. 1. Section of cartilage of cat, stained with carmine, showing very numerous cartilage cells. For high powers.

1265. B. 2. Sections of cartilage of kitten, at birth and at the age of five weeks, stained with carmine, showing the relative number of cartilage cells. For high powers.
Dr. Lionel S. Beale, London, England.

1012. B. 3. Sections of articular cartilage from knee joint of ox, stained with carmine, showing capsules, cells and nuclei perfectly defined. For high powers.
See Part Second, **IV.** A. B. 1, 2.

1013. B. 4. Same as **B. 3**, without the staining.

906 to 916. B. 5. Eleven preparations, consisting of perpendicular sections of articular cartilage from knee joint of calf, stained with carmine, showing capsules, cells and nuclei well defined, and the different character and arrangement of the cells near the free and attached surfaces of the cartilage. For high powers.

917 to 923. B. 6. Seven sections of rib cartilage of calf, stained with carmine, showing capsules, cells, nuclei and blood-vessels. For high powers.

924 to 931. B. 7. Eight sections of rib cartilage of calf, stained with carmine, showing very beautifully the various stages in the formation of young cells by multiplication by division; also bloodvessels. For high powers.
See Part Second, **IV.** A. B. 3 to 9.

1330 to 1336 and 1316 to 1318. B. 8. Ten sections of cartilaginous vertebra of sturgeon, stained with carmine, showing sparsely scattered cartilage cells. For high powers.

1010. B. 9. Transverse section of rib cartilage from kitten, stained with carmine, showing cartilage cells an capsules. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

For other illustrations, see **IV.** B. B. 7 to 9; **VII.** C. B. 7; **VIII.** B. B. 2, 4; **XII.** A. B. 1, 2; **XIII.** B. B. 1.

B. Bone.

A. From Man.

1062. **A. 1.** Longitudinal section of compact substance of shaft of femur, showing the Haversian canals and the arrangement of the lacunæ and canaliculi. In the specimen, the balsam has filled many of the canaliculi, rendering them invisible. For moderate and high powers.

1063. **A. 2.** Same as **A. 1**, embracing a greater extent of bone, and with the canaliculi perfectly preserved. For moderate and high powers.

See Part Second, **IV.** B. A. 1, 4.

1064. **A. 3.** Transverse section of portion of shaft of femur, extending across the entire thickness of the compact substance, showing the arrangement of the Haversian systems, the lacunæ and canaliculi. A little of the spongy tissue is preserved on the inner edge of the section. For moderate and high powers.

1065. **A. 4.** Section similar to **A. 3.**

1066. **A. 5.** Section similar to **A. 3.**

1067. **A. 6.** Section similar to **A. 3**, but showing very little spongy tissue.

1080. **A. 7.** Transverse section of portion of shaft of femur, extending across the entire thickness of the compact substance, stained with carmine, showing very well the lamellar structure of the bone substance. For moderate and high powers.

See Part Second, **IV.** B. A. 2.

1071. **A. 8.** Longitudinal section of portion of compact substance of rib, embracing the surface of junction with the costal cartilage, showing the Haversian systems, lacunæ and canaliculi. For moderate and high powers.

1068. **A. 9.** Horizontal section through one lateral half of condyle of lower jaw, showing the arrangement of the compact and spongy substance, as well as their minute anatomy. For low and high powers.

1069. **A. 10.** Same as **A. 9**, but embracing nearly the entire diameter of the condyle.

1070. **A. 11.** Vertical section through the long axis of condyle of lower jaw and ramus of the condyloid process, showing the arrangement and minute anatomy of the compact and spongy tissues. The thin layer of compact substance on the articular surface of the condyle is wanting over the outer half of the section. For low and high powers.

1072. **A. 12.** Vertical section through the posterior projection of inner condyle of femur of a young boy, in whom much of the condyle was still cartilaginous; shows a mesh-work of spongy tissue, bordered by a narrow ring of more compact substance. Parts of this ring have been broken off in the section. For low and high powers.

1679 to 1681. **A. 13.** Three preparations of parietal bone of fœtus, stained with carmine, showing the cells and nuclei of the young lacunæ colored by the carmine. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1630. **A. 14.** Similar to **A. 13**; a transparent Prussian blue injection fills some of the vessels of the bone. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1631. **A. 15.** Portion of orbital plate of frontal bone of fœtus, with partial transparent Prussian blue injection, showing the Haversian canals and closely aggregated lacunæ of the young bone. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1682. Section through one and portion of another of the bones of the tarsus of new-born infant, stained with
A. 16. carmine. Only a small central portion in the bones is as yet ossified, and the specimen shows the process of ossification of cartilage and the minute anatomy of cartilage, perichondrium and muscle, a few muscular fibres remaining attached to the bones. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1049 & 1050. Two sections of portion of condyle of femur of young boy, showing the ossification of cartilage. For
A. 17. moderate and high powers.

1616. Lower extremity of fœtus, at the eighth week, stained with carmine, showing ossification in the shafts
A. 18. of the long bones, and the almost exclusively cellular composition of the young cartilage. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

For other illustrations, see Part Second, **IV.** B. A. 3.

B. From Animals.

1081. Transverse section of shaft of bone of albatross, embracing the entire circumference of the bone. Most
B. 1. of the canaliculi are invisible from the use of too fluid balsam in the mounting. For moderate and high powers.
J. Bourgogne, Paris, France.

1082. Transverse section of spongy tissue from vertebra of whale. Most of the canaliculi are filled with
B. 2. balsam. For low and high powers.
J. Bourgogne, Paris, France.

1083. Section labelled by the preparer: "Transverse section of bone of Ostrich." The section is, however,
B. 3. parallel to the Haversian canals. For moderate and high powers.
J. Bourgogne, Paris, France.

1044. Tranverse section of compact substance of fossil bone of whale. Most of the canaliculi are filled with
B. 4. balsam. For moderate powers.
C. M. Topping, London, England.

458. Piece of fossil bone from the neighborhood of Richmond, Va., asserted to be a "mad-stone," curing
B. 5. syphilis, hydrophobia, bites of serpents, &c., and offered for sale as such. Shows the Haversian canals, but is too thick to show lacunæ and canaliculi. For low powers.

459 to 461. Three preparations of scales of gar-fish, showing the osseous structure of the scales. For low and high
B. 6. powers.

1623 & 1678. Two preparations consisting of horizontal sections of sternum of mouse, with cartilages, articulating
B. 7. extremities of ribs, and portions of muscle attached, stained with carmine, showing the minute anatomy and mutual relations of the several structures enumerated. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1683 & 1684. Two horizontal sections through one lateral half of head of tibia of young puppy, stained with carmine,
B. 8. showing the process of ossification of cartilage. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1047. Section of cartilage and young bone from cat, stained with carmine, showing the process of ossification
B. 9. of cartilage. For high powers.

For other illustrations, see **VII.** C. B. 7.

C. Pathological.

1073. Transverse section of portion of compact substance of shaft of human femur, from a case of osteo-
C. 1. myelitis, showing large cavities produced in the bone by ulceration, apparently starting from the walls of the Haversian canals. For low and high powers.

1074. Same as **C. 1**, but embracing a portion of healthy bone. Is too thick for minute study. For low and
C. 2. moderate powers.

1075. C. 3. Transverse section of portion of compact substance of shaft of human fibula from the vicinity of a fracture, showing a narrow deposit of new bone from periosteal inflammation. For low and high powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1076. C. 4. Transverse section of sequestrum from human bone, embracing compact and spongy tissue. Upon a portion of the outer surface there is a deposit of new bone. For moderate and high powers.

1077 & 1078. C. 5. Two transverse sections through a mass of young callus in the vicinity of a fracture, from human femur, showing the structure of new bone. For low and high powers.

1079. C. 6. Transverse section of compact substance of shaft of human femur, with a small portion of callus attached to the outer surface, from the vicinity of a fracture. The earthy constituents of the bone have been removed by maceration in acid. For moderate and high powers.

1685. C. 7. Longitudinal section of a chicken bone through a consolidated fracture, showing the rounded extremities of the bones riding past each other, but connected by an arch of new spongy bone. For low and high powers.
Hospital Steward A. J. Schafhirt, U. S. Army.

C. Periosteum.

A. From Man.

325. A. 1. Opaque injection (yellow) of the vessels from the anterior fontanelle. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

327. A. 2. Opaque injection (yellow) of the vessels of the pericranium. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

329. A. 3. Opaque injection (yellow) of the vessels of periosteum of tibia. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

330. C. 1. Opaque injection (red) of the vessels of inflamed periosteum, from a syphilitic node of tibia. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

D. Medullary Substance.

A. From Man.

354. A. 1. Opaque injection in two colors (arteries white, veins blue) of the vessels of medullary substance from femur. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

F. Synovial Membranes.

A. From Man.

1059 to 1061. A. 1. Three preparations of synovial fringes from finger joint, with transparent carmine injection, showing the arrangement of the capillary loops. For low powers.
See Part Second, **IV.** F. A. 1.

328. A. 2. Opaque injection (red) of the vessels of synovial membrane from knee joint. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

V. VASCULAR SYSTEM.

A. Heart.

B. Pericardium.

C. Arteries.

D. Veins.

E. Capillaries.

F. Lymphatic Vessels.

G. Lymphatic Glands.

H. Blood and Lymph.

A. From Man. | B. From Animals. | C. Pathological.

V. VASCULAR SYSTEM.

A. Heart.

A. From Man.

315. A. 1. Opaque injection (yellow) of the vessels of the substance of heart of fœtus. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

316. A. 2. Opaque injection (red) of the vessels of papillary muscle of heart. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

317. A. 3. Opaque injection (yellow) of the vessels of trabeculæ carneæ of heart. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1084 to 1086. B. 1. Three transverse sections through wall of auricle of bullock's heart, showing the arrangement of the muscular bundles composing the wall. For low and high powers.

322. B. 2. Opaque injection (yellow) of the vessels of trabeculæ carneæ of heart of *Hexanchus griseus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Arteries.

A. From Man.

319. A. 1. Opaque injection (red) of vasa vasorum of aorta. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **III.** B. c. 2.

B. From Animals.

526. B. 1. Portion of aorta of mouse and arterial branches, stained with carmine, showing (best in the smaller vessels) the structure of the coats. For moderate and high powers.

436 to 438. B. 2. Three preparations of arteries and veins in muscular tissue of kitten, stained with carmine, showing the general character of the structure of the vessels. For moderate and high powers.

439 and 440. B. 3. Two preparations of arteries and veins from kitten, stained with carmine, showing the minute anatomy of the walls of the vessels; also nerves and adipose tissue. For moderate and high powers.

1666 to 1668. B. 4. Three preparations of arteries, veins and capillaries from kitten, stained with carmine, showing very perfectly the minute anatomy of the walls of the vessels and of nerves and connective tissue. For moderate and high powers.

For other illustrations, see **I.** A. B. 1; **II.** A. B. 1; **III.** B. B. 3, 5, 6, 7 (Specimen **1187**), 10, 11; **VI.** D. B. 9 Specimen **1214**); **VI.** E. B. 3 to 5; **VII.** B. B. 2, 3; **VII.** O. B. 1, 3 to 6; **VII.** Q. B. 4.

D. Veins.

A. From Man

See **III.** B. c. 2.

B. From Animals.

See **I.** A. b. 1; **II.** A. b. 1; **III.** B. b. 3, 5, 6, 7 (Specimen **1187**), 10, 11; **V.** C. b. 2 to 4; **VI.** E b. 3 to 5; **VII.** B. b. 2, 3; **VII.** O. b. 1, 3 to 6; **VII.** Q. b 4.

E. Capillaries.

A. From Man.

See **III.** B. c. 2.

B. From Animals.

See **II.** A. b. 1; **III.** B. b. 3 to 5, 6, 7 (Specimen **1187**), 11; **V.** C. b. 4; **VI.** D. b. 9 (Specimen **1214**); **VI.** E. b. 5; **VII.** B. b. 2, 3; **VII.** O. b. 1, 3 to 6; **VII.** P. b. 1; **VII.** Q. b. 4.

F. Lymphatic Vessels.

A. From Man.

28. Opaque injection (yellow) of the lymphatic vessels of the scrotum. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

351. Opaque injection (white) of the lymphatic vessels on the outside of a gravid uterus. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

29. Opaque injection (yellow) of lymphatic vessels of the skin of the leg in elephantiasis. For low powers.
C. 1. Prof. Joseph Hyrtl, Vienna, Austria.

352. Opaque injection (yellow) of subarachnoid lymphatic plexus from a hydrocephalic child. For low
C. 2. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

G. Lymphatic Glands.

A. From Man.

287. Opaque injection in two colors (arteries white, veins blue) of small lymphatic glands from the
A. 1. mesentery. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

288. Same as **A. 1**, from a large gland (arteries red, veins yellow). For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

H. Blood and Lymph.

A. From Man.

608. Human blood corpuscles, dried. For high powers.
A. 1. *See Part Second*, **V.** H. A. 1 to 4.

B. From Animals.

387. Blood corpuscles of pigeon, dried. For high powers.
B. 1. *See Part Second*, **V.** H. B. 1.

609 to 612. Four preparations of blood corpuscles of frog, dried. For high powers.
B 2. *See Part Second*, **V.** H. B. 2.

613 to 617. Five preparations of blood corpuscles of toad, dried. For high powers.
B. 3.

618 to 621. Seven preparations of blood corpuscles of lizard *(Menopoma Allegheniensis)*. For high powers.
B. 4.

2018 to 2050. Three preparations of blood corpuscles of *Triton*. For high powers.
B. 5.

VI. NERVOUS SYSTEM.

A. Cerebrum.

B. Cerebellum.

C. Pons Varolii and Medulla Oblongata.

D. Spinal Cord.

E. Nerves.

F. Ganglia.

G. Membranes of Brain and Spinal Cord.

A. From Man. | B. From Animals. | C. Pathological.

VI. NERVOUS SYSTEM.

A. Cerebrum.

B. From Animals.

496 to 507 and 1543 to 1545. B. 1. Fifteen preparations consisting of sections of cerebrum of mouse, with transparent carmine injection, showing the arrangement of the excessively minute capillaries. For moderate powers.

1960, 1961 and 2033, 2034. B. 2. Four sections of cerebrum of kitten, with transparent carmine injection, showing the arrangement of the capillaries in the several portions of the cerebrum. Specimens **1961, 2033** and **2034** embrace the entire thickness of the cerebrum. For low powers.

B. Cerebellum.

A. From Man.

331. A. 1. Opaque injection (red) of the vessels of the cortical substance of cerebellum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Pons Varolii and Medulla Oblongata.

A. From Man.

1551. A. 1. Transverse section of medulla oblongata through the olivary bodies, stained with carmine, showing the general arrangement of the component parts of the cord, and also individual nerve cells and fibres. For low and high powers.
Dr. R. T. Edes, Hingham, Mass.

1547. A. 2. Transverse section of medulla oblongata at the region of the decussation of the anterior pyramids; similar in character to **A. 1.**
Dr. R. T. Edes, Hingham, Mass.

D. Spinal Cord.

A. From Man.

1552. A. 1. Transverse section of upper cervical portion of spinal cord, stained with carmine, showing the general arrangement of the component parts of the cord, and also individual nerve cells and fibres. For low and high powers.
Dr. R. T. Edes, Hingham, Mass.

1612. A. 2. Transverse section of spinal cord stained with carmine. The section has cracked in many places in the process of mounting and does not show well under the high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1619. Same as **A. 2**, without the staining.
A. 3. Assistant Surgeon J. S. Billings, U. S. Army.

335. Opaque injection (yellow) of the vessels of central part of spinal cord. For low powers.
A. 4. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1550. Transverse section of spinal cord of dog through the cervical enlargement, stained with carmine,
B. 1. showing the general and minute anatomy of the cord. For low and high powers.
Dr. R. T. Edes, Hingham, Mass.

1548. Transverse section of spinal cord of dog through the lumbar enlargement, stained with carmine;
B. 2. similar in character to **B. 1.**
Dr. R. T. Edes, Hingham, Mass.

375. Transverse section of spinal cord of cat, stained with carmine, showing the general and minute anatomy
B. 3. of the cord. For low and high powers.
Dr. S. A. Jones, Englewood, N. J.

1149 to 1159. Eleven transverse sections of spinal cord of cat, with transparent Prussian blue injection (almost
B. 4. entirely faded) and carmine staining, showing the general and minute anatomy of the cord. The central canal of the cord is still extant, and many of the specimens show the columnar epithelium lining the canal. The sections are particularly well suited for study with the higher powers.

1160 to 1166. Seven preparations, consisting of transverse sections of spinal cord of kitten, with transparent Prussian
B. 5. blue injection and carmine staining, showing the general anatomy of the cord, and, partially, the arrangement of the capillaries. For low and moderate powers.

1621. Transverse section of spinal cord of kitten, with transparent Prussian blue injection, showing the
B. 6. arrangement of the capillaries of the cord. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

376 to 385. Ten transverse sections of spinal cord of calf, stained with carmine, showing the general and minute
B. 7. anatomy of the cord. For low and high powers.

1167 to 1169. Three preparations, same as **B. 7**, but cracked in mounting, and not well adapted for high powers.
B. 8.

1208 to 1214. Seven preparations of scraps of spinal cord of calf, teased out so as to show nerve cells and fibres and
B. 9. their mutual relations; stained with carmine. Specimen **1214** shows also very beautifully a small artery and capillaries. For high powers.

1215 to 1218. Four preparations of isolated multipolar nerve cells, with their processes attached, from spinal cord of
B. 10. calf; stained with carmine. For high powers.

1558. Same as **B. 10.**
B. 11. Prof. Joseph Gerlach, Erlangen, Bavaria.
See Part Second, **VI.** D. B. 1.

1556. Tangle of axis fibres teased out from white substance of spinal cord of calf and stained with carmine.
B. 12. For high powers.
Prof. Joseph Gerlach, Erlangen, Bavaria.

1549. Transverse section of spinal cord of *Emys insculpta* through the cervical enlargement, stained with
B. 13. carmine, showing the general and minute anatomy of the cord. For low and high powers.
Dr. R. T. Edes, Hingham, Mass.

1962 to 1965. Four transverse sections of cervical portion of spinal cord of kitten, with transparent carmine injection,
B. 14. showing the arrangement of the capillaries. For low powers.

E. Nerves.

A. From Man.

1542. **A. 1.** Nerve from finger, with transparent carmine injection, showing the dense mesh-work of capillaries surrounding the nerve. For low powers.

517. **A. 2.** Pacinian body from finger, with transparent carmine injection, showing the arrangement of the capillaries over the surface of the body. For low powers.

331. **A. 3.** Opaque injection (red) of the vessels of the ischiatic nerve. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

332. **A. 4.** Opaque injection (yellow) of the vessels of the posterior root of the second sacral nerve. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

333. **A. 5.** Opaque injection (yellow) of the vessels of the sympathetic nerve. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **II.** A. A. 8, 11 (Specimens **1998** to **2002**), 12 (Specimens **2009** to **2011**); **III.** B. C. 2.

B. From Animals.

602. **B. 1.** Nerve from neck of mouse, with transparent carmine injection, showing the arrangement of the capillaries around the nerve. For low powers.

518. **B. 2.** Nerve of rat, with transparent Prussian blue injection and carmine staining. Only a few of the vessels are filled by the injection. The staining brings out the connective tissue corpuscles of the neurilemma, and from the cut extremities of the nerve the nerve pulp projects in globular masses. For moderate and high powers.

1040. **B. 3.** Nerves from rat, with transparent Prussian blue injection and carmine staining, showing the individual nerve fibres composing the bundles, the corpuscles of the neurilemma, and also muscular fibres, arteries and veins. For moderate and high powers.

857. **B. 4.** Pacinian bodies in situ in mesentery of cat, with transparent Prussian blue injection, showing the structure of the Pacinian bodies and their relations to the nerves: also arteries, veins, and adipose tissue. For moderate and high powers.

858. **B. 5.** Same as **B. 4**, without the injection, and stained with carmine. The staining brings out more distinctly the structure and relations of the Pacinian bodies. Shows also arteries, veins, capillaries and connective tissue. For moderate and high powers.

For other illustrations, see **II.** A. B. 1; **III.** B. B. 4, 6, 9, 11; **III.** B. C. 4; **V.** C. B. 3, 4; **VI.** F. B. 1; **VII.** B. B. 2, 3; **VII.** C. B. 8; **VII.** M. B. 1 (Specimen **939**); **VII.** O. B. 1, 3, 5; **VII.** Q. B. 1, 4; **IX.** A. B. 11; **XII.** A. B. 1, 2.

F. Ganglia.

B. From Animals.

1622. **B. 1.** Three nerve ganglia, with connecting nerve trunks attached, from a caterpillar. Vessels of the trachea are also shown passing to the ganglia and nerve trunks, and there breaking up into great numbers of extremely fine ramifying branches. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

G. Membranes of Brain and Spinal Cord.

A. From Man.

350. A. 1. Opaque injection (white) of the vessels of choroid plexus, from lateral ventricle of cerebrum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1277 & 1278. B. 1. Two preparations of choroid plexus of cat, with transparent carmine injection, showing the arrangement of the vessels of the plexus, and the epithelial cells covering them. For low and high powers.

1243. B. 2. Choroid plexus of rat, with transparent carmine injection, showing the arrangement of the vessels of the plexus. For low powers.

1966. B. 3. Portion of pia mater of kitten, with transparent carmine injection, showing the arrangement of the bloodvessels. For low powers.

VII. DIGESTIVE ORGANS.

A. Mucous Membrane of Mouth and Fauces.

B. Salivary and Poison Glands.

C. Tongue

D. Teeth.

E. Pharynx.

F. Œsophagus.

G. Stomach.

H. Small Intestine.

I. Large Intestine and Cloaca.

K. Liver and Gall-Bladder.

L. Chemical Constituents of Bile.

M. Pancreas.

N. Spleen.

O. Mesentery.

P. Omentum.

Q. Peritoneum.

A. From Man. | B. From Animals. | C. Pathological.

VII. DIGESTIVE ORGANS.

A. Mucous Membrane of Mouth and Fauces.

B. From Animals.

196. B. 1. Opaque injection (yellow) of the vessels of the mucous membrane of mouth of *Triton cristatus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

197. B. 2. Opaque injection (yellow) of the vessels of the fornix of mouth of *Salamandra maculosa*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

198. B. 3. Opaque injection (yellow) of the vessels of the palate of *Salamandra maculosa*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. Salivary and Poison Glands.

A. From Man.

276. A. 1. Opaque injection in two colors (arteries yellow, veins red) of parotid gland. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

277. A. 2. Opaque arterial injection (yellow) of submaxillary gland. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1662. B. 1. Portion of salivary gland from kitten, stained with carmine, showing the racemose character of the gland and the nuclei of the pavement epithelium of the lobules. For low and high powers.

1663. B. 2. Portion of duct of salivary gland of kitten, stained with carmine, showing the structure of the duct, and also arteries, veins, capillaries, nerves and connective tissue. For moderate and high powers.

1664. B. 3. Portion of salivary gland, with duct attached, from kitten, stained with carmine, similar in character to B. 1 and 2; shows also arteries, veins, capillaries, nerves and connective tissue. For low and high powers.

280. B. 4. Opaque injection in two colors (arteries yellow, veins red) of parotid gland of *Simia Capucina*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

289. B. 5. Opaque injection in two colors (arteries red, veins yellow) of poison gland of *Aspis Haje*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Tongue.

A. From Man.

306. Opaque injection (yellow) of the vessels on the under surface of tongue. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

307. Opaque injection (yellow) of the vessels in a section of tongue For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

308. Opaque injection (red) of the vessels of the papillæ circumvallatæ of tongue. For low powers.
A. 3. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

388 to 394. Series of seven preparations of epidermis of upper surface of cat's tongue, from tip to root, showing the
B. 1. large recurved papillæ. For low powers.

941 to 950. Series of ten perpendicular sections of tongue of cat, cut transversely, with transparent carmine injection,
B. 2. showing the arrangement of the capillaries and muscular bundles in the tongue and the structures of the mucous membrane. For low and moderate powers.

951 to 953. Three perpendicular sections of tongue of kitten, cut transversely, with transparent carmine injection;
B. 3. similar in character to **B. 2.**

405. Perpendicular section of small portion of tongue of dog, with transparent Prussian blue injection,
B. 4. showing the arrangement of the capillary loops in the long papillæ of the tongue. For low powers.
Assistant Surgeon J. S. Billings, U. S. Army.

406. Perpendicular section of portion of tongue of dog, cut longitudinally, with transparent Prussian blue
B. 5. injection; similar in character to **B. 4**, but embracing more of the substance of the tongue.
Assistant Surgeon J. S. Billings, U. S. Army.

555 to 566. Twelve preparations, consisting of perpendicular sections of tongue of mouse, cut transversely, with
B. 6. transparent carmine injection, showing the arrangement of the capillaries in the substance of the tongue and mucous membrane, and the character of the papillæ. For low and moderate powers.

536 to 542. Series of seven perpendicular sections of tongue of chicken, cut transversely, with transparent carmine
B. 7. injection, showing the relations and anatomy of the various structures—muscle, cartilage, bone and dense epidermis—composing the organ, and the arrangement of the capillaries. For low and high powers.

531. Perpendicular section of portion of tongue of *Iguana*, with transparent Prussian blue injection and
B. 8. carmine staining, showing the arrangement of the muscular elements of the tongue, especially the muscular fibres passing up to the summit of the erectile papillæ, the arrangement of the capillaries, and also some nerve fibres. In one or two of the papillæ branched muscular fibres are seen. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

309. Opaque injection (red) of the vessels of the filiform papillæ of tongue of lion. For low powers.
B. 9. Prof. Joseph Hyrtl, Vienna, Austria.

310. Opaque injection (yellow) of the vessels of tongue of *Salamandra*. For low powers.
B. 10. Prof. Joseph Hyrtl, Vienna, Austria.

311. Opaque injection (yellow) of the vessels of tongue of frog. For low powers.
B. 11. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

543 to 554 and 1219 to 1221. Fifteen preparations consisting of perpendicular sections of tongue of rat infested with the *Trichina spiralis*, with transparent carmine injection, showing the parasites lying encysted between the muscular fibres. The specimens show also the normal arrangement of the elements of the rat's tongue. For low
C. 1. and moderate powers.

D. Teeth.

A. From Man.

395. A. 1. Longitudinal section of incisor tooth. The enamel has all been broken off in the course of preparation Shows only the dentine. For low and high powers.

396. A. 2. Longitudinal section of incisor tooth. As in **A. 1**, the enamel is wanting. Shows only the dentine. For low and high powers.

397. A. 3. Longitudinal section of incisor tooth. This section retains most of the enamel, but is much thicker than the preceding. It embraces the central cavity of the tooth, and shows the osseous cement lining the inner surface of the fang. For low and high powers.

398. A. 4. Longitudinal section of molar tooth, showing all the structures of the tooth. For low and high powers.

B. From Animals.

399. B. 1. Longitudinal section of teeth of rat with portion of lower jaw attached, and transverse section of another tooth, showing all the structures of the teeth. For low and high powers.
J. Bourgogne, Paris, France.

400. B. 2. Longitudinal section of molar tooth of sheep, showing its various structures. For low and high powers.
J. Bourgogne, Paris, France.

401. B. 3. Transverse section of same as **B. 2**. For low and high powers.
J. Bourgogne, Paris, France.

402. B. 4. Section of portion of molar tooth of elephant, showing enamel and dentine. For low and high powers.
J. Bourgogne, Paris, France.

E. Pharynx.

B. From Animals.

527. B. 1. Portion of pharynx of *Iguana*, with transparent Prussian blue injection, showing a dense layer of pigment cells with anastomosing processes. For moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

510. B. 2. Epidermis from pharynx of *Iguana*, slightly stained with carmine, showing the spike-shaped papillæ. For moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1954. B. 3. Portion of mucous membrane from pharynx of kitten, with transparent carmine injection, showing the arrangement of the bloodvessels. For low and moderate powers.

199. B. 4. Opaque injection (white) of the vessels of pharynx of *Salamandra maculosa*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

F. Œsophagus.

B. From Animals.

1510. B. 1. Portion of œsophagus of mouse, with transparent carmine injection, showing the arrangement of the capillaries and muscular layers. For moderate and high powers.

569 & 570. B. 2. Two preparations of œsophagus of chicken, with transparent carmine injection, showing the arrangement of the capillaries. For low powers.

G. Stomach.

A. From Man.

157. A. 1. Opaque injection in two colors (arteries white, veins blue) of mucous membrane of stomach, near the cardiac orifice. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

158. A. 2. Same as **A. 1**, from near the pylorus. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

159. A. 3. Same as **A. 1**, (arteries yellow, veins red), from the fundus of the stomach.
Prof. Joseph Hyrtl, Vienna, Austria.

160. A. 4. Opaque injection in two colors (arteries white, veins red) of the submucous connective tissue of stomach.
Prof. Joseph Hyrtl, Vienna, Austria.

161. A. 5. Opaque injection in two colors (arteries yellow, veins red) of muscular coat of stomach.
Prof. Joseph Hyrtl, Vienna, Austria.

178. A. 6. Opaque injection in two colors (arteries white, veins red) of pylorus.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

473. B. 1. Portion of muscular coat of stomach of cat, with transparent carmine injection, showing the arrangement of the capillaries. For low and moderate powers.

567. B. 2. Portion of stomach of toad, with transparent Prussian blue injection and carmine staining, showing the arrangement of the glands and capillaries. The mucous surface is towards the observer. For low and moderate powers.

568. B. 3. Perpendicular sections of stomach of toad, with transparent Prussian blue injection and carmine staining, showing the anatomy of the several coats of the stomach. For low and high powers.

1955 & 1956. B. 4. Two perpendicular sections of stomach of kitten, embracing the entire circumference of the organ, with transparent carmine injection, showing the arrangement of the capillaries in the several coats of the stomach, and the epithelium in situ on the mucous membrane. For low and high powers.

1972. B. 5. Portion of muscular coat of stomach of kitten, with transparent carmine injection, showing the arrangement of the capillaries. For low powers.

181. B. 6. Opaque injection in two colors (arteries yellow, veins red) of the vessels in a transverse section of proventriculus of goose. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

182. B. 7. Same as **B. 6**, in longitudinal section. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

183. B. 8. Opaque injection (yellow) of the vessels in a transverse section of glands of proventriculus of *Pavo cristatus*.
Prof. Joseph Hyrtl, Vienna, Austria.

184. B. 9. Opaque injection in two colors (arteries white, veins blue) of the vessels on the external aspect of glands of proventriculus of *Columba*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

185. B. 10. Opaque injection in two colors (arteries yellow, veins red) of the vessels on the internal aspect of proventriculus of *Ardea cinerea*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

186. B. 11. Opaque injection in two colors (arteries yellow, veins red) of the vessels on the internal surface of muscular stomach of *Gallina*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

187. B. 12. Opaque injection in two colors (arteries white, veins blue) of muscular stomach of *Strix Bubo*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

200. B. 13. Opaque injection in two colors (arteries white, veins blue) of stomach of *Proteus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

205. B. 14. Opaque injection (white) of the vessels of stomach of *Triton cristatus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

207. B. 15. Opaque injection in two colors (arteries red, veins white) of stomach of *Salamandra*, near the pylorus. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

215. B. 16. Opaque injection in two colors (arteries yellow, veins green) of stomach of *Rana ridibunda*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

219. B. 17. Opaque injection in two colors (arteries yellow, veins blue) of pylorus of *Rana esculenta*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

232. B. 18. Opaque injection in two colors (arteries white, veins blue) of stomach of *Coluber tesselatus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

233. B. 19. Opaque injection in two colors (arteries white, veins green) of stomach of *Angais fragilis*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

212. B. 20. Opaque injection in two colors (arteries yellow, veins red) of stomach of *Acipenser Sturio*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

213. B. 21. Opaque injection (red) of vessels of pylorus of *Acipenser Sturio*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

214. B. 22. Same as **B. 21**, from *Acipenser Ruthenus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

216. B. 23. Opaque injection (red) of vessels of muscular coat of stomach of *Acipenser Sturio*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

219. B. 24. Opaque injection in two colors (arteries white, veins blue) of stomach of *Cobitis fossilis*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

250. B. 25. Opaque injection (white) of vessels of muscular coat of stomach of pike. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

1327 to 1329 and 1343 to 1345. C. 1. Six perpendicular sections of human stomach, in the immediate vicinity of a small cyst, stained with carmine, showing thickening of the walls of the stomach, especially of the muscular coat. For low and high powers.
From Specimen **768**, *Medical Section, chap.* IV., *sec.* 2, B. 5.

II. Small Intestine.

A. From Man.

408 to 410. A. 1. Three preparations of mucous membrane of ileum, dissected from the other coats of the intestine, showing the villi and orifices of the glands of Lieberkühn. For low and moderate powers.

401. A. 2. Perpendicular section of ileum, stained with red aniline, showing the minute anatomy of the several coats of the intestine. For low and high powers.

1563. A. 3. Portion of muscular coat of small intestine of negro infant, with transparent carmine injection, showing the arrangement of the capillaries. For low and moderate powers.

571 to 576 and 1111. A. 4. Seven preparations, consisting of portions of jejunum, with opaque injection (red), showing the arrangement of the capillary loops in the villi. For low powers.

577, 578 and 1112, 1511. A. 5. Four preparations, same as A. 4, but with yellow instead of red injection.

162. A. 6. Opaque injection in two colors (arteries yellow, veins blue) of mucous membrane of duodenum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

163. A. 7. Opaque injection (red) of the vessels of mucous membrane of jejunum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

164. A. 8. Opaque injection in two colors (arteries white, veins yellow) of ileum from a new-born child. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

165. A. 9. Opaque injection in two colors (arteries yellow, veins blue) of mucous membrane of ileum, near the ileo-cæcal valve, from a child two years old. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

166. A. 10. Opaque injection in two colors (arteries yellow, veins blue) of muscular coat of ileum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

167. A. 11. Opaque injection (white) of the vessels of a Peyer's patch. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

168. A. 12. Opaque injection in two colors (arteries yellow, veins red) of a Peyer's patch. The glands are filled with chyle. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

169. A. 13. Opaque injection (yellow) of the chyliferous vessels of the intestinal villi. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

170. A. 14. Same as A. 13, with opaque injection (red) of the arteries. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

535. B. 1. Perpendicular section of small intestine of puppy, showing the very long villi. For low powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1053 & 1054. B. 2. Two preparations, consisting of perpendicular sections of duodenum of cat, with transparent carmine injection, showing the arrangement of the capillaries in the several coats of the intestine, and also the glands of Brunner. For low and moderate powers.

605 & 606. B. 3. Two perpendicular sections of jejunum of cat, with transparent carmine injection, showing the arrangement of the capillaries in the several coats of the intestine, and also the epithelium of the villi. For low and moderate powers.

1222 & 1223. B. 4. Two preparations, similar to **B. 3.**

1282 & 1283. B. 5. Two perpendicular sections of ileum of cat, with transparent carmine injection, showing the arrangement of the capillaries in the several coats, and also the glands of a Peyer's patch. For low and moderate powers.

1560. B. 6. Perpendicular section through entire circumference of small intestine of cat, with transparent carmine injection, showing the arrangement of the capillaries in the several coats of the intestine, and also the epithelium in situ upon the villi. For low and moderate powers.

Prof. Joseph Gerlach, Erlangen, Bavaria.

951 to 961. B. 7. Eight preparations, same as **B. 6**, and showing the same points.

962 to 967. and 607. B. 8. Seven perpendicular sections of small intestine of cat, with transparent Prussian blue injection (faded to a considerable extent) and carmine staining; showing the minute anatomy of the structures of the several coats of the intestine. For low and high powers.

603. B. 9. Perpendicular section of mucous coat of small intestine of cat, with transparent Prussian blue injection and carmine staining, showing the capillary loops in the villi and the structure of the follicles of Lieberkühn. For low and high powers.

595. B. 10. Oblique section, same as **B. 9.**

756 to 758. B. 11. Three perpendicular sections through the entire circumference of small intestine of cat, with transparent Prussian blue injection and carmine staining, showing the capillary loops in the villi and the individual cells of the columnar epithelium of the villi, with their nuclei stained. For low and high powers.

1311 to 1316 and 1575 & 1576. B. 12. Five preparations, consisting of perpendicular sections of small intestine of kitten, with transparent Prussian blue injection and carmine staining, showing the arrangement of the capillaries in the several coats of the intestine and the epithelium in situ on the villi For low and moderate powers.

1317 to 1321. B. 13. Eight preparations, same as **B. 12.** The injection has faded to a great extent, but the sections show the minute anatomy of the various structures of the walls of the intestine. In many places there are instructive transverse sections of the villi. For low and high powers.

1325. B. 14. Perpendicular section of small intestine of kitten, with transparent carmine injection, showing the arrangement of the capillaries and the epithelium in situ on the villi. For low and moderate powers.

759. B. 15. Same as **B. 14**, embracing the entire circumference of the intestine.

581 to 587, 760 to 767, and 1300 to 1303. B. 16. Sixteen preparations, consisting of portions of small intestine of rat, with transparent carmine injection, showing the capillary loops in the villi and over the surface of the mucous membrane. The inner surface of the intestine is towards the observer. For low and moderate powers.

1313. B. 17. Same as **B. 16**, showing also a solitary gland, with its vessels injected.

588 to 590 and 1304 & 1305. B. 18. Five preparations, consisting of portions of mucous membrane of small intestine of mouse with transparent carmine injection, showing the capillary loops in the villi. For low and moderate powers.

1306. B. 19. Same as **B. 18**, showing a small Peyer's patch and the orifices of the follicles of Lieberkühn. For low and moderate powers.

768. B. 20. Same as **B. 18**, showing the orifices of the follicles of Lieberkühn. For low and moderate powers.

591 to 594 and 769 to 771. B. 21. Seven preparations of villi of small intestine of mouse, with transparent carmine injection, showing the arrangement of the capillaries in the villi. For low and moderate powers.
See Part Second, **VII.** H. B. 1.

772 to 776. B. 22. Five perpendicular sections through entire circumference of small intestine of mouse, with transparent carmine injection, showing the capillaries in the villi and intestinal walls and the epithelium of the villi in situ. For low and moderate powers.

777. B. 23. Perpendicular section through entire circumference of small intestine of mouse, with transparent Prussian blue injection and carmine staining, showing the capillaries and the round nuclei of the substance of the villi. For low and high powers.

604. B. 24. Portion of small intestine of mouse, with transparent Prussian blue injection and carmine staining, showing the arrangement of the capillaries, the orifices of the follicles of Lieberkühn, and, better than **B. 23**, the round nuclei of the substance of the villi. For low and high powers.

596 & 1326. B. 25. Two preparations of villi from small intestine of chicken, with double transparent injection (artery blue, veins and capillaries red), showing the arrangement of the vessels of the villi. For low powers.

597 to 599. B. 26. Three preparations of villi from small intestine of chicken, with transparent carmine injection, showing the arrangement of the vessels in the villi. For low powers.

581 to 583. B. 27. Three preparations of portions of small intestine of frog, with transparent carmine injection, showing the arrangement of the bloodvessels in the intestinal walls. For low powers.

778 to 782. B. 28. Five preparations of portions of small intestine of toad, with transparent carmine injection, similar in character to **B. 27**. For low powers.

783. B. 29. Portion of ileum of sheep, with opaque injection (red), showing the arrangement of the vessels in the villi. For low powers.

784 to 786. B. 30. Three preparations of small intestine of chicken, with opaque injection (bluish white), showing the capillary networks in the villi. For low powers.

580. B. 31. Same as **B. 30**, injected with red.

600 & 601. B. 32. Two preparations of villi from small intestine of chicken, with double opaque injection (artery bluish white, veins yellow; capillaries, some filled from the artery, some from the veins), showing the arrangement and mutual relations of the bloodvessels in the villi. For low powers.

1957 & 1958. B. 33. Two preparations, same as **B. 15**.

179. B. 34. Opaque injection in two colors (arteries yellow, veins red) of intestinal villi of *Capra Ibex*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

188. B. 35. Same as **B. 34**, from *Struthio Camelus*, (arteries white, veins blue). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

189. B. 36. Same as **B. 35**, from *Tetrao Cothurnix*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

190. B. 37. Same as **B. 35**, embracing isolated villi only. For low powers
Prof. Joseph Hyrtl, Vienna, Austria.

191. Same as **B. 35**, from *Rhea Americana*. For low powers.
B. 38. Prof. Joseph Hyrtl, Vienna, Austria.

192. Opaque injection (white) of chyliferous vessels of villi of *Otis tarda*. For low powers.
B. 39. Prof. Joseph Hyrtl, Vienna, Austria.

193. Same as **B. 39**, from *Corvus Corone*. For low powers.
B. 40. Prof. Joseph Hyrtl, Vienna, Austria.

201. Opaque injection (white) of small intestine of *Proteus*. For low powers.
B. 41. Prof. Joseph Hyrtl, Vienna, Austria.

202. Same as **B. 41**. from near the cloaca. For low powers.
B. 42. Prof. Joseph Hyrtl, Vienna, Austria.

204. Opaque injection in two colors (arteries white, veins blue) of small intestine of *Triton cristatus*. For
B. 43. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

208. Opaque injection in two colors (arteries white, veins green) of small intestine of *Salamandra*. For low
B. 44. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

209. Same as **B. 44**, from near the cloaca. For low powers.
B. 45. Prof. Joseph Hyrtl, Vienna, Austria.

213. Opaque injection in two colors (arteries white, veins blue) of small intestine of *Bufo viridis*. For low
B. 46. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

214. Same as **B. 46**, from near the cloaca. For low powers.
B. 47. Prof. Joseph Hyrtl, Vienna, Austria.

216. Opaque injection in two colors (arteries yellow, veins green) of small intestine of *Rana ridibunda*. For
B. 48. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

217. Same as **B. 48**, from near the cloaca. For low powers.
B. 49. Prof. Joseph Hyrtl, Vienna, Austria.

221. Opaque injection in two colors (arteries yellow, veins blue) of small intestine of *Rana temporaria*. For
B. 50. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

222. Same as **B. 50**, from *Pelobates fuscus*. For low powers.
B. 51. Prof. Joseph Hyrtl, Vienna, Austria.

223. Same as **B. 50**, from near the cloaca of *Alytes obstetricans*, (arteries red, veins blue). For low powers.
B. 52. Prof. Joseph Hyrtl, Vienna, Austria.

224. Same as **B. 50**, from *Rana esculenta*, (arteries white, veins red). For low powers.
B. 53. Prof. Joseph Hyrtl, Vienna, Austria.

225. Same as **B. 50**, from *Bufo vulgaris*, (arteries yellow, veins red). For low powers.
B. 54. Prof. Joseph Hyrtl, Vienna, Austria.

226. Same as **B. 50**, from *Hyla viridis*, (arteries red, veins yellow). For low powers.
B. 55. Prof. Joseph Hyrtl, Vienna, Austria.

228. Opaque arterial injection (white) of the villi of *Pseudopus serpentinus*. For low powers.
B. 56. Prof. Joseph Hyrtl, Vienna, Austria.

229. Same as **B. 56**, in two colors (arteries white, veins red). For low powers.
B. 57. Prof. Joseph Hyrtl, Vienna, Austria.

230. Same as **B. 57**, from *Psammosaurus griseus*. For low powers.
B. 58. Prof. Joseph Hyrtl, Vienna, Austria.

231. Same as **B. 57**, from *Vipera Ammodytes*, (arteries yellow, veins red). For low powers.
B. 59. Prof. Joseph Hyrtl, Vienna, Austria.

234. Opaque injection in two colors (arteries white, veins blue) of small intestine of *Coluber Æsculapii*. For
B. 60. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

235. Same as **B. 60**, from *Camæleo Africanus*. For low powers.
B. 61. Prof. Joseph Hyrtl, Vienna, Austria.

236. Same as **B. 60**, in one color (red), from *Geochelonia tabulata*. For low powers.
B. 62. Prof. Joseph Hyrtl, Vienna, Austria.

237. Same as **B. 62**, from near the cloaca. For low powers.
B. 63. Prof. Joseph Hyrtl, Vienna, Austria.

238. Same as **B. 60**, from *Thalassochelys Couana*, (arteries yellow, veins blue). For low powers.
B. 64. Prof. Joseph Hyrtl, Vienna, Austria.

239. Opaque injection in two colors (arteries yellow, veins blue) of the ileo-cæcal valve of *Emys Europæa*.
B. 65. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

240. Opaque injection in two colors (arteries white, veins red) of small intestine of *Testudo Græca*. For low
B. 66. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

241. Opaque injection in two colors (arteries yellow, veins blue) of muscular coat of small intestine of *Testudo*
B. 67. *Græca*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

247. Opaque injection in two colors (arteries yellow, veins blue) of small intestine of *Acanthias vulgaris*. For
B. 68. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

416 to 422. Series of seven perpendicular sections of human ileum, from a case of fatal diarrhœa following convalescence from fever, showing enlargement and protrusion of the solitary glands; stained with yellow aniline.
C. 1. The series consists of sections through two glands from periphery to centre, showing the glands enlarged to the size of small pin-heads and projecting from the surface of the intestine, pushing the mucous coat before them. There is active cell-multiplication in the connective tissue beneath them. In all but specimen **422** a portion of a Peyer's patch is also seen. For low and high powers.
From the same intestine as Specimen **159**, *Medical Section, chap.* **IV.** *sec.* 3, II. 3.
See Part Second, **VII.** II, c. 1 *and* 2.

423 to 429. Series of seven perpendicular sections of human ileum, from a case of camp fever, showing enlargement and protrusion of the solitary glands; stained with yellow aniline. The series embraces sections through
C. 2. two solitary glands, exhibiting the same conditions as in **C. 1.** All but specimens **424** and **428** show also a Peyer's patch. Very numerous bloodvessels are seen in the connective tissue layer. For low and high powers.
From the same intestine as Specimens **385** *to* **387**, *Medical Section, chap.* **IV.** *sec.* 3, I. 1 *to* 3.

430 to 435. Series of six perpendicular sections of human ileum, from the same case as **C. 2**, showing an enlarged solitary gland situated at the junction of two valvulæ conniventes; stained with yellow aniline. The
C. 3. sections show also a Peyer's patch with commencing ulceration, and very numerous bloodvessels in the connective tissue layer. For low and high powers.
From the same intestine as Specimens **385** *to* **387**, *Medical Section, chap.* **IV.** *sec.* 3, I. 1 *to* 3.

411 to 413. Series of three perpendicular sections of human ileum, showing an enlarged and slightly protuberant
C. 4. solitary gland. An original staining with red aniline has almost entirely faded. The solitary gland shows points of softening in its centre. Not very well suited for high powers.

1686 to 1717. Series of thirty-two perpendicular sections of human ileum, from a case of typhoid fever, showing a
C. 5. Peyer's patch greatly thickened and protuberant, but not yet ulcerated: stained, some with red and some with yellow aniline. The patch is seen to have lost its glandular structure, and to form, with the altered connective tissue in its vicinity, a mass consisting of closely aggregated adventitious cells, fed by numerous bloodvessels. The sections pass through various portions of the diseased patch, from periphery to centre. Suited for high powers, under which the progressive stages of cell-multiplication in the connective tissue are beautifully shown.

From the same intestine as Specimen **608,** *Medical Section, chap.* **IV.** *sec.* 3, I. 81.

See Part Second, **VII.** H. c. 3.

416. Perpendicular section of human ileum, from a case of typhoid fever, showing a condition of a Peyer's
C. 6. patch similar to C. 5: stained with red aniline. For low and high powers.

See Part Second, **VII.** H. c. 4.

1718 to 1741. Series of twenty-four perpendicular sections of human ileum, from a case of typhoid fever, showing
C. 7. progressive stages of disease in a Peyer's patch, from a slight thickening, where the glands of the patch can still be recognized, to complete structural degeneration and final ragged ulceration; stained with yellow aniline. Suited for high powers, which show the minute anatomy of the structural changes.

From the same intestine as Specimens **619** *to* **621,** *Medical Section, chap.* **IV.** *sec.* 3, I. 70 *to* 72.

417 to 455. Series of nine perpendicular sections of human ileum, from a case of camp fever, showing progressive
C. 8. stages of thickening and ulceration of a Peyer's patch; stained with red aniline. The ulcers are seen to originate in the individual glands of the patch, which, after softening and disintegrating, burst into the cavity of the intestine, establishing thus minute ulcers, which subsequently spread. For low and high powers.

From the same intestine as Specimens **424** *and* **425,** *Medical Section, chap.* **IV.** *sec.* 3, E. 42 *and* 43.

See Part Second, **I.** A. c. 1; **VII.** H. c. 5 *to* 8.

456 & 457. Series of two perpendicular sections of human ileum, from the same case as C. 8, showing three
C. 9. disintegrated glands of a Peyer's patch at the point of rupture: stained with red aniline. For low and high powers.

From the same intestine as Specimens **424** *and* **425,** *Medical Section, chap.* **IV.** *sec.* 3, E. 42 *and* 43.

See Part Second, **VII.** H. c. 9.

462 to 465. Series of four perpendicular sections of human ileum, from a case of camp fever, showing several
C. 10. disintegrated glands of a Peyer's patch before rupture, and, in the first three specimens of the series, several shallow ulcers; stained with yellow aniline. For low and high powers.

From the same intestine as Specimens **407** *and* **408,** *Medical Section, chap.* **IV.** *sec.* 3, E. 46 *and* 47.

See Part Second, **VII.** H. c. 10.

466 to 469. Series of four perpendicular sections of human ileum, from the same case as C. 10, showing a deep
C. 11. smooth ulcer in a Peyer's patch, extending down to the muscular coat, and, in the last three specimens, one disintegrated gland of the patch not yet ruptured; stained with yellow aniline. For low and high powers.

From the same intestine as Specimens **407** *and* **408,** *Medical Section, chap.* **IV.** *sec.* 3, E. 46 *and* 47.

See Part Second, **VII.** H. c. 11 *to* 14.

1712 to 1759. Series of eighteen perpendicular sections of human ileum, from a case of camp fever, showing an
C. 12. excavating ulcer extending deep into the connective tissue layer of the intestine, and, in specimens **1715** to **1750,** various stages of ulceration of a solitary gland; stained, some with red and some with yellow aniline. The first section of the series passes through the thickened intestine just beyond the edge of the ulcer, showing cell-multiplication in the connective tissue and enlarged bloodvessels; also a portion of a Peyer's patch. The remaining sections pass through various portions of the ulcer, from periphery to centre. For low and high powers.

From the same intestine as Specimen **702,** *Medical Section, chap.* **IV.** *sec.* 3, E. 61.

See Part Second **VII.** H. c. 15 *to* 18.

1760 to 1771. Series of twelve perpendicular sections of human ileum, from the same case as C. 12, showing an
C. 13. excavating ulcer of similar character to the preceding, but larger and extending down to the muscular coat; also, in specimens **1762** to **1767,** commencing disintegration of the solitary glands; stained, some with red and some with yellow aniline. For low and high powers.

From the same intestine as Specimen **702,** *Medical Section, chap.* **IV.** *sec.* 3, E 61.

470 to 472. C. 14. Series of three perpendicular sections of human ileum, showing a typhoid ulcer of a Peyer's patch in process of healing; stained with red aniline. The walls of the cicatrix are seen to consist for the most part of condensed connective tissue, embedded in which are a few of the original glands of the patch For low and high powers.

From the same intestine as Specimens **189** *to* **191,** *Medical Section, chap.* **IV.** *sec.* 3, H. 5 *to* 7.

See Part Second, **VII.** H. c. 19.

360. C. 15. Opaque injection (red) of the vessels of human small intestine in cholera morbus. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

I. Large Intestine.

A. From Man.

171. A. 1. Opaque injection in two colors (arteries yellow, veins red) of mucous membrane of cæcum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

172. A. 2. Same as **A. 1**, from the vermiform appendix. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

173. A. 3. Same as **A. 1**, from the ascending colon. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

174. A. 4. Same as **A. 1**, from the descending colon, (arteries yellow, veins blue). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

175. A. 5. Opaque injection in two colors (arteries white, veins red) of the submucous connective tissue of the colon. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

176. A. 6. Opaque injection in two colors (arteries white, veins blue) of rectum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

177. A. 7. Opaque injection in two colors (arteries yellow, veins red) of ileo-cæcal valve. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

180. A. 8. Opaque injection in two colors (arteries yellow, veins red) of the pouches of the rectum. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

407. B. 1. Horizontal section of mucous membrane of large intestine of cat, with transparent Prussian blue injection and carmine staining, showing the follicles of Lieberkühn in transverse section, with epithelium in situ, and the arrangement of the capillary network between the follicles. For moderate and high powers.

579. B. 2. Same as **B. 1**; the injection and staining have, in a great measure, faded. For moderate powers.

787. B. 3. Perpendicular section through entire circumference of cæcum of cat, with transparent carmine injection, showing the arrangement of the capillaries in the intestinal walls and the very large solitary glands. For low powers.

1555. B. 4. Same object as **B. 3**, with transparent carmine injection and imperfect blue staining; similar in character to **B. 3**.
Professor Joseph Gerlach, Erlangen, Bavaria.

635. B. 5. Horizontal section of mucous membrane of large intestine of rat, with transparent carmine injection, showing the network of capillaries between the follicles of Lieberkühn. For low powers.

632 to 634. B. 6. Three preparations of portions of large intestine of mouse with transparent carmine injection, showing the arrangement of the capillaries. For low powers.

788 & 789. B. 7. Two perpendicular sections of large intestine of mouse, with transparent carmine injection, showing the arrangement of the capillaries in the intestinal walls. For low and moderate powers.

790. B. 8. Perpendicular section through entire circumference of large intestine of mouse, with transparent Prussian blue injection and carmine staining, showing the arrangement and relations of the several coats of the intestine and the capillaries. For low and moderate powers.

625 to 631. B. 9. Seven preparations of portions of large intestine of frog, with transparent carmine injection, showing the arrangement of the bloodvessels. For low powers.

791 to 798. B. 10. Eight preparations of portions of large intestine of toad, with transparent carmine injection; similar in character to B. 9. Specimen **796** shows also the cysts of a parasitic worm. The worm itself has altered since mounting so as to be no longer recognizable. For low powers.

799. B. 11. Same object as B. 10, with transparent Prussian blue injection and carmine staining. The staining has failed to bring out any points of structure, and the preparation shows only the injected vessels. For low powers.

636. B. 12. Cloaca of chicken, with opaque injection (red), showing the arrangement of the capillaries. For low powers.

637. B. 13. Portion of large intestine of cat, with opaque injection (yellow), showing the capillary network between the follicles of Lieberkühn. For low powers.

46. B. 14. Opaque injection (yellow) of the vessels of cloacal outlet of female *Triton tæniatus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

194. B. 15. Opaque injection in two colors (arteries yellow, veins red) of villi of cloaca of *Cygnus olor*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

203. B. 16. Opaque injection in two colors (arteries white, veins blue) of the vessels of cloaca of *Proteus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

206. B. 17. Same as B. 16, from *Triton cristatus*, (arteries white, veins red). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

210. B. 18. Same as B. 16, in one color (red) from *Salamandra*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

212. B. 19. Same as B. 16, from *Bufo viridis*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

218. B. 20. Same as B. 16, from *Rana ridibunda*, (arteries yellow, veins green). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

227. B. 21. Same as B. 16, from *Bufo palmarum* (arteries red, veins green). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

211. B. 22. Opaque injection in two colors (arteries yellow, veins red) of border of anus of *Salamandra*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

220. B. 23. Opaque injection in two colors (arteries yellow, veins green) of cæcum of *Rana esculenta* at the ileo-cæcal valve. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

245. B. 24. Opaque injection (yellow) of the vessels of large intestine of *Acipenser Ruthenus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

218. B. 25. Opaque injection in two colors (arteries yellow, veins blue) of villi in the beginning of large intestine of *Acanthias vulgaris*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

638. C. 1. Perpendicular section of human colon, from a case of chronic diarrhœa, showing slight thickening of the connective tissue layer; stained with yellow aniline. Cell-multiplication is commencing in the connective tissue adjoining the mucous coat. For low and high powers.

See Part Second, **VII.** I. c. 1 *to* 4.

639 to 641. C. 2. Series of three perpendicular sections of human colon, showing enlargement of the solitary glands and slight thickening of the connective tissue layer; stained with red aniline; cell-multiplication is well marked in the connective tissue adjoining the solitary glands. For low and high powers.

Assistant Surgeon J. J. Woodward, U. S. Army.

642 to 650. C. 3. Series of nine perpendicular sections of human colon, from a case of mild chronic diarrhœa, showing slight enlargement of the solitary glands; stained with yellow aniline. For low and high powers.

From the same intestine as Specimen **547**, *Medical Section, chap.* **IV.** *sec.* 3, L. 2.

See Part Second, **VII.** I. c. 5.

651 & 652. C. 4. Series of two perpendicular sections of human colon, showing an enlarged solitary gland. Shows, under the high powers, the cell-multiplication in the connective tissue adjoining the enlarged gland, but the other structures of the intestine are not well preserved. For high powers.

Assistant Surgeon J. J. Woodward, U. S. Army.

653 to 658. C. 5. Series of six perpendicular sections of human colon, showing enlargement and commencing ulceration of the solitary glands; stained with yellow aniline. The solitary glands are considerably enlarged; there is thickening of the submucous connective tissue, and, in the last three specimens of the series, the mucous membrane has commenced to ulcerate over the summits of the solitary glands. For low and high powers.

See Part Second, **VII.** I. c. 6 *to* 8.

659 to 667. C. 6. Series of nine perpendicular sections of human colon, showing shallow ulceration of the mucous membrane around an enlarged solitary gland; stained with yellow aniline. As usual, there is considerable cell-multiplication in the connective tissue in the neighborhood of the diseased spot. For low and high powers.

From the same intestine as Specimen **406**, *Medical Section, chap.* **IV.** *sec.* 3, L. 38.

See Part Second, **VII.** I. c. 9.

668. C. 7. Perpendicular section of human colon, showing ulceration around two very much enlarged solitary glands; stained with yellow aniline. The mucous coat has entirely disappeared from over the solitary glands, and there is a furrow of ulceration around the circumference of the gland reaching down to the connective tissue layer; in the latter layer there is the usual cell-multiplication evident. For low and high powers.

669. C. 8. Perpendicular section of human colon, showing ulceration of the mucous coat around an enlarged solitary gland, with commencing ulceration of the gland itself; stained with red aniline. The ulceration is more extensive than in C. 7; there is the usual thickening in the connective tissue layer. For low and high powers.

Assistant Surgeon J. J. Woodward, U. S. Army.

670 to 672. C. 9. Series of three perpendicular sections of human colon, showing commencing ulceration of a solitary gland, similar to that shown in C. 7 and 8, but with little change in the connective tissue layer; stained with yellow aniline. The mucous membrane has cracked in many places in these specimens in the course of preparation. For low and high powers.

673 to 677. C. 10. Series of five perpendicular sections of human colon, showing enlarged solitary glands and a shallow ulcer of the mucous coat, extending about half-way through the thickness of the layer; stained with yellow aniline. For low and high powers.

678 to 682. C. 11. Series of five perpendicular sections of human colon, showing a few enlarged solitary glands and shallow ulceration of the mucous membrane, similar to that shown in C. 10; stained with yellow aniline. The muscular layers have not been preserved in these sections. For low and high powers.

683 to 685. C. 12. Series of three perpendicular sections of human colon, showing the following forms of ulcers: a narrow ulcer extending to the muscular layer below, and eating into the connective tissue at the sides so as to leave an overhanging edge of mucous membrane; shallow ulcers of the mucous coat, and a wide ulcer, with shelving sides, extending down to the muscular coat. The connective tissue of the intestine is much thickened, and, in the vicinity of the ulcers, has lost its normal appearance entirely, being transformed into masses of closely-packed, ill-formed cells. Stained with red aniline. For low and high powers.

See Part Second, **VII.** I. c. 10 *to* 15.

686. C. 13. Perpendicular section of human colon, from the same case as **C. 12**, showing deep ulcers extending nearly to the muscular coat. The various tissues present the same characteristics as those mentioned in **C. 12**. Stained with red aniline. For low and high powers.

687 to 691. C. 14. Series of five perpendicular sections of human colon, showing the same varieties of ulcers and conditions of the tissues of the intestine as those described under **C. 12**. In the first two specimens of the series the sections pass through a small excavating ulcer beyond the line where it pierces the mucous coat, exhibiting thus a cavity in the connective tissue layer bridged over by mucous membrane and bordered by walls of dense altered connective tissue. Stained with yellow aniline. For low and high powers.

See Part Second, **VII.** I. c. 16.

1520 to 1531. C. 15. Series of twelve perpendicular sections of human colon, showing a deep smooth ulcer extending to the muscular coat. The first six specimens of the series, like the first two of **C. 14**, show ulceration of the connective tissue alone. In the remainder of the specimens the sections pass through the centre of the ulcer. There is but little change in the connective tissue layer. The mucous coat has cracked badly in the process of preparation. Stained with yellow aniline. For low and high powers.

From the same intestine as Specimen **466,** *Medical Section, chap.* **IV.** *sec.* 3, L. 116.

1532 to 1537. C. 16. Series of six perpendicular sections of human colon, from the same case as **C. 15**, showing deep ragged ulcers of the intestine. In all the specimens but the last the structures of the mucous coat have entirely disappeared, and a ragged mass of shreds represents the inner half of the thickness of the intestine. In the last specimen a portion of mucous membrane and a very much enlarged solitary gland can still be recognised. Stained with red aniline. For low and high powers.

From the same intestine as Specimen **466,** *Medical Section, chap.* **IV.** *sec.* 3, L. 116.

See Part Second, **VII.** I. c. 17.

692 to 702. C. 17. Series of eleven perpendicular sections of human colo from a case of chronic dysentery, showing extensive ulcers reaching to the muscular coat. The connective tissue in the neighborhood of the ulcers is, as usual, altered in character by the products of cell-multiplication. Stained with yellow aniline. For low and high powers.

From the same intestine as Specimen **409,** *Medical Section, chap.* **IV.** *sec.* 3, L. 89.

See Part Second, **VII.** I. c. 18.

703 to 710. C. 18. Series of eight perpendicular sections of human colon, showing extensive and deep ulcers and altered connective tissue, similar to the appearances described in **C. 17**; stained, some with red and some with yellow aniline. For low and high powers.

711 & 712. C. 19. Series of two perpendicular sections of human colon, showing ulcers and conditions of the connective tissue similar to those described in **C. 17**; stained with red aniline. For low and high powers.

See Part Second, **VII.** I. c. 19 *and* 20.

713 & 714. C. 20. Series of two perpendicular sections of human colon, showing extensive disease of the mucous and connective tissue coats of the intestine. These layers have both entirely lost their normal structure and are blended into a mass of closely aggregated ill-formed cells. Stained with yellow aniline. For low and high powers.

715 to 728. C. 21. Series of fourteen perpendicular sections of human colon, showing extensive ulcers of various depths, and great thickening, from cell-multiplication, in the connective tissue layer; stained with carmine, except specimens **716, 727** and **728.** For low and moderate powers.

729 to 731. C. 22. Series of three perpendicular sections of human colon, showing the structure of the so-called pseudo-membranous exudation. The mucous membrane is considerably thickened, and near its upper surface has lost its normal structure, having degenerated into a dense mass indistinctly cellular in its character. The follicles of Lieberkühn gradually lose themselves in this altered tissue, and, in the lower portions of the mucous layer, where they can still be seen, are separated from each other by new cell-growths. The mucous membrane is ulcerated in many places, and the connective tissue layer is greatly thickened, and shows active cell-multiplication. Stained with red aniline. For low and high powers.

From the same intestine as Specimen **360,** *Medical Section, chap.* **IV.** *sec.* 3, L. 100.

See Part Second, **VII.** I. c. 21 *and* 22.

732 to 755. C. 23. Series of twenty-four perpendicular sections of human colon, showing a condition of the intestinal structures similar to that described under **C. 22**, but with the morbid changes not so far advanced; stained, some with red and some with yellow aniline. For low and high powers.

K. Liver and Gall-Bladder.

A. From Man.

861. A. 1. Portion of human gall-bladder with opaque injection (red), showing the arrangement of the capillaries. For low powers.

251. A. 2. Opaque injection in three colors (artery red, portal vein blue, hepatic veins white) of surface of liver. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

252. A. 3. Same as **A. 2**, in two colors (artery yellow, portal vein red), from a fœtus. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

253. A. 4. Same as **A. 2**, in section of the organ. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

254. A. 5. Same as **A. 2**, in four colors (artery white, portal vein blue, hepatic veins red, bile-ducts yellow). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

255. A. 6. Same as **A. 4**, (artery white, portal vein red, bile-ducts yellow). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

256. A. 7. Opaque injection in two colors (arteries white, veins red) of gall-bladder. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

818. B. 1. Section of liver of sheep with transparent carmine injection through the portal vein, showing the arrangement of the capillaries in the lobules. An original Prussian blue injection through the hepatic veins has entirely faded from the specimen. For low and moderate powers.

800 to 803, and 859 & 860. B. 2. Six sections of liver of sheep, with double transparent injection (portal vein carmine and hepatic veins Prussian blue), showing the peripheral portion of the capillary plexus in the lobules filled with the red, and the central portion with the blue injection. In specimen **860** all the capillaries are filled with the red, and the commencement of the intralobular veins alone with blue. For low and moderate powers.
See Part Second, **VII.** K. B. 1 *and* 2.

804 to 815. B. 3. Twelve sections of liver of sheep, with transparent Prussian blue injection and carmine staining, showing the capillaries of the lobules filled with the injection, and interlacing with the network of hepatic cells—the individual cells, with their nuclei, being rendered beautifully distinct by the staining. For moderate and high powers.

816 & 817. B. 4. Two sections of liver of rabbit, with opaque yellow injection, showing the arrangement of the capillaries in the lobules. For low powers.

1539. B. 5. Portion of gall-bladder of mouse, with transparent carmine injection, showing the arrangement of the bloodvessels in the walls of the bladder. For low powers.

529 & 818. B. 6. Two preparations of portions of gall-bladder of *Iguana*, with transparent Prussian blue injection, showing the arrangement of the capillaries in the walls of the bladder. For low powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1959. B. 7. Portion of liver of sheep, with triple transparent injection (portal vein red, hepatic vein blue, bile-ducts yellow), showing the mutual relations of the vessels in the lobules. Only a few of the bile-ducts are filled with the injection. For low powers.

257. B. 8. Opaque injection in two colors (portal vein yellow, hepatic vein red) of liver of *Macacus Cynomolgus*. For low powers.
Prof. JosephHyrtl, Vienna, Austria.

258. Same as **B. 8**, from *Sus scrofa*, in three colors (artery white, portal vein yellow, hepatic vein red). For
B. 9. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

259. Same as **B. 8**, from *Lepus Cuniculus*, (portal vein white, hepatic vein red). For low powers.
B. 10. Prof. Joseph Hyrtl, Vienna, Austria.

260. Same as **B. 8**, from *Erinaceus Europæus*. For low powers.
B. 11. Prof. Joseph Hyrtl, Vienna, Austria.

261. Same as **B. 10**, from *Mustela Martes*. For low powers.
B. 12. Prof. Joseph Hyrtl, Vienna, Austria.

262. Same as **B. 8**, from *Picus Martius*, (artery yellow, vein red). For low powers.
B. 13. Prof. Joseph Hyrtl, Vienna, Austria.

263. Same as **B. 8**, (red portal injection only), from *Columba Palumbus*. For low powers.
B. 14. Prof. Joseph Hyrtl, Vienna, Austria.

264. Same as **B. 13**, from *Tetrao Urogallus*. For low powers.
B. 15. Prof. Joseph Hyrtl, Vienna, Austria.

265. Same as **B. 8**, from *Rana Alpina*, (portal vein red, hepatic vein green). For low powers.
B. 16. Prof. Joseph Hyrtl, Vienna, Austria.

266. Same as **B. 8**, from *Pelobates fuscus*, (portal vein white, hepatic vein blue). For low powers.
B. 17. Prof. Joseph Hyrtl, Vienna, Austria.

267. Same as **B. 8**, from *Bipes Pallasii*, (portal vein red, hepatic vein blue). For low powers.
B. 18. Prof. Joseph Hyrtl, Vienna, Austria.

268. Same as **B. 8**, from *Vipera Berus*, (portal vein red, hepatic vein yellow). For low powers.
B. 19. Prof. Joseph Hyrtl, Vienna, Austria.

269. Same as **B. 10**, from *Coluber Austriacus*. For low powers.
B. 20. Prof. Joseph Hyrtl, Vienna, Austria.

270. Same as **B. 8**, from *Emys Europæa*, (arteries white, portal vein red). For low powers.
B. 21. Prof. Joseph Hyrtl, Vienna, Austria.

271. Same as **B. 8**, from *Lacerta viridis*, (portal vein yellow, hepatic vein blue). For low powers.
B. 22. Prof. Joseph Hyrtl, Vienna, Austria.

272. Same as **B. 8**, from *Lucioperia Sandra*, (artery white, portal vein blue). For low powers.
B. 23. Prof. Joseph Hyrtl, Vienna, Austria.

273. Same as **B. 10**, from *Acipenser Ruthenus*. For low powers.
B. 24. Prof. Joseph Hyrtl, Vienna, Austria.

274. Same as **B. 8**, (red portal injection only), from *Chimæra monstrosa*. For low powers.
B. 25. Prof. Joseph Hyrtl, Vienna, Austria.

275. Opaque injection (green) of the vessels of gall-bladder of *Lota*. For low powers.
B. 26. Prof. Joseph Hyrtl, Vienna, Austria.

L. Chemical Constituents of Bile.

A. From Man.

862. Tabular crystals of cholesterine from a gall-stone. For moderate powers.
A. 1. *See Part Second*, **XIV.** D. A. 1 *and* 2.

M. Pancreas.

A. From Man.

278. Opaque injection in two colors (arteries yellow, veins blue) of pancreas. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

279. Opaque injection (red) of the ramification and terminal vesicles of the pancreatic duct. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

933 to 939. Seven preparations of portions of pancreas of cat, with transparent carmine injection, showing the
B. 1. arrangement of the capillaries around the lobules of the gland. Specimen **939** shows also a Pacinian body. For low powers.

290. Opaque arterial injection (white) of pancreas of *Crocodilus Niloticus*. For low powers.
B. 2. Prof. Joseph Hyrtl, Vienna, Austria.

292. Opaque injection in two colors (arteries white, veins green) of pancreas of *Proteus anguineus*. For low
B. 3. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

N. Spleen.

A. From Man.

284. Opaque injection in two colors (arteries yellow, veins blue) of section of spleen. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

286. Opaque venous injection (red) of spleen of *Acipenser Ruthenus*. For low powers.
B. 1. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

285. Opaque injection (red) of the vessels in a section of hypertrophied spleen, from a case of quartan
C. 1. intermittent fever. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

O. Mesentery.

A. From Man.

355. Opaque injection in two colors (arteries yellow, veins blue) of mesentery. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

851 to 855. Five preparations of mesentery of cat, with transparent Prussian blue injection and carmine staining,
B. 1. showing very beautifully the minute anatomy of connective tissue, adipose tissue, bloodvessels and nerves. For moderate and high powers.

856. Portion of mesentery of cat, with transparent carmine injection, showing the arrangement of the blood-
B. 2. vessels, and also adipose tissue. For low powers.

819 to 821. Three preparations of mesentery of kitten, with transparent Prussian blue injection and carmine staining,
B. 3. showing the same structures as **B. 1.** Specimen **819** shows also, very beautifully, several Pacinian bodies. For moderate and high powers.

822. Portion of mesentery of kitten, stained with carmine (very imperfectly), showing connective tissue,
B. 4. bloodvessels and adipose tissue. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1307 & 1308. Two preparations of mesentery of dog, with transparent Prussian blue injection and carmine staining,
B. 5. showing the same structures as **B. 1.** For moderate and high powers.

823. Same as **B. 5**; the staining is much more brilliant.
B. 6.

For other illustrations, see **VI.** E. B. 4 *and* 5.

P. Omentum.

B. From Animals.

2035. Omentum of kitten, stained with carmine, showing the minute anatomy of connective and adipose
B. 1. tissue and capillaries. For moderate and high powers.

Q. Peritoneum.

B. From Animals.

1631. Portion of peritoneum of young mouse, stained with carmine, showing numerous and large corpuscles
B. 1. in the young peritoneum, beautifully defined by the staining; also bloodvessels, nerves and adipose tissue. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

849 & 850. Two preparations of peritoneum of frog, with transparent carmine injection, showing the arrangement
B. 2. of the bloodvessels. For low powers.

824 & 825. Two preparations of peritoneum of toad, with transparent carmine injection, showing the arrangement
B. 3. of the bloodvessels. For low powers.

826 & 827. Two preparations same as **B. 3**, but also stained with carmine, showing the nucleated epithelial cells
B. 4. of the peritoneum in situ; also a very abundant network of nerves, with the nuclei of the neurilemma beautifully defined, and arteries, veins and capillaries. For low and high powers.

VIII. RESPIRATORY ORGANS.

A. Larynx.

B. Trachea and Bronchi.

C. Lungs, Gills and Air-Bladder.

D. Pleuræ.

E. Thyroid Gland.

F. Thymus Gland.

A. From Man. | B. From Animals. | C. Pathological.

VIII. RESPIRATORY ORGANS.

A. Larynx.

A. From Man.

56. Opaque injection (red) of the vessels of mucous membrane of larynx. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

63. Opaque arterial injection (yellow) of glottis of *Rana esculenta*. For low powers.
B. 1. Prof. Joseph Hyrtl, Vienna, Austria.

B. Trachea and Bronchi.

A. From Man.

57. Opaque injection in two colors (arteries white, veins green) of mucous membrane of trachea. For low
A. 1. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1617. Portion of posterior wall of trachea of mouse, faintly stained with carmine, showing the free extremities
B. 1. of three of the cartilaginous rings, and the fibrous connecting layer abounding in elastic tissue. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

828. Horizontal section of portion of trachea of puppy, with transparent Prussian blue injection, showing the
B. 2. relations and minute anatomy of the cartilaginous rings and the fibrous connecting layer. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

829. Portion of air tube of wasp and branches; shows also several muscular fibres; partially stained with
B. 3. carmine. For high powers.

1975. Portion of trachea of kitten, with transparent Prussian blue injection and carmine staining, showing
B. 4. the epithelium of the mucous membrane in situ, the anatomy of the cartilaginous rings, and the arrangement of the bloodvessels. For low and high powers.

2030. Transverse section of trachea of kitten, with transparent carmine injection, showing the extent of the
B. 5. cartilaginous rings around the circumference of the section, and the arrangement of the bloodvessels. For low powers.

76. Opaque injection (yellow) of the vessels in the trachea of *Coluber Austriacus*. For low powers.
B. 6. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

58. Opaque injection (blue) of the vessels of human bronchus in chronic catarrh. For low powers.
C. 1. Prof. Joseph Hyrtl, Vienna, Austria.

C. Lungs, Gills and Air-Bladder.

A. From Man.

519 to 523 and 830 to 838. A. 1. Fourteen preparations of lung, with transparent carmine injection, showing the network of capillaries in the walls of the air vesicles. For low and moderate powers.

1551. A. 2. Portion of lung, with transparent Prussian blue injection and faint carmine staining, showing the network of capillaries in the walls of the air vesicles, and in a few places the connective tissue corpuscles of the parenchyma of the lung. For low and high powers.
Prof. Joseph Gerlach, Erlangen, Bavaria.

839. A. 3. Portion of lung of baby, with very imperfect transparent Prussian blue injection, showing the fibrous trabeculæ and tesselated epithelium of the air vesicles in situ. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

49. A. 4. Opaque injection (white) of the air vesicles of the lung of a new-born child. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

52 A. 5. Opaque injection in three colors (arteries blue, veins red, air cells white) of lung. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

53. A. 6. Opaque arterial injection (red) of a section of lung. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

51. A. 7. Opaque injection in two colors (arteries white, veins red) of lung of six months' fœtus which had never breathed. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

810. B. 1. Portion of lung of dog, with transparent Prussian blue injection, showing the network of capillaries in the walls of the air vesicles. For low and moderate powers

521 & 811. B. 2. Two preparations of lung of frog, with transparent carmine injection, showing same as **B. 1.** For low powers.

812 to 814. B. 3. Three preparations of lung of toad, similar to **B. 2.**
See Part Second, **VIII.** C. B. 1.

525. B. 4. Portion of lung of newt, similar to **B. 2.**

528. B. 5. Portion of lung of *Iguana*, similar to **B. 2.**

55. B. 6. Opaque injection in two colors (arteries red, air cells yellow) of lung of *Simia Satyr.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

60. B. 7. Opaque arterial injection (white) of lung of *Meleagris Galloparo* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

61. B. 8. Same as **B. 7**, of gills of *Proteus anguineus.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

62. B. 9. Same as **B. 7**, (red) of *Proteus anguineus.* For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

61. Same as **B. 7**, (yellow), of *Rana esculenta;* external surface of lung in collapse. For low powers.
B. 10. Prof. Joseph Hyrtl, Vienna, Austria.

65. Same as **B. 10**; internal surface in expansion. For low powers.
B. 11. Prof. Joseph Hyrtl, Vienna, Austria.

66. Same as **B. 7**, of *Salamandra;* internal surface in collapse. For low powers.
B. 12. Prof. Joseph Hyrtl, Vienna, Austria.

67. Same as **B. 7**, of *Triton cristatus.* For low powers.
B. 13. Prof. Joseph Hyrtl, Vienna, Austria.

68. Opaque injection in two colors (arteries blue, veins white) of lung of *Bipes Pallasii.* For low powers.
B. 14. Prof. Joseph Hyrtl, Vienna, Austria.

69. Same as **B. 14**, of *Varanus Niloticus;* external surface, (arteries white, veins red). For low powers.
B. 15. Prof. Joseph Hyrtl, Vienna, Austria.

70. Same as **B. 15**, of *Uromastix Spinipes;* internal surface. For low powers.
B. 16. Prof. Joseph Hyrtl, Vienna, Austria

71. Same as **B. 14**, of *Vipera Ammodytes;* internal cellulated aspect, (arteries green, veins yellow). For
B. 17. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

72. Same as **B. 17**, of *Coluber Æsculapii,* (arteries yellow, veins red). For low powers.
B. 18. Prof. Joseph Hyrtl, Vienna, Austria.

73. Same as **B. 15**, of *Seps chalcides.* For low powers.
B. 19. Prof. Joseph Hyrtl, Vienna, Austria.

74. Same as **B. 18**; posterior end of the lung, very scantily supplied with bloodvessels, (arteries white,
B. 20. veins blue). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

75. Same as **B. 14**, of *Crocodilus Niloticus,* (arteries red, lymphatic vessels yellow). For low powers.
B. 21. Prof. Joseph Hyrtl, Vienna, Austria.

77. Same as **B. 15**, of *Emys Europæa.* For low powers.
B. 22. Prof. Joseph Hyrtl, Vienna, Austria.

78. Same as **B. 14**, of *Testudo Græca,* (arteries blue, veins red). For low powers.
B. 23. Prof. Joseph Hyrtl, Vienna, Austria.

79. Opaque injection in two colors (arteries blue, veins white) of gills of *Hexanchus griseus.* For low
B. 24. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

80. Same as **B. 24**, of *Cartharia minor.* For low powers.
B. 25. Prof. Joseph Hyrtl, Vienna, Austria.

81. Same as **B. 24**, of *Anguilla muræna,* (arteries white, veins red). For low powers.
B. 26. Prof. Joseph Hyrtl, Vienna, Austria.

82. Same as **B. 24**, of *Silurus glanis,* (arteries white, veins blue). For low powers.
B. 27. Prof. Joseph Hyrtl, Vienna, Austria.

83. Same as **B. 24**, of *Lucioperca Sandra,* (arteries yellow, veins white). For low powers.
B. 28. Prof. Joseph Hyrtl, Vienna, Austria.

84. Same as **B. 28**, embracing only a single lamina. For low powers.
B. 29. Prof. Joseph Hyrtl, Vienna, Austria.

85. Opaque arterial injection (red) of branchiæ succenturiatæ of *Lota communis*. For low powers.
B. 30. Prof. Joseph Hyrtl, Vienna, Austria.

86. Opaque arterial injection (white) of vascular body in air-bladder of eel. For low powers.
B. 31. Prof. Joseph Hyrtl, Vienna, Austria.

87. Opaque venous injection (yellow) of retia mirabilia unipolaria in the air-bladder of *Lota*. For low powers.
B. 32. Prof. Joseph Hyrtl, Vienna, Austria.

88. Same as B. 32, of *Perca fluviatilis*, in two colors (arteries white, veins blue). For low powers.
B. 33. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

50. Opaque injection (red) of the air vesicles of adult human lung with incipient emphysema. For low
C. 1. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

51. Opaque injection in three colors (arteries white, veins red, air cells blue) of inflamed lung; the air cells,
C. 2. filled with exudation, have not allowed free entrance to the blue injection. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

D. Pleuræ.

C. Pathological.

59. Opaque injection (yellow) of the subpleural lymphatic plexus of an œdematous lung. For low powers.
C. 1. Prof. Joseph Hyrtl, Vienna, Austria.

356. Opaque injection (yellow) of newly formed vessels in an inflamed pleura. For low powers.
C. 2. Prof. Joseph Hyrtl, Vienna, Austria.

357. Opaque injection (red) of the vessels in a very old pseudo-membrane of the pleura. For low powers.
C. 3. Prof. Joseph Hyrtl, Vienna, Austria.

E. Thyroid Gland.

A. From Man.

282. Opaque injection (yellow) of the vessels of thyroid gland of fœtus. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

283. Same as A. 1 from the atrophied gland of a woman eighty years old. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

281. Opaque arterial injection (yellow) of thyroid gland, from a scrofulous subject. For low powers.
C. 1. Prof. Joseph Hyrtl, Vienna, Austria.

IX. URINARY ORGANS AND SUPRARENAL GLANDS.

A. Kidneys and Wolffian Bodies.

B. Ureters.

C. Bladder.

D. Urethra.

E. Chemical Constituents of Urine.

F. Organic Deposits in Urine.

G. Suprarenal Glands.

A. From Man. | B. From Animals. | C. Pathological.

IX. URINARY ORGANS AND SUPRARENAL GLANDS.

A. Kidneys and Wolffian Bodies.

A. From Man.

975. A. 1. Section of cortical portion of kidney, stained with carmine, showing the arrangement of the convoluted uriniferous tubules and Malpighian bodies. For low powers.
Dr. S. A. Jones, Englewood, N. J.

976 & 977. A. 2. Two sections of cortical portion of kidney, with (very imperfect) transparent Prussian blue injection. The injection fills a few of the interlobular arteries, and the capillaries of the Malpighian bodies. For low powers.
Dr. S. A. Jones, Englewood, N. J.

1772 to 1778. A. 3. Seven sections of cortical and medullary portions of kidney, with transparent carmine injection. The injection is very perfect, and the specimens show the mutual relations of the various systems of vessels. For low and moderate powers.

1538. A. 4. Same as A. 3, but embracing only the cortical portion of the kidney. For low powers.

2023 to 2025. A. 5. Three sections of cortical and medullary portions of kidney, with double transparent injection (artery red, vein blue) and carmine staining. The red injection fills only a few of the Malpighian bodies; the blue venous injection is more perfect. The staining shows the arrangement of the straight and convoluted uriniferous tubules, and defines the epithelium of the tubes in situ and the cellular elements of the stroma of the kidney. The fibrous tunic of the Malpighian bodies and its lining epithelium are beautifully shown. For low and high powers.

89. A. 6. Opaque injection (yellow) of the vessels of the Malpighian bodies in a section of cortical substance of kidney from a new-born child. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

90. A. 7. Opaque injection in two colors (Malpighian bodies yellow, veins blue) of the vessels on the surface of the cortical portion of kidney; from a child two years old. For low powers.
Prof Joseph Hyrtl, Vienna, Austria.

91. A. 8. Same as A. 7, in vertical section. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

93. A. 9. Opaque venous injection (blue) of pyramid; vertical section. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

94. A. 10. Same as A. 9, horizontal section, (arteries red, veins yellow). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

95. A. 11. Opaque venous injection (yellow) of surface of kidney. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

96. A. 12. Opaque injection (yellow) of the straight uriniferous tubules in the medullary portion of the kidney, showing the tubules bifurcating. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

97. A. 13. Opaque injection (yellow) of the convoluted uriniferous tubules in the cortical portion of the kidney. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

815 & 816. B. 1. Two sections of cortical and medullary portions of kidney of dog, with transparent Prussian blue injection, showing the vessels of the Malpighian bodies and the capillary plexus of the substance of the kidney partially filled by the injection. For low and moderate powers.

817. B. 2. Same as B. 1, with transparent carmine injection, showing all the vessels of the kidney filled by the injection. For low and moderate powers.

1624. B. 3. Section of cortical portion of kidney of dog, with partial transparent Prussian blue injection, showing the vessels of the Malpighian bodies and the capillary plexus of the substance of the kidney interlacing with the convoluted uriniferous tubules. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1625 & 1626. B. 4. Two preparations, same as B. 3, including also some of the medullary portion of the kidney.
Assistant Surgeon J. S. Billings, U. S. Army.

1628 & 1632. B. 5. Two preparations, same as B. 4, with faint carmine staining, showing the uriniferous tubules better defined.
Assistant Surgeon J. S. Billings, U. S. Army.

981 to 983. B. 6. Three sections of cortical and medullary portions of kidney of small dog, with transparent carmine injection. The injection fills only the capillaries of the Malpighian bodies and their afferent arteries. The convoluted uriniferous tubules are seen composing the bulk of the renal substance. For low powers.

1779 & 1780. B. 7. Two sections of cortical portion of kidney of dog, with transparent Prussian blue injection and carmine staining, showing the capillaries of the Malpighian bodies and substance of the kidney, and, very beautifully, the convoluted uriniferous tubules sharply defined by the staining. For low and high powers.

1781. B. 8. Same as B. 7; embracing also some of the medullary portion of the kidney.

1782. B. 9. Portion of capsule of kidney of dog, with double transparent injection (arteries red, veins and capillaries blue), showing the arrangement of the vessels. For low powers.

1783. B. 10. Same as B. 9; the blue has mostly faded.

1309. B. 11. Same as B. 9; showing also the cells of the substance of the capsule and some nerves. For low and high powers.

984. B. 12. Section of cortical and medullary portion of kidney of cat, with transparent carmine injection; showing all the vessels of the kidney filled by the injection. For low and moderate powers.
Bourgogne Frères, Paris, France.

1784 to 1788. B. 13. Five preparations, same as B. 12.

1789 & 1790. B. 14. Two preparations, same as B. 13, with the sections passing through the entire kidney perpendicularly and parallel to the axis of the pyramids.

1791 & 1792. B. 15. Two preparations, same as B. 14, cut transversely to the axis of the pyramids, exhibiting the straight tubules of the medullary portion in transverse section.

1793 & 1794. B. 16. Two sections of medullary and cortical portions of kidney of cat, with transparent Prussian blue injection and carmine staining. The injection fills only the capillaries of the Malpighian bodies. The sections show the uriniferous tubules with epithelium in situ splendidly defined by the staining; also the epithelium of the inner surface of the Malpighian capsules. For moderate and high powers.

1795 to 1797. B. 17. Three sections of cortical and medullary portions of kidney of rat, with transparent Prussian blue injection, showing all the vessels of the kidney filled by the injection. For moderate powers.

1798 to 1802. B. 18. Five preparations, same as B. 17, but with the injection mostly faded in the cortical portion.

1564 to 1571 and 1803 to 1809. B. 19. Eighteen sections of cortical and medullary portions of kidney of rat, with transparent Prussian blue injection and carmine staining. The injection has mostly faded in the cortical portion. The staining defines very beautifully the straight and convoluted uriniferous tubules, showing their arrangement and relations. In specimens **1570** and **1801** to **1807**, the individual epithelial cells in situ in the tubules are also clearly shown. For low and high powers.

968. B. 20. Section of cortical portion of kidney of sheep, with partial transparent Prussian blue injection. The injection fills only some of the interlobular and afferent arteries and capillaries of the Malpighian bodies. For low powers.

969 & 970. B. 21. Two sections of cortical and medullary portions of kidney of sheep, with transparent Prussian blue injection and carmine staining. The injection is similar to that in B. 20; the staining shows the arrangement and relations of the uriniferous tubules. For low and moderate powers.

971 to 973. B. 22. Three preparations, same as B. 21, but with the injection mostly faded.

978 & 979. B. 23. Two sections of cortical portion of kidney of pig, stained with carmine, showing the minute anatomy and relations of the Malpighian bodies and uriniferous tubules. For moderate and high powers.
Dr. S. A. Jones, Englewood, N. J.

1810 to 1813. B. 24. Four sections of cortical and medullary portions of kidney of ox, with opaque yellow injection, showing the arrangement of the various bloodvessels of the kidney. For low powers.

1977. B. 25. Section of cortical and medullary portions of kidney of rabbit, with double transparent injection (artery red, veins blue). The arterial injection fills all the vessels of the cortical portion; the venous, a few of the straight vessels of the medullary portion. For low powers.

1976. B. 26. Same as B. 25. The blue venous injection fills some of the capillary plexus in the cortical substance, meeting the red in many places in the same vessel.

2026 to 2028. B. 27. Three preparations of capsule of kidney of dog, with transparent Prussian blue injection and carmine staining, showing the arrangement of the bloodvessels, and the cellular elements of the stroma of the capsule, beautifully defined by the staining. For low and high powers.

98. B. 28. Opaque injection (yellow) of fasciculated uriniferous tubules in the cortical portion of kidney of *Cynocephalus Hamadryas*. The white spots are deposits of uric salts. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

99. B. 29. Opaque injection in two colors (arteries yellow, veins red) of a vertical section of cortical and medullary portions of kidney of *Ovis Musimon*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

100. B. 30. Same as B. 29, from a bear, (arteries red, uriniferous tubules white). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

101. B. 31. Same as B. 29, from *Lepus Cuniculus*, (arteries red, veins white). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

102. B. 32. Opaque injection (white) of Malpighian bodies in kidney of *Pteropus Egyptiacus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

103. B. 33. Same as B. 32, from *Lutra vulgaris*, (red). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

104. B. 34. Same as B. 33, from *Meles Taxus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

105. B. 35. Same as B. 32, from *Sus scrofa;* veins also injected (blue). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

106. Same as **B. 32**, from *Halmaturus Brunii*, (yellow). For low powers.
B. 36. Prof. Joseph Hyrtl, Vienna, Austria.

107. Same as **B. 36**, from *Equus Caballus*. For low powers.
B. 37. Prof. Joseph Hyrtl, Vienna, Austria.

108. Same as **B. 32**, from *Camelopardalis Giraffa*. For low powers.
B. 38. Prof. Joseph Hyrtl, Vienna, Austria.

109. Same as **B. 33**, from *Felis Lynx*. For low powers.
B. 39. Prof. Joseph Hyrtl, Vienna, Austria.

110. Same as **B. 33**, from *Ornithorhynchus paradoxus*. For low powers.
B. 40. Prof. Joseph Hyrtl, Vienna, Austria.

111. Same as **B. 33**, from *Castor Fiber*, in section of cortical substance. For low powers.
B. 41. Prof. Joseph Hyrtl, Vienna, Austria.

117. Same as **B. 32**, from *Fasianus gallus*. For low powers.
B. 42. Prof. Joseph Hyrtl, Vienna, Austria.

118. Same as **B. 42**, with uriniferous tubules in transverse section of the kidney. For low powers.
B. 43. Prof. Joseph Hyrtl, Vienna, Austria.

119. Opaque injection (yellow) of the uriniferous tubules in cortical portion of kidney of *Falco Esalon*.
B. 44. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

120. Opaque injection (yellow) of uriniferous tubules in section of kidney of *Tetrao tetrix*. For low powers.
B. 45. Prof. Joseph Hyrtl, Vienna, Austria.

121. Opaque injection (yellow) of Malpighian bodies in kidney of *Rana Alpina*. For low powers.
B. 46. Prof. Joseph Hyrtl, Vienna, Austria.

122. Same as **B. 46**, from *Proteus anguineus*. For low powers.
B. 47. Prof. Joseph Hyrtl, Vienna, Austria.

123. Same as **B. 46**, from *Salamandra maculosa*. For low powers.
B. 48. Prof. Joseph Hyrtl, Vienna, Austria.

124. Same as **B. 46**, from *Triton cristatus*, with the transitus of the arteries (white) into the renal veins
B. 49. (blue). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

125. Same as **B. 46**, from a tadpole, in two colors (arteries yellow, veins red). For low powers.
B. 50.

126. Same as **B. 50**, from *Salamandra atra*. For low powers.
B. 51. Prof. Joseph Hyrtl, Vienna, Austria.

127. Same as **B. 50**, from *Triton tæniatus*. For low powers.
B. 52. Prof. Joseph Hyrtl, Vienna, Austria.

128. Same as **B. 46**, from *Bufo vulgaris*. For low powers.
B. 53. Prof. Joseph Hyrtl, Vienna, Austria.

129. Same as **B. 46**, from *Bipes Pallasii;* dorsal surface of kidney. For low powers.
B. 54. Prof. Joseph Hyrtl, Vienna, Austria.

130. Same as **B. 46**, from *Vipera Chersea;* ventral surface of kidney. For low powers.
B. 55. Prof. Joseph Hyrtl, Vienna, Austria.

131. Same as **B. 50**, from *Coclopeltis lacertina*. For low powers.
B. 56. Prof. Joseph Hyrtl, Vienna, Austria.

132. Same as **B. 46**, from *Tropidonotus Natrix*. For low powers.
B. 57. Prof. Joseph Hyrtl, Vienna, Austria.

133. Same as **B. 46**, from *Chrysolamprus ocellatus;* section of the kidney. For low powers.
B. 58. Prof. Joseph Hyrtl, Vienna, Austria.

134. Same as **B. 58**, from *Chersus marginatus*, (red). For low powers.
B. 59. Prof. Joseph Hyrtl, Vienna, Austria.

135. Same as **B. 50**, from *Bufo palmarum*, (renal veins green). For low powers.
B. 60. Prof. Joseph Hyrtl, Vienna, Austria.

136. Opaque injection (red) of afferent or portal vein on the dorsal surface of kidney of *Hyla viridis*. For
B. 61. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

137. Opaque injection in two colors (arteries white, renal veins red) of dorsal face of kidney of *Anguis*
B. 62. *fragilis*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

138. Opaque injection in two colors (portal vein red, uriniferous tubules white) of dorsal surface of kidney
B. 63. of *Zacholus Austriacus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

139. Opaque injection in three colors (arteries white, renal vein blue, ureter yellow) of ventral face of kidney
B. 64. of *Coluber Merremii*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

140. Same as **B. 64**, from *Aspis Haje*. For low powers.
B. 65. Prof. Joseph Hyrtl, Vienna, Austria.

141. Same as **B. 64**, from *Coluber leopardinus*, (uriniferous ducts white). For low powers.
B. 66. Prof. Joseph Hyrtl, Vienna, Austria.

142. Same as **B. 66**, from *Coluber Æsculapii*. For low powers.
B. 67. Prof. Joseph Hyrtl, Vienna, Austria.

143. Same as **B. 63**, from *Coluber viridi-flavus*, (uriniferous ducts yellow, portal vein red). For low powers.
B. 68. Prof. Joseph Hyrtl, Vienna, Austria.

144. Same as **B. 64**, from *Trigonocephalus*, (arteries yellow, veins blue, uriniferous tubules white). For
B. 69. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

147. Opaque injection in three colors (arteries yellow, portal vein green, uriniferous tubules white) of dorsal
B. 70. face of kidney of *Bipes Pallasii*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

148. Same as **B. 70**, from *Crocodilus Niloticus*, (arteries white, portal vein red, uriniferous ducts green).
B. 71. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

149. Same as **B. 70**, from *Bipes Pallasii*, in four colors, (arteries white, portal vein blue, uriniferous tubules
B. 72. yellow, renal vein red). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

150. Opaque injection (red) of portal vein on dorsal face of kidney of *Scincus officinalis*, (uriniferous ducts
B. 73. white). For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

151. Opaque injection (yellow) of Malpighian bodies in the kidney of *Scyllium Canicula*. For low powers.
B. 74. Prof. Joseph Hyrtl, Vienna, Austria.

152. Same as **B. 74**, from *Silurus glanis*. For low powers.
B. 75. Prof. Joseph Hyrtl, Vienna, Austria.

153. Same as **B. 74**, from *Conger Myrus*. For low powers.
B. 76. Prof. Joseph Hyrtl, Vienna, Austria.

154. Same as **B. 74**, with tubuli uriniferi also injected, from *Abramis Brama*. For low powers.
B. 77. Prof. Joseph Hyrtl, Vienna, Austria.

155. Opaque injection (yellow) of tubuli uriniferi in kidney of *Tinca chrysitis*. For low powers.
B. 78. Prof. Joseph Hyrtl, Vienna, Austria.

156. Same as **B. 78**, from *Idus melanotus*. For low powers.
B. 79. Prof. Joseph Hyrtl, Vienna, Austria.

318. Opaque injection in two colors (yellow and red) of vessels of Wolffian body of fœtal horse, showing
B. 80. true Malpighian bodies. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

For other illustrations, see **IX.** B. B. 1.

C. Pathological.

1814 & 1815. Two sections of cortical and medullary portions of human fatty kidney, with transparent Prussian blue
C. 1. injection and carmine staining. The fat has all been removed in the process of preparation, but the contours of the uriniferous tubules are seen to be lost over a great part of the sections. The specimens show the cellular elements of the kidney splendidly defined by the carmine. For moderate and high powers.
From Specimen **863**, *Medical Section, chap.* **V.** *sec.* 1, B. 7.

1816 & 1817. Two preparations, same as **C. 1**, but with the injection and staining in great part faded.
C. 2. *From the same specimen as* **C. 1.**

92. Opaque injection (yellow) of the vessels of human kidney in Bright's disease. For low powers.
C. 3. Prof. Joseph Hyrtl, Vienna, Austria.

B. Ureters.

A. From Man.

980. Mucous membrane of ureter of child, with transparent carmine injection, showing the arrangement of
A. 1. the bloodvessels. For low powers.

116. Opaque injection in two colors (arteries white, veins blue) of pelvis of kidney. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

974. Ureter of frog, with transparent carmine injection, showing the arrangement of the bloodvessels. A
B. 1. small portion of the kidney remains attached and shows a few Malpighian bodies with the capillaries injected. For low powers.

115. Opaque injection (yellow) of the ramifying branches of the ureter on the ventral surface of the kidney
B. 2. of *Pseudopus serpentinus*. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

146. Same as **B. 2**, from *Acontias Meleagris*. For low powers.
B. 3. Prof. Joseph Hyrtl, Vienna, Austria.

C. Bladder.

A From Man.

112. Opaque injection (red) of the vessels in the mucous membrane of the bladder. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

123. Same as A. 1, of the muscular layer. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

985. Portion of bladder of cat, with transparent carmine injection, showing the arrangement of the bloodvessels,
B. 1. and, in some places, the epithelium of the mucous coat in situ. For low and high powers.

991. Portion of bladder of mouse, with transparent carmine injection, showing the arrangement of the capillaries.
B. 2. For low and moderate powers.

316. Opaque injection in two colors (arteries white, veins red) of bladder of *Salamandra*. For low powers.
B. 3. Prof. Joseph Hyrtl, Vienna, Austria.

D. Urethra.

A. From Man.

114. Opaque injection (red) of the vessels in the urethra. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

986 to 990. Five sections of slough of mucous membrane of human urethra. The slough, in the form of a tubular
C. 1. grayish cast, was drawn from the urethra of a patient who had been using injections of chloride of zinc for the cure of gonorrhœa. The sections show sufficient indications of connective and fibrous tissue, bloodvessels and urethral glands, to prove the cast to be a true slough. For history of the case, see the *Boston Medical and Surgical Journal*, vol. 69, page 323. The portion of the slough from which the sections were cut was presented by Dr. J. B. S Jackson, of Boston, Mass.

E. Chemical Constituents of Urine.

A. From Man.

992 & 993. Two preparations of various forms of crystals of urea, artificially prepared. Many of the crystals have
A. 1. lost their sharp outline from partial solution. For moderate powers.

994. Large rhomboidal crystals and glomeruli of uric acid, natural deposit. For low and moderate powers.
A. 2. Assistant Surgeon J. J. Woodward, U. S. Army.

995. Small quadrate tabular crystals of uric acid, natural deposit. For moderate and high powers.
A. 3. Assistant Surgeon J. J. Woodward, U. S. Army.

996. Barrel-shaped and fusiform crystals of uric acid, natural deposit. For moderate powers.
A. 4. Assistant Surgeon J. J. Woodward, U. S. Army.

997. Large rhomboid, crucial and spindle-shaped crystals of uric acid, artificially crystallized. For low
A. 5. powers.

998. A. 6. Very large irregular crystals of uric acid, artificially crystallized. For low powers.

999. A. 7. Small hexagonal tabular plates of uric acid, artificially crystallized. For moderate and high powers.

1000. A. 8. Small rhomboid and cylindroid crystals of uric acid, artificially crystallized. For moderate powers.

1002. A. 9. Minute dumb-bell crystals of urates mixed with fusiform crystals of uric acid, natural deposit. For moderate and high powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1003 & 1004. A. 10. Two preparations of minute spheroidal crystals of urate of soda with a few prismatic crystals of triple phosphate of magnesia and ammonia, natural deposit. For moderate and high powers.

1005. A. 11. Dumb-bell and spheroidal crystals of urate of soda with projecting spiculæ, and foliaceous crystals of basic phosphate of magnesia and ammonia, artificially crystallized. For moderate powers.

1006 to 1008. A. 12. Three preparations of dumb-bell and spheroidal crystals of urate of soda, with granular masses of the amorphous urates and prismatic crystals of triple phosphate of magnesia and ammonia, natural deposit. For moderate and high powers.

1011. A. 13. Minute ovoid plates of oxalate of lime, artificially crystallized. For high powers.

1013 to 1017. A. 14. Five preparations of overlapping hexagonal plates of cystine, natural deposit. For moderate powers.

1018. A. 15. Rosettes of minute hexagonal plates of cystine, recrystallized from ammoniacal solution. For moderate and high powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1019 & 1492. A. 16. Two preparations of prismatic crystals of triple phosphate of magnesia and ammonia, natural deposit; mounted in a watery menstruum. For low and moderate powers.

1020. A. 17. Same as A. 16; mounted in glycerine jelly.

1023. A. 18. Same as A. 16; mounted dry.

1021. A. 19. Large foliaceous crystals of basic phosphate of magnesia and ammonia, natural deposit. For low powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1022. A. 20. Same as A. 19; mounted dry.

1024 to 1027. A. 21. Four preparations of rosettes and penniform crystals of phosphate of lime, artificially crystallized. For moderate powers.

1028. A. 22. Various forms of crystals of phosphates, stained yellow with bile, natural deposit; from a case of jaundice. For moderate powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1029 to 1033. A. 23. Five preparations of amorphous phosphate of lime and octahedral and dumb-bell crystals of oxalate of lime, natural deposit. For high powers.

B. From Animals.

1001. B. 1. Small acicular and spindle-shaped crystals of hippuric acid; from urine of horse. For moderate powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

1012. B. 2. Spherical crystals of carbonate of lime; from urine of horse. For moderate powers.
Assistant Surgeon J. J. Woodward, U. S. Army.

F. Organic Deposits in Urine.

A. From Man.

1035. A. 1. Granular casts of the uriniferous tubes, and pus corpuscles: from a case of Bright's disease. For high powers.

1036. A. 2. Granular casts of the uriniferous tubes, blood corpuscles and prisms of triple phosphates; from a case of Bright's disease. For high powers.
Presented by Surgeon T. Sim, U. S. Vols.

G. Suprarenal Glands.

A. From Man.

115. A. 1. Opaque injection (yellow) of the vessels in the suprarenal gland; from a new-born child.
Prof. Joseph Hyrtl, Vienna, Austria.

X. SEXUAL ORGANS, OVA AND FŒTAL APPENDAGES.

A. Testes.

B. Tunica Vaginalis.

C. Vasa Deferentia.

D. Vesiculæ Seminales.

E. Prostate and Cowper's Glands.

F. Penis.

G. Semen.

H. Vulva.

I. Vagina.

K. Uterus.

L. Fallopian Tubes and Oviducts.

M. Ovaries.

N. Mammary Glands.

O. Ova.

P. Fœtal Appendages.

A. From Man. | B. From Animals. | C. Pathological.

X. SEXUAL ORGANS, OVA AND FŒTAL APPENDAGES.

A. Testes.

B. From Animals.

336. Opaque injection in two colors (arteries white, veins red) of testis of *Proteus*. For low powers.
B. 1. Prof. Joseph Hyrtl, Vienna, Austria.

337. Opaque injection (yellow) of the vessels of testis of *Salamandra maculosa*. For low powers.
B. 2. Prof. Joseph Hyrtl, Vienna, Austria.

F. Penis.

A. From Man.

338. Opaque injection (red) of the vessels of the corpus cavernosum. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

G. Semen.

A. From Man.

1194. Human spermatozoa. For high powers.
A. 1. J. Bourgogne, Paris, France.

B. From Animals.

1349. Spermatozoa of horse. For high powers.
B. 1. J. Bourgogne, Paris, France.

2012 to 2014. Three preparations of spermatozoa of rabbit. For high powers.
B. 2.

K. Uterus.

A. From Man.

340. Opaque injection (red) of the vessels in a non-gravid uterus. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

341. Opaque injection (red) of the vessels in the neck of the uterus. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

L. Fallopian Tubes and Oviducts.

B. From Animals.

344. Opaque injection in two colors (arteries white, veins red) of oviduct of *Triton Alpestris*. For low
B. 1. powers.
Prof. Joseph Hyrtl, Vienna, Austria.

345. Same as **B. 1**, (gravid), from *Salamandra*, (arteries white, veins yellow). For low powers.
B. 2. Prof. Joseph Hyrtl, Vienna, Austria.

M. Ovaries.

A. From Man.

342. Opaque injection (red) of the vessels of a Graafian vesicle after conception. For low powers.
A. 1. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

343. Opaque injection in two colors (arteries white, veins blue) of ovary of *Triton Alpestris*. For low powers.
B. 1. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

1337 to 1342. Six sections through the walls of a cyst of human ovary, in which was lodged a fœtus in a case of
C. 1. extra-uterine pregnancy. The sections are stained with carmine and show the muscular structure of the walls of the cyst. For moderate and high powers.
From Specimen **795,** *Medical Section, chap.* **V.** *sec.* 5, E. 3.

N. Mammary Glands.

A. From Man.

291. Opaque injection (red) of the lactiferous tubules and terminal vesicles in the mammary gland. For
A. 1. low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

O. Ova.

B. From Animals.

1499. Ova of *Tænia solium*. For high powers.
B. 1. Dr. S. A. Jones, Englewood, N. J.

For other illustrations, see **XV.** A. A. 1 *to* 3.

P. Fœtal Appendages.

A. From Man.

1495. Portion of placenta, with transparent carmine injection, showing the bloodvessels of the part. For low
A. 1. and moderate powers.
Presented by Surgeon T. Sim, U. S. Vols.

347. Opaque injection in two colors (arteries white, veins red) of placenta. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

XI. ORGAN OF VISION.

A. Sclerotica and Cornea.

B. Choroid and Iris.

C. Retina.

D. Crystalline Lens.

E. Vitreous Humor and Hyaloid Membrane.

F. Conjunctiva.

G. Lachrymal Glands and Ducts.

H. Eyelids.

A. From Man. | B. From Animals. | C. Pathological.

XI. ORGAN OF VISION.

A. Sclerotica and Cornea.

B. From Animals.

1818. B. 1. Portion of cornea of cat, with transparent carmine injection, showing the fine capillary loops around the circumference of the cornea. For low powers.

1310. B. 2. Transverse sections of cornea of frog, faintly stained with carmine, showing the laminated structure of the cornea and the long fusiform corneal cells. For high powers.

1311. B. 3. Portion of membrane of Descemet, from cornea of frog, stained with carmine, showing the nucleated epithelium in situ upon its inner surface. For high powers.

B. Choroid and Iris.

A. From Man.

1553. A. 1. Portion of vascular layer of choroid, with transparent carmine injection, showing the arrangement of the capillaries in the membrana choriocapillaris. For low powers.
Prof. Joseph Gerlach, Erlangen, Bavaria.

297. A. 2. Opaque injection (yellow) of the vessels of the ciliary processes. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

298. A. 3. Opaque injection (white) of the vessels of the choroid. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

301. A. 4. Opaque injection (white) of the vasa vorticosa of the choroid. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1819 to 1821. B. 1. Three preparations of portions of choroid from eye of white rabbit, with transparent carmine injection, showing the arrangement of the capillaries. For low and moderate powers.

1822 & 1823. B. 2. Two preparations of portions of ciliary processes and iris from eye of rabbit, with transparent carmine injection, showing the arrangement of the capillaries. For low and moderate powers.

514 & 515. B. 3. Two preparations of portions of choroid, ciliary body and iris from eye of chicken, with transparent carmine injection, showing the arrangement of the bloodvessels in the several structures, and the pigment of the choroid and ciliary processes. For low and moderate powers.

511. B. 4. Ciliary processes from eye of rabbit, with opaque yellow injection, showing the vessels of the processes. For low powers.

513. B. 5. Same as **B. 4**, with opaque red injection.

386 & 512. B. 6. Two preparations of ciliary processes from eye of dog, with opaque yellow injection, showing the vessels of the processes. For low powers.

1263. Marsupium from eye of chicken, with transparent carmine injection, showing the arrangement of the
B. 7. bloodvessels and the masses of pigment. For low and moderate powers.

1978. Posterior portion of choroid from eye of cat, with transparent carmine injection, showing the arrange-
B. 8. ment of the bloodvessels, the pigment cells, and the absence of pigment in the tapetum. For low and moderate powers.

299. Opaque injection (yellow) of the vasa vorticosa of choroid of *Salamandra*. For low powers.
B. 9. Prof. Joseph Hyrtl, Vienna, Austria.

302. Opaque injection (white) of the vessels of iris of *Anguilla Murœna*. For low powers.
B. 10. Prof. Joseph Hyrtl, Vienna, Austria.

303. Opaque injection (yellow) of the vessels of choroid of *Rana esculenta*. For low powers.
B. 11. Prof. Joseph Hyrtl, Vienna, Austria.

301. Opaque injection (yellow) of the vessels of choroid and iris of *Salamandra*. For low powers.
B. 12. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

296. Opaque injection (yellow) of the vessels of human iris with coloboma. For low powers.
C. 1. Prof. Joseph Hyrtl, Vienna, Austria.

C. Retina.

A. From Man.

1559. Portion of retina, with transparent carmine injection, showing the arrangement of the fine capillaries of
A. 1. the retina. For low and moderate powers.
Prof. Joseph Gerlach, Erlangen, Bavaria.

300. Opaque injection (yellow) of the arteria centralis retinæ and its branches. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

1821 to 1827. Four preparations of retina from eye of cat, with transparent carmine injection, showing the arrangement
B. 1. of the fine retinal capillaries. For low and moderate powers.

1980. Portion of retina from eye of kitten, with transparent carmine injection, showing the arrangement of the
B. 2. fine retinal capillaries. For low and moderate powers.

D. Crystalline Lens.

A. From Man.

305. Opaque injection (yellow) of the vessels of the capsule of the lens, with lens in situ, from eye of fœtus.
A. 1. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. From Animals.

532. Capsule of crystalline lens from eye of puppy, with transparent Prussian blue injection, showing the
B. 1. arrangement of the bloodvessels in the young capsule. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1828. Crystalline lens in situ in its capsule, from eye of frog, with opaque yellow injection, showing the ramifying
B. 2. vessels of the capsule; shows also, by transmitted light, the laminated structure of the lens. For low and moderate powers.

1979. Crystalline lens, with posterior capsule attached, from eye of kitten, with transparent carmine injection,
B. 3. showing the arrangement of the capillaries in the capsule. For low powers.

F. Conjunctiva.

A. From Man.

2031. Portion of conjunctiva from eye of six-months' fœtus, with transparent carmine injection, showing the
A. 1. arrangement of the capillaries. For low powers.

291. Opaque injection (yellow) of the vessels of the conjunctiva. For low powers.
A. 2. Prof. Joseph Hyrtl, Vienna, Austria.

295. Same as A. 2, (red), from the ball of the eye. For low powers.
A. 3. Prof. Joseph Hyrtl, Vienna, Austria.

C. Pathological.

293. Opaque injection (red) of the vessels of inflamed conjunctiva. For low powers.
C. 1. Prof. Joseph Hyrtl, Vienna, Austria.

H. Eyelids.

A. From Man.

1129 to 1137. Nine perpendicular sections of upper eyelid of negro, showing the general arrangement and relations of
A. 1. the various structures of the lid. For low powers.

1981. Perpendicular section of upper eyelid of a six-months' fœtus, with transparent carmine injection. The
A. 2. injection is imperfect, but the specimen shows the general arrangement of the structures of the eyelid, and, with a high power, muscular fibres, young connective tissue, the epithelium lining the duct of a Meibomian gland and free edge of the eyelid, and the cellular elements of the young hair-bulbs. For low and high powers.

B. From Animals.

516. Nyctitating membrane from eyelid of chicken, with transparent carmine injection, showing the arrange-
B. 1. ment of the bloodvessels. For low powers.

2032. Nyctitating membrane from eyelid of kitten, with transparent carmine injection, showing the arrange-
B. 2. ment of the bloodvessels. For low powers.

XII. ORGAN OF HEARING.

A. External Ear.

B. Middle Ear, Membrana Tympani and Eustachian Tube.

C. Internal Ear.

A. From Man. B. From Animals. | C. Pathological.

XII. ORGAN OF HEARING.

A. External Ear.

B. From Animals.

1829 & 1830. B. 1. Two sections of pinna from rat, with transparent Prussian blue injection and carmine staining, showing the minute anatomy and general arrangement of the various structures of the pinna. For low and high powers.

1831. B. 2. Same as **B. 1**, with the injection faded.

B. Middle Ear, Membrana Tympani and Eustachian Tube.

B. From Animals.

1833. B. 1. Two tympanic membranes from frog, with transparent carmine injection, showing the arrangement of the zone of capillaries around the ear-drum. For low powers.

C. Internal Ear.

B. From Animals.

1557. B. 1. Lamina spiralis from ear of rat, with transparent carmine injection, showing the general structure of the lamina and the arrangement of the capillaries. For moderate and high powers.
Prof. Joseph Gerlach, Erlangen, Bavaria.

XIII. ORGAN OF SMELL.

A. Schneiderian Membrane.

B. Other Structures of the Nose.

A. From Man | B. From Animals. | C. Pathological.

XIII. ORGAN OF SMELL.

A. Schneiderian Membrane.

A. From Man.

312. A. 1. Opaque injection (red) of the vessels in the Schneiderian membrane over the inferior turbinated bone. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

313. A. 2. Same as A. 1, (white); from the septum narium. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

B. Other Structures of the Nose.

B. From Animals.

1982. B. 1. Transverse section of nasal fossæ of kitten, with transparent carmine injection, showing the mutual relations of the various structures, the arrangement of the capillaries, and, with a high power, the anatomy of cartilage. For low and high powers.

XIV. PATHOLOGICAL GROWTHS.

A. Cartilaginous Tumors.

B. Fibrous and Connective Tissue Tumors.

C. Cancers.

D. Cholesterine Tumors.

A. From Man. | B. From Animals.

XIV. PATHOLOGICAL GROWTHS.

A. Cartilaginous Tumors.

A. From Man.

1055 to 1058 and 1834 to 1841. A. 1. Twelve sections of a portion of a very large enchondromatous tumor from shoulder, stained with carmine. The tissue of the tumor is seen to be true cartilage. For high powers.
From Specimen **866,** *Medical Section, chap.* **VI.** *sec.* 2, *No.* 19

B. Fibrous and Connective Tissue Tumors.

A. From Man.

1842 to 1847. A. 1. Six sections of fibrous tumor of uterus, stained with carmine, showing smooth muscular fibre intermixed with fibrous tissue. For moderate powers.
From Specimen **788,** *Medical Section, chap.* **V.** *sec.* 5, B. 2.

1848 to 1854. A. 2. Seven sections of fibrous tumor of uterus, stained with carmine, showing dense fibrous tissue and smooth muscle. For moderate and high powers.
From Specimen **780,** *Medical Section, chap.* **V.** *sec.* 5, B. 4.

1241 to 1254. A. 3. Eleven perpendicular sections through a keloid growth from the breast of a negro, stained with carmine, showing great hypertrophy of the fibrous stroma of the true skin. The structures of the skin are preserved but are forced apart by the growth of new tissue. For low and high powers.
From Specimen **629,** *Medical Section, chap.* **VII.,** *No.* 3.

1855 to 1861. A. 4. Ten sections of fibro-plastic tumor of clitoris, stained with carmine, showing a stroma of dense connective tissue with very distinct fusiform cells enclosing masses of many-nucleated round cells and free nuclei. From a girl of fifteen years: had been growing for about one year: removed by Dr. George McCoy, Washington, D. C., June, 1866; has not recurred to date of publication. For low and high powers.

361 to 369. A. 5. Nine sections of a sarcomatous tumor of brain. The tissue of the tumor consists of closely-aggregated spindle-shaped connective tissue corpuscles embedded in the meshes of a fibrous stroma. Partially stained with red aniline. For high powers.
From Specimen **535,** *Medical Section, chap.* **I.** *sec.* 1, D. 3.

2036 to 2041. A. 6. Six sections of fibroid tumor of uterus, stained with carmine, showing dense fibrous tissue. For moderate and high powers.

359. A. 7. Opaque injection (red) of the vessels in a fibrous tumor of the uterus. For low powers.
Prof. Joseph Hyrtl, Vienna, Austria.

C. Cancers.

A. From Man.

903 to 905. A 1. Three preparations of small scraps from an encephaloid cancer of the liver, showing masses of closely-packed roundish cells. The cells have altered by keeping, and the nuclei can no longer be distinguished. For high powers.

D. Cholesterine Tumors.

A. From Man.

370 & 371. A. 1. Two preparations of scraps of a cholesteatoma growing on the inner face of the frontal bone. The tabular plates of cholesterine, which were abundant in the fresh specimen, have almost all dissolved, and the sections show only the meshwork of hexagonal cells that compose the matrix of the tumor. For high powers.

From Specimen **531**, *Medical Section, chap.* **I.** *sec.* 1, D. 1.

See Part Second, **XIV.** D. A. 1 *and* 2.

XV. PARASITES.

A. Animal.

B. Vegetable.

A. From Man. | B. From Animals.

XV. PARASITES.

A. Animal.

A. From Man.

1865 to 1869. A. 1. Five preparations of young joints of *Tænia solium*. For low powers.
See Specimens **814** *and* **832**, *Medical Section, chap.* **IV.** *sec.* 3, N. 8 *and* 9.

1500, 2016 and 2017. A. 2. Fully formed proglottides of *Tænia solium*; three preparations. For low powers.
Dr. S. A. Jones, Englewood, N. J.

1197. A. 3. Female *Trichocephalus dispar*. The worm has broken in two across the abdomen, and great numbers of ova are scattered over the field. For low and high powers.

1870. A. 4. *Acarus Scabiei*. For low and moderate powers.
See Part Second, **XV.** A. A. 3.

For other illustrations, see **III.** B. C. 1 *and* 2.
See also Part Second, **XV.** A. A. 1, 2, 4, 5.

B. From Animals.

1196. B. 1. *Cysticercus*, from hare. For low powers.

1562. B. 2. *Trichina spiralis*, from hog. For low and high powers.
Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

For other illustrations, see **III.** B. C. 3 *to* 6; **VII.** C. C. 1; **VII.** I. B. 10 (Specimen **796**).
See also Part Second, **XV.** A. B. 1 *to* 3.

B. Vegetable.

A. From Man.

1291 & 1292. A. 1. Two preparations of *Achorion Schonleinii*, from a case of favus of the leg. For high powers.

XVI. ARTICLES OF FOOD AND CLOTHING, AND MATERIA MEDICA.

A. Articles of Food.

B. Articles of Clothing.

C. Materia Medica.
- A. Crystals.
- B. Roots.
- C. Stems.
- D. Leaves.
- E. Flowers.
- F. Fruits.

XVI. ARTICLES OF FOOD AND CLOTHING, AND MATERIA MEDICA.

A. Articles of Food.

1396 & 1397. Sections of bean; two preparations. For moderate and high powers.
A. 1.

1398 to 1400. Sections of roasted bean; three preparations. For moderate and high powers.
A. 2.

1402 & 1403. Sections of grain of rice; two preparations. For moderate and high powers.
A. 3.

1404 to 1406. Sections of roasted grain of rice; three preparations. For moderate and high powers.
A. 4.

1407 to 1409. Sections of kernel of Indian corn; three preparations. For moderate and high powers.
A. 5.

1410 to 1412. Sections of roasted kernel of Indian corn; three preparations. For moderate and high powers.
A. 6.

1413. Starch grains from Indian corn. For moderate and high powers.
A. 7.

1414 to 1416. Sections of rye grain: three preparations. For moderate and high powers.
A. 8.

1417 to 1419. Sections of roasted rye grain; three preparations. For moderate and high powers.
A. 9.

1420 to 1422. Sections of wheat grain; three preparations. For moderate and high powers.
A. 10.

1423 to 1425. Sections of roasted wheat grain; three preparations. For moderate and high powers.
A. 11.

1426 to 1428. Sections of barley grain; three preparations. For moderate and high powers.
A. 12.

1429 to 1431. Sections of roasted barley grain; three preparations. For moderate and high powers.
A. 13.

1433. Sections of oat grain. For moderate and high powers.
A. 14.

1434 to 1436. Sections of roasted oat grain; three preparations. For moderate and high powers.
A. 15.

1437 to 1439. Sections of pea; three preparations. For moderate and high powers.
A. 16.

1110. Sections of roasted pea. For moderate and high powers.
A. 17.

1413 to 1415. Sections of unripe acorn; three preparations. For moderate and high powers.
A. 18.

1446. Sections of roasted unripe acorn. For moderate and high powers.
A. 19.

1447 to 1449. Sections of hazel-nut; three preparations. For moderate and high powers.
A. 20.

1450 to 1452. Sections of Irish potato; three preparations. For moderate and high powers.
A. 21.

1453 & 1454. Sections of roasted Irish potato; two preparations. For moderate and high powers.
A. 22.

1455 to 1457. Sections of fragments of tapioca; three preparations. For moderate and high powers.
A. 23.

1458 & 1459. Sections of fragments of sago; two preparations. For moderate and high powers.
A. 24.

1460 to 1462. Arrow-root starch; three preparations. For moderate and high powers.
A. 25. *See Part Second,* **XVI.** A. 1.

1463 to 1465. Investing membrane of coffee berry; three preparations. For moderate and high powers.
A. 26.

1466 & 1467. Sections of coffee berry; two preparations. For moderate and high powers.
A. 27.

1468 to 1473. Sections of roasted coffee berry; six preparations. For moderate and high powers.
A. 28. *See Part Second,* **XVI.** A. 2.

1474, 1475, 1489, 1490, 1491 & 1493. Series of six preparations of crystals of caffeine, showing various sizes of the acicular crystals. For moderate and high powers.
A. 29.

1476 to 1478. Horizontal sections embracing upper surface of tea leaf; three preparations. For moderate and high powers.
A. 30.

1479 to 1481. Horizontal sections embracing under surface of tea leaf; three preparations. For moderate and high powers.
A. 31.

1482 & 1483. Sections of capsicum seed; two preparations. For moderate and high powers.
A. 32.

1484 to 1486. Sections of black mustard seed; three preparations. For moderate and high powers.
A. 33.

1487. Sections of white mustard seed. For moderate and high powers.
A. 34.

1488. Specimen of commercial powdered mustard, showing extensive adulteration with wheat flour. For moderate and high powers.
A. 35.

2119 & 2120. Two preparations of crystals of caffeine. For low powers.
A. 36.

B. Articles of Clothing.

1871 to 1881. Eight preparations of white wool. For moderate and high powers.
B. 1. *See Part Second*, **XVI.** B. 1.

1882 to 1886. Five preparations of cotton fibres. For moderate and high powers.
B. 2. *See Part Second*, **XVI.** B. 2.

1887 to 1891. Five preparations of fibres of flax. For moderate and high powers.
B. 3. *See Part Second*, **XVI.** B. 3.

1892 to 1896. Five preparations of fibres of silk. For moderate and high powers.
B. 4. *See Part Second*, **XVI.** B. 4.

C. Materia Medica.

A. Crystals.

2103 & 2104. Two preparations of crystals of amygdalin. For low and moderate powers.
A. 1.

2105 & 2106. Two preparations of crystals of codeia. For low powers.
A. 2.

2107 & 2108. Two preparations of crystals of morphia. For low powers.
A. 3.

2109 & 2110. Two preparations of crystals of muriate of morphia. For low and moderate powers.
A. 4.

2111 & 2112. Two preparations of crystals of piperin. For low powers.
A. 5.

2113 to 2116. Four preparations of crystals of sulphate of quinia. For moderate powers
A. 6.

2117 & 2118. Two preparations of crystals of strychnia. For low and moderate powers.
A. 7.

B. Roots

2058. Two transverse sections of root of *Althæa officinalis;* one partially stained with red aniline, and one
B. 1. unstained. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2059. Two transverse sections of root of *Angelica Archangelica*, stained with red aniline. For low and
B. 2. moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2060. Two oblique sections of root of *Arum triphyllum;* one stained with red aniline, and one unstained.
B. 3. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2061. Two transverse sections of root of *Asarum Canadense;* one stained with red aniline, and one unstained.
B. 4. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2062. Same as **B. 4**, with fainter staining.
B. 5. Assistant Surgeon J. S. Billings, U. S. Army.

2063. Two transverse sections of rhizoma of *Acorus Calamus;* one stained with red aniline, and one unstained.
B. 6. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2064. Transverse section of root of *Cocculus palmatus.* For low and high powers.
B. 7. Assistant Surgeon J. S. Billings, U. S. Army.

2065. Two transverse sections of root of *Gentiana lutea;* one stained with red aniline, and one unstained. For
B. 8. low and moderate powers.
Presented by Assistant Surgeon J. S. Billings, U. S. Army.

2066. Two transverse sections of root of *Glycyrrhiza glabra;* one stained with red aniline, and one unstained.
B. 9. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2067. Two transverse sections of root of *Cephaëlis Ipecacuanha;* one stained with red aniline, and one
B. 10. unstained. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2068. Two transverse sections of rhizoma of *Iris Florentina;* one stained with blue and red aniline, and one
B. 11. unstained. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2069. Four sections, two transverse and two longitudinal, of root of *Krameria triandra*, stained with red
B. 12. aniline. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2070. Two transverse sections of root of *Cissampelos Pareira;* one stained with red aniline, and one unstained.
B. 13. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2071. Three transverse sections of rhizoma of *Podophyllum peltatum;* one stained with carmine, one with blue
B. 14. aniline, and one unstained. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2072. Two sections of root of *Rheum*, from East Indies; one stained with red aniline, and one unstained. For
B. 15. low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2073. Same as **B. 15**, from Turkey. For low and high powers.
B. 16. Assistant Surgeon J. S. Billings, U. S. Army.

2074. Two transverse sections of rhizoma of *Sanguinaria Canadensis;* one stained with red aniline, and one
B. 17. unstained. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2075. Two longitudinal sections of bark of root of *Sassafras officinale;* one stained with red aniline, and one
B. 18. unstained. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2076. Two transverse sections of bulb of *Scilla maritima;* one stained with red aniline, and one unstained.
B. 19. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2077. Two transverse sections of root of *Polygala Senega;* one stained with blue and red aniline, and one
B. 20. unstained. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2078. Five transverse sections of root of *Aristolochia Serpentaria.* For low and moderate powers.
B. 21. Assistant Surgeon J. S. Billings, U. S. Army.

2079. Four transverse sections of root of *Spigelia Marilandica;* three stained with red aniline, and one unstained.
B. 22. For low and moderate powers.
Assistant Surgeon J. S. Billings. U. S. Army.

2080. Five sections, two transverse and three longitudinal, of root of *Valeriana officinalis.* For low and
B. 23. moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2081. Two sections, same as **B. 23**, one longitudinal and one transverse; stained with carmine.
B. 24. Assistant Surgeon J. S. Billings, U. S. Army.

2082. Two transverse sections of rhizoma of *Zinziber officinale;* the upper one stained with red aniline, and the
B. 25. lower with carmine. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

C. Stems.

2083. Four longitudinal sections of bark of *Cinchona Calisaya;* one stained with red aniline, and the others
C. 1. unstained. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2084. Two transverse sections of bark of *Cinnamomum Zeylanicum;* one stained with red aniline, and one
C. 2. unstained. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2085. Sections of wood of *Guaiacum officinale.* For low and high powers.
C. 3. Assistant Surgeon J. S. Billings, U. S. Army.

2086. Longitudinal sections of bark of *Daphne Gnidium.* For low and moderate powers.
C. 4. Assistant Surgeon J. S. Billings, U. S. Army.

E. Flowers.

2087. Four sections, two transverse and two longitudinal, of unexpanded flowers of *Caryophyllus aromaticus;*
E. 1. one transverse and one longitudinal section stained with red aniline, the others unstained. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2088. *Lupulina.* For low and high powers.
E. 2. Assistant Surgeon J. S. Billings, U. S. Army.

F. Fruits.

2089. Section of fruit of *Juniperus communis.* For low and moderate powers.
F. 1. Assistant Surgeon J. S. Billings, U. S. Army.

2090. Two sections of seed of *Linum usitatissimum;* one stained with red aniline, and one unstained. For
F. 2. low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

XVII. DIATOMS AND OTHER TEST OBJECTS.

A. Mixed Diatoms.

B. Selected Diatoms.

- A. Eunotieæ.
- B. Fragilarieæ.
- C. Surirelleæ.
- D. Striatelleæ.
- E. Melosireæ.
- F. Coscinodisceæ.
- G. Eupodisceæ.
- H. Biddulphieæ.
- I. Angulifereæ.
- K. Chætocereæ.
- L. Cocconeideæ.
- M. Cymbelleæ.
- N. Gomphonemeæ.
- O. Naviculeæ.

C. Other Test Objects.

XVII. DIATOMS AND OTHER TEST OBJECTS.

A. Mixed Diatoms.

1897. Diatoms from Rappahannock Cliff, Va. For high powers.
A. 1. From material presented by Count L. F. Pourtales, Washington, D. C.

1898. Diatoms from Hollis Cliff, Va. For high powers.
A. 2. From material presented by Count L. F. Pourtales, Washington, D. C.

1899. Diatoms from Monterey, Cal. For high powers.
A. 3. From material presented by Count L. F. Pourtales, Washington, D. C.

1900. Diatoms from Monterey; lower stratum. For high powers.
A. 4. From material presented by Count L. F. Pourtales, Washington, D. C.

1901. Diatoms from Piscataway, Md. For high powers.
A. 5. From material presented by Count L. F. Pourtales, Washington, D. C.

1902 & 1903. Diatoms from Bermuda; two preparations. For high powers.
A. 6. From material presented by Count L. F. Pourtales, Washington, D. C.

1901 & 1905. Diatoms from Barbadoes; two preparations. For high powers.
A. 7. From material presented by Count L. F. Pourtales, Washington, D. C.

1906. Diatoms from Barbadoes, Springfield district. For high powers.
A. 8. From material presented by Count L. F. Pourtales, Washington, D. C.

1907 to 1910. Diatoms from Para River; four preparations. For high powers.
A. 9. From material presented by Count L. F. Pourtales, Washington, D. C.

1517. Sub-peat diatoms from New Hampshire. For high powers.
A. 10. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1911. Diatoms from Bemis Lake, N. H. For high powers.
A. 11. Arthur M. Edwards, Esq., New York.

1912 & 1913. Diatoms from Richmond earth, Va.; two preparations. For high powers.
A. 12.

1914. Diatoms from Para River. For high powers.
A. 13. W. F. Beach, Esq., Louisville, Ky.

1915. Diatoms from Portland, Me. For high powers.
A. 14. W. F. Beach, Esq., Louisville, Ky.

1916. Diatoms from Cold Spring, Cape May. For high powers.
A. 15 W. F. Beach, Esq., Louisville, Ky.

B. Selected Diatoms.

A. Eunotieæ.

1580. Various forms of *Epithemia.* For high powers.
A. 1. J. Bourgogne, Paris, France.

1917. *Himantidium;* Quebec. For high powers.
A. 2. W. F. Beach, Esq., Louisville, Ky.

B. Fragilarieæ.

1918. *Nitzschia linearis.* For high powers.
B. 1. W. F. Beach, Esq., Louisville, Ky.

1919 to 1923. Five preparations of *Amphipleura pellucida.* For high powers.
B. 2. W. S. Sullivant, Esq., Columbus, Ohio.

1924 to 1926. Three preparations of *Amphipleura pellucida.* For high powers.
B. 3. W. F. Beach, Esq., Louisville, Ky.

1589. *Amphipleura magna;* near Empire Mines, Isthmus of Panama. For high powers.
B. 4. Arthur M. Edwards, Esq , New York.

1927. *Amphipleura Sullivanti;* Cuba. For high powers.
B. 5. W. F. Beach, Esq., Louisville, Ky.

C. Surirelleæ.

1928 to 1930. Three preparations of *Syncdra radians.* For high powers.
C. 1. W. F. Beach, Esq., Louisville, Ky.

1606. *Stictodiscus* (fossil); California. For high powers.
C. 2. Arthur M. Edwards, Esq , New York.

D. Striatelleæ.

1931. *Rhabdonema.* For high powers.
D. 1. W. F. Beach, Esq., Louisville, Ky.

1599. *Grammatophora marina;* coast of England. For high powers.
D. 2. Arthur M. Edwards, Esq., New York.

1511. *Grammatophora serpentina;* Fayal. For high powers.
D. 3. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1585. *Grammatophora.* For high powers.
D. 4. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.
See Part Second, **XVII.** B. d. 1 *and* 2.

1505. *Grammatophora;* New Hampshire. For high powers.
D. 5. J. Bourgogne, Paris, France.

1509. *Grammatophora marina.* For high powers.
D. 6. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1510. *Grammatophora subtilissima;* Greenport, Long Island. For high powers.
D. 7. Assistant Surgeon J. J. Woodward, U. S. Army.

2091 & 2092. Two preparations of *Grammatophora.* For high powers.
D. 8. C. M. Topping, London, England.

E. Melosireæ.

1602. *Podosira Franklinii;* California. For high powers.
E. 1. Arthur M. Edwards, Esq., New York.

1603. *Podosira cervina;* California. For high powers.
E. 2. Arthur M. Edwards, Esq., New York.

F. Coscinodisceæ.

1598. *Coscinodiscus robustus;* California. For high powers.
F. 1. Arthur M. Edwards, Esq., New York.

1932 & 1933. Two preparations of *Coscinodiscus.* For high powers.
F. 2.

1934. *Coscinodiscus.* For high powers.
F. 3. Christian Febiger, Esq., Wilmington, Del.

1935. *Coscinodiscus, Craspedodiscus* and *Heliopelta;* Nottingham, Md. For high powers.
F. 4. W. F. Beach, Esq., Louisville, Ky.

1936. *Actinocyclus* and *Coscinodiscus;* Nottingham, Md. For high powers.
F. 5. W. F. Beach, Esq , Louisville, Ky.

1587. *Actinocyclus Stodderii;* Sandwich Islands. For high powers.
F. 6. Arthur M. Edwards, Esq., New York.

1588. *Actinocyclus Iris;* Sandwich Islands. For high powers.
F. 7. Arthur M. Edwards, Esq., New York.

1600. *Heliopelta* and *Coscinodiscus;* Nottingham, Md. For high powers.
F. 8. Arthur M. Edwards. Esq., New York.
See Part Second, **XVII.** B. F. 3.

1937. *Heliopelta* and *Coscinodiscus;* Bermuda. For high powers.
F. 9. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.
See Part Second, **XVII.** B. F. 1 *and* 2.

1502. *Arachnoidiscus Ehrenbergii;* California. For high powers.
F. 10. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1590. *Arachnoidiscus* (fossil); California. For high powers.
F. 11. Arthur M. Edwards, Esq., New York.

1591. *Arachnoidiscus* (recent); California. For high powers.
F. 12. Arthur M. Edwards, Esq., New York.
See Part Second, **XVII.** B. F. 4 *and* 5.

G. Eupodisceæ.

1592. *Aulacodiscus crux;* Nottingham, Md. For moderate and high powers.
G. 1. Arthur M. Edwards, Esq., New York.

1593. *Aulacodiscus formosus;* Bolivian guano. For moderate and high powers.
G. 2. Arthur M. Edwards, Esq., New York.

1594. *Aulacodiscus Germanicus;* Wilmington River, Ga. For moderate and high powers.
G. 3. Arthur M. Edwards, Esq., New York.

1595. *Aulacodiscus Rogersii;* Nottingham, Md. For high powers.
G. 4. Arthur M. Edwards, Esq., New York.

1596. *Aulacodiscus scaber;* Chincha guano. For high powers.
G. 5. Arthur M. Edwards, Esq.. New York.

H. BIDDULPHIEÆ.

1516. *Isthmia nervosa;* California. For moderate and high powers.
H. 1. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

I. ANGULIFEREÆ.

1607. *Triceratium;* Florida. For high powers.
I. 1. Arthur M. Edwards, Esq., New York.

1609. *Triceratium striolatum;* Sandwich Islands. For high powers.
I. 2. Arthur M. Edwards, Esq., New York.

1610. *Triceratium Favus;* Wilmington River, Ga. For high powers.
I. 3. Arthur M. Edwards, Esq., New York.

K. CHETOCEREÆ.

1938. *Bacteriastrum furcatum;* Wilmington River, Ga. For high powers.
K. 1. W. F. Beach, Esq., Louisville, Ky.

L. COCCONEIDEÆ.

1597. *Cocconeis* (fossil); Monterey, Cal. For high powers.
L. 1. Arthur M. Edwards, Esq., New York.

M. CYMBELLEÆ.

1939. *Cymbella.* For high powers.
M. 1. W. F. Beach, Esq., Louisville, Ky.

1940. *Cocconema parvum.* For high powers.
M. 2. W. F. Beach, Esq., Louisville, Ky.

1941. *Amphora hyalina;* Cape May. For high powers.
M. 3. W. F. Beach, Esq., Louisville, Ky.

N. GOMPHONEMEÆ.

1512. *Gomphonema.* For high powers.
N. 1. J. Bourgogne, Paris, France.

O. NAVICULEÆ.

1518. *Navicula major.* For high powers.
O. 1. J. Bourgogne, Paris, France.

1583. *Navicula cryptocephala.* For high powers.
O. 2. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1608. Various forms of *Navicula*, sub-peat deposit; Bemis Lake, N. H. For high powers.
O. 3. Arthur M. Edwards, Esq., New York.
See Part Second. **XVII.** B. o. 2 *and* 3.

1942 & 1943. Two preparations of *Navicula rhomboides;* Bemis Lake, N. H., and Cherryfield, Me. For high powers.
O. 4. Arthur M. Edwards, Esq., New York.
See Part Second, **XVII.** B. o. 1.

1503. *Navicula rhomboides.* For high powers.
O. 5. J. Bourgogne, Paris, France.

1601. *Navicula cuspidata;* Washington, Pa. For high powers.
O. 6. Arthur M. Edwards, Esq., New York.

1581 & 1582. Two preparations of *Navicula (Pinnularia) viridis.* For high powers.
O. 7. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1508. *Navicula tumida.* For high powers.
O. 8. J. Bourgogne, Paris, France.

1944. *Navicula Plectrum;* Bemis Lake, N. H. For high powers.
O. 9. Arthur M. Edwards, Esq., New York.

1605. *Stauroneis;* Laconia, N. H. For high powers.
O. 10. Arthur M. Edwards, Esq., New York.
See Part Second, **XVII.** B. o. 4.

1945. *Pleurosigma Baltieum.* For high powers.
O. 11. W. F. Beach, Esq., Louisville, Ky.

1578. *Pleurosigma Baltieum.* For high powers.
O. 12. J. Bourgogne, Paris, France.

1586. *Pleurosigma formosum.* For high powers.
O. 13. C. M. Topping, London, England.
See Part Second, **XVII.** B. o. 5 *and* 6.

1946. *Pleurosigma tenue;* brackish water, Delaware. For high powers.
O. 14. W. F. Beach, Esq., Louisville, Ky.

1506. *Pleurosigma angulatum.* For high powers.
O. 15. J. Bourgogne, Paris, France.
See Part Second, **XVII.** B. o. 7 *to* 19.

1507 & 1947. Two preparations of *Pleurosigma angulatum.* For high powers.
O. 16. Assistant Surgeon J. J. Woodward, U. S. Army.

1948. *Pleurosigma angulatum;* England. For high powers.
O. 17. W. F. Beach, Esq., Louisville, Ky.

1949 & 1950. Two preparations of *Pleurosigma Spenceri.* For high powers.
O. 18. W. F. Beach, Esq., Louisville, Ky.

1579. *Pleurosigma attenuatum.* For high powers.
O. 19. J. Bourgogne, Paris, France.

1951. *Pleurosigma attenuatum.* For high powers.
O. 20. *See Part Second,* **XVII.** B. o. 19.

1581. *Pleurosigma Hippocampus.* For high powers.
O. 21. Procured from Messrs. J. W. Queen & Co., Philadelphia, Pa.

1952. *Amphiprora pulchra.* For high powers.
O. 22. W. F. Beach, Esq., Louisville, Ky.

1953. *Mastogloia;* Cape May. For high powers.
O. 23. W. F. Beach, Esq., Louisville, Ky.

2093 & 2094. Two preparations of *Pleurosigma formosum.* For high powers.
O. 24. C. M. Topping, London, England.

2095 & 2096. Two preparations of *Pleurosigma angulatum.* For high powers.
O. 25. C. M. Topping London, England.

2097 & 2098. Two preparations of *Pleurosigma Spenceri.* For high powers.
O. 26. C. M. Topping, London, England.

2099 & 2100. Two preparations of *Pleurosigma attenuatum*. For high powers.
O. 27. C. M. Topping, London, England.

C. Other test objects.

1513. Scales of *Podura*. For high powers.
C. 1. Smith, Beck & Beck, London, England.

1514 & 1515. Scales of *Podura*. For high powers.
C. 2. Assistant Surgeon J. J. Woodward, U. S. Army.

2101 & 2102. Two preparations of scales of *Podura*. For high powers.
C. 3. Procured from Messrs. Powell & Lealand, London, England.

See Part Second, **XVII.** C. 1 *to* 4.

XVIII. MISCELLANEOUS.

XVIII. MISCELLANEOUS.

1604. *Polycystina;* Barbadoes. For high powers.
Arthur M. Edwards, Esq., New York.

444. Wing of fly. For low and high powers.

1498. Fungus from mouldy straw. For high powers.

2051 & 2052. Two preparations of crystals of sulphate of lime. For moderate powers.
See Part Second, **XVIII.** (*negative* 1.)

1501. Sediment from Potomac water. For high powers.

932. Spiral vessels in stem of *Leontodon Taraxacum,* stained with purple aniline. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1009. Three transverse sections of stem of *Leontodon Taraxacum.* For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1034. Five transverse sections of stem of *Rosa centifolia;* central section stained with purple aniline, the rest with carmine. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1269. Transverse section of stem of Judas tree, stained with both carmine and purple aniline. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1299. Transverse section of broom straw. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1504. Transverse section of rose stem, stained with both carmine and purple aniline. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

1832. Pollen of violet. For high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

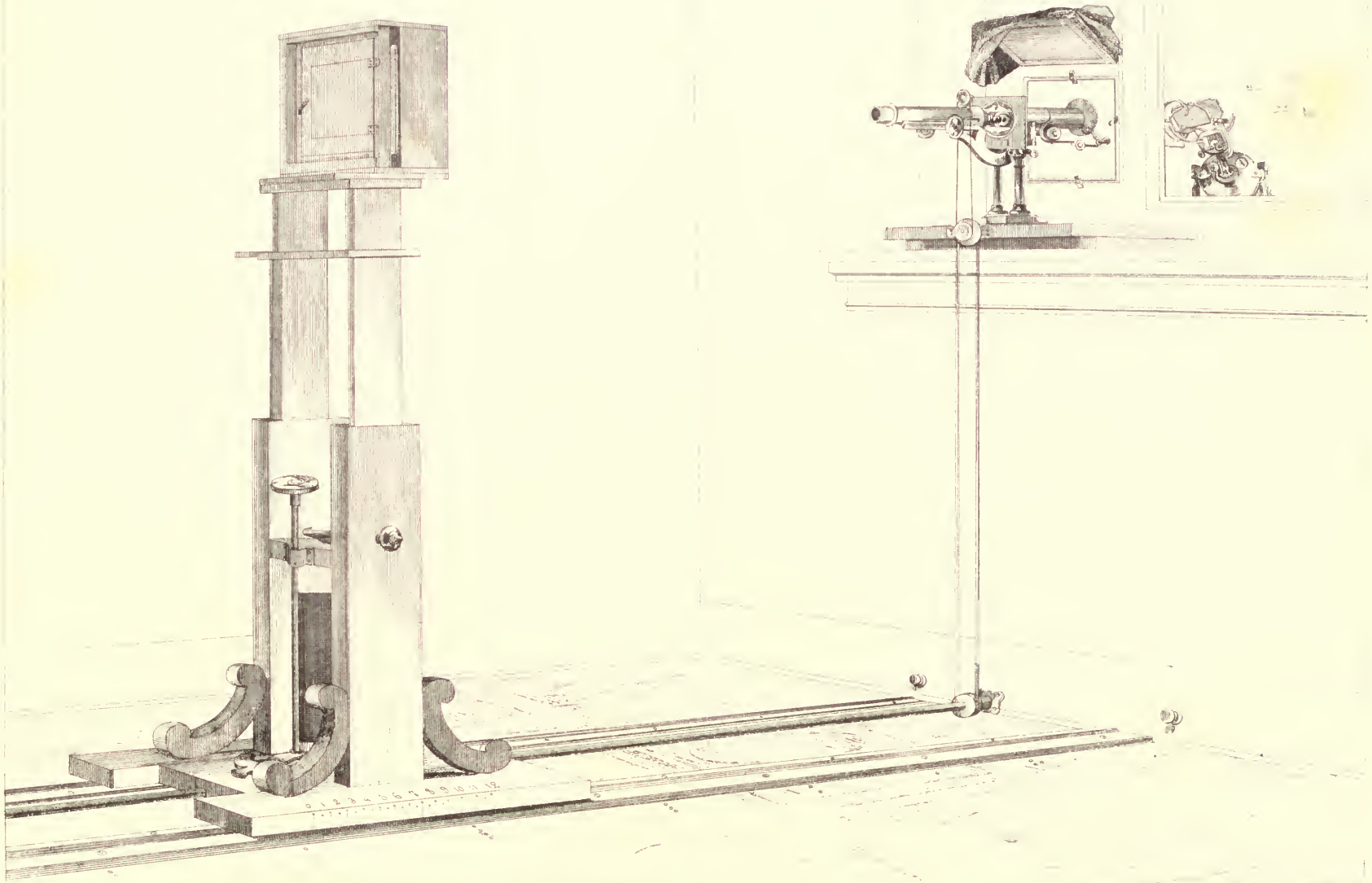
2053. Sprig of moss, stained with red aniline. For low and moderate powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2054. Transverse sections of leaf-bud of maple, stained with carmine. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2055. Horizontal section of leaf of *Filix mas,* exposing the under surface of the leaf, stained with blue aniline. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2056. Same as specimen **2055,** containing three sections; central piece stained with carmine, the others with red aniline. For low and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.

2057. Enveloping membrane of seed of ivy. For moderate and high powers.
Assistant Surgeon J. S. Billings, U. S. Army.



Part Second.

PHOTOGRAPHIC NEGATIVES OF MICROSCOPIC OBJECTS.

NOTE —These negatives are on sheets of plate glass seven inches square, and were prepared in the Microscopical Department of the Museum by Assistant Surgeon Edward Curtis, U. S. Army, mainly from the Museum Cabinet of Specimens. Most of them have been photographed by means of the object-glasses of the microscope alone; but, in some cases, where great amplification has been desired, the power of the objective has been increased by inserting a concave lens, properly corrected, ("amplifier"), into the body of the microscope in the position usually occupied by the eyepiece. In some of the earlier negatives also, the ordinary eyepieces were used in conjunction with the object-glass. In each case the particular objective or combination used, and the number of diameters that the object appears magnified, are given in the description of the negative.

The rationale of the process employed in the production of these negatives is as follows: To secure a perfectly steady and at the same time an intense light, the direct rays of the sun are reflected upon the plane mirror of the microscope from the mirror of a Silbermann's heliostat. The beam so obtained is thrown upon a piece of greased ground glass inserted into the short body of the microscope below the achromatic condenser. An intense "white cloud" illumination is thus obtained, perfectly free from the spectral interference lines that would result from the use of the unmodified rays of the sun, and so steady as to allow of long exposures with the high powers.* The object upon the stage of the microscope, illuminated by this light—condensed, if necessary, by an achromatic condenser below the stage—is magnified by the object-glass of the instrument; and the image so formed, being brought to a focus upon the plane of the surface of the sensitive plate, yields the photographic impression. In order to insure perfect *photographic* sharpness of definition in the object-glass, the objectives used for photography are specially corrected so as to bring to one focus the rays in the violet end of the spectrum, where the actinic power resides, instead of mean white light, as is the case with ordinary achromatic objectives. Violet light alone is then used to illuminate the object, this being obtained practically pure by interposing in the solar beam reflected from the mirror a shallow cell, with plate glass sides, containing a solution of the ammonio-sulphate of copper. Sharp photographic definition is thus secured, and at the same time, since the visual and chemical foci are here identical, the source of error encountered in the use of ordinary objectives, from the want of coincidence between these two foci, is entirely obviated. The blue copper solution is also of use in absorbing the heat rays of the solar beam. The concave amplifiers used in combination with the objectives are also specially corrected for violet light.†

*On certain objects, with very low powers, and on some of the finely marked diatoms, with very high powers, the ground glass may be advantageously omitted and the direct rays of the sun used.

†The objectives and amplifiers of this description are those mentioned in the Catalogue as made by Mr. Wales; those of other makers that have been used are the ordinary achromatic lenses.

The apparatus devised and in present use at the Museum is figured in the plate facing the preceding page. For the sake of convenience a camera-box and table are dispensed with, and the operating room, having a window facing to the south, is itself converted into a camera by wooden shutters on the inside of the window, sufficient non-actinic light to enable the operator to move about freely being admitted through yellow panes in a sashed door. A small yellow pane is also let into one of the window shutters to enable the operator to watch the sky during an exposure and see when clouds are about to obscure the sun. The microscope, with its body in a horizontal position, stands on a shelf on the inner window sill, its feet fitting into brass cleets to insure accuracy of position. Covering the portion of the window towards which the microscope points is a stout immovable shutter, having a square opening to receive a movable piece which fits into it with a rebate and is held in position by four wooden buttons. An aperture is cut in this movable shutter (see fig. 1) of the same diameter as the short body of the microscope and in a direct line with it; and a light tight connection is made between the two by a sliding brass tube (*b*) fitted to the shutter. This aperture can be opened and closed at will, to make the exposures, by a brass plate (*c*) playing over the outer face of the shutter on a pivot, which, passing through the shutter, is worked by a handle (*d*) from within the room. This brass plate is sunk into a shallow space cut in the shutter so as not to project beyond its surface. Over the plate and covering the aperture is fastened the glass cell (*e*) containing the blue copper solution. Immediately below the edge of this cell a piece of brass tubing (*f*), thirteen inches long, is screwed to the shutter, carrying at its extremity the microscope mirror (*g*) accurately centred opposite the aperture in the shutter. This mirror is adjustable from within the room by means of two steel rods (*h h*) attached to its framework by ball and socket joints, and projecting into the room through small holes in the shutter. One of these rods moves the mirror upon its vertical, the other upon its horizontal axis. The heliostat stands on an iron shelf outside the window, in such a position that its mirror is a few inches only distant from the microscope mirror and in a northwesterly direction from it.

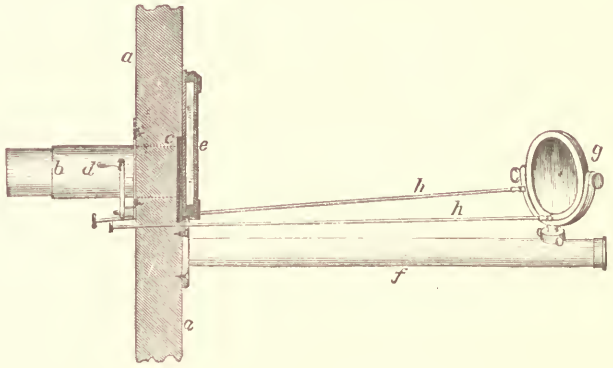


FIG. 1. Section of movable shutter, with apparatus attached: *a*, shutter; *b*, sliding brass tube to join the short body of the microscope; *c*, brass plate to close the aperture in the shutter; *d*, handle to work the same from within the room; *e*, glass cell containing the blue copper solution; *f*, brass tube carrying the microscope mirror; *g*, mirror; *h h*, steel rods to adjust the mirror from within the room.

The frame for the plate-holder, instead of standing upon a table, is supported upon a narrow walnut car, running upon an iron track ten feet long, laid upon the floor at right angles to the plane of the window (see plate). This car consists essentially of a base made of four pieces of wood joined together so as to leave an opening in the centre eight inches square, and two stout uprights, connected by a crosspiece, which rise from the side pieces of this base and have a ∨-shaped way cut on their inner faces to receive the sliding sides of the top of the car. This top can thus be adjusted

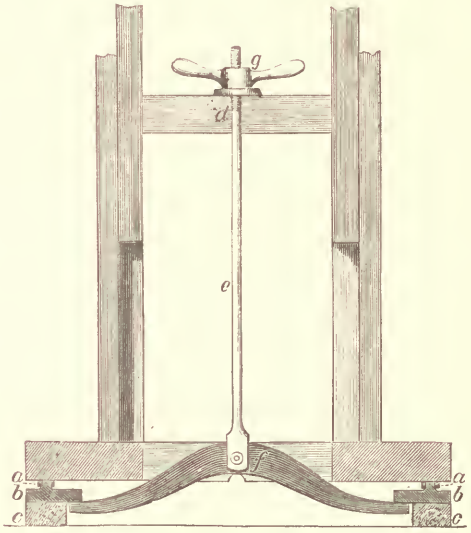


FIG. 2. Transverse section of car and track, to show the rails and the apparatus for clamping the car to the same: *a a*, small brass wheels, grooved; *b b*, flat iron rails, with ∧-shaped projection to fit the groove in the wheels; *c c*, wooden rails; *d*, crosspiece connecting the sides of the car; *e*, vertical iron rod passing through the same; *f*, cast-iron crosspiece to clamp under the iron rails; *g*, screw nut, with handles, to elevate the same.

to any height, and clamped in position by wooden binding screws, so that negative plates of different sizes may be used, if desired, and centred to the axis of the microscope body. The track (see fig. 2) consists of two wooden rails (*c c*) an inch high, screwed to the floor, upon which in turn are screwed flat iron rails (*b b*) whose inner edges project half an inch beyond the wooden rails. These iron rails are cast with a ∧-shaped projection on their upper faces and the base of the car is furnished with small brass wheels (*a a*) correspondingly grooved to run on these projections. The car can be firmly fixed upon the track at any position by the following means (see fig. 2): Through a hole in the centre of the crosspiece (*d*) connecting the sides of the car, runs a vertical iron rod (*e*), supporting at its lower extremity a cast iron crosspiece with flat ends (*f*), which hangs transversely to the direction of the track through the central opening in the base of the car. The ends of this crosspiece reach under the projecting inner edges of the flat iron rails (*b b*) and are made to clamp against their under surfaces by a nut with handles (*g*) screwing on the upper part of the iron rod, and binding on an iron washer on the wooden crosspiece (*d*) through which the rod runs. The car can thus be fixed upon the track at any distance from the microscope within ten feet, and the distance that the surface of the negative is from the stage of the microscope in any given position of the car is determined by a scale of feet laid off upon the floor close to one of the rails, and a scale of inches on the side of the base of the car. (See plate.)

To obtain the final focus of the image upon the plate in the plate-holder, the following contrivance is used (see fig. 3): A perfectly straight cylindrical iron shaft (*a*) runs the entire length of the track, midway between the two rails, and at such a height as just to clear a groove on the under surface of the base of the car. This shaft has a shallow square groove cut in it along its entire length, and is supported at each extremity by brass bearings, attached to the floor, in which it turns freely. To the posterior crosspiece of the base of the car is fastened a bent brass bearing (*b*), projecting into the square opening in the base of the car and supporting two bevel gear wheels (*c*) working into each other. The upper and horizontal one of these wheels is turned by a vertical iron rod (*d*) attached to it, which is furnished at its upper extremity with a large milled head (*e*) and is supported by a collar (*f*) attached to the crosspiece connecting the sides of the car. The lower and vertical wheel is pierced to allow the passage of the long shaft (*a*), and from the surface of the bore a small square iron tongue projects, exactly fitting the longitudinal groove in the shaft. By this means, no matter what may be the position of the car upon the track, the operator can rotate the shaft (*a*) through the pressure of this tongue upon the sides of the groove, by turning the milled head (*e*) connected with the bevel wheels. At the same time the car can be moved freely over the track, the iron tongue running smoothly to and fro in the groove of the shaft. This long shaft (*a*) is made to turn the fine adjustment wheel of the microscope by the following means (see plate): Attached to the edge of the shelf upon which the microscope stands is a short iron axle parallel to the grooved shaft below, which turns freely in two flat brass bearings, and supports two wheels. One of these, a small brass wheel,

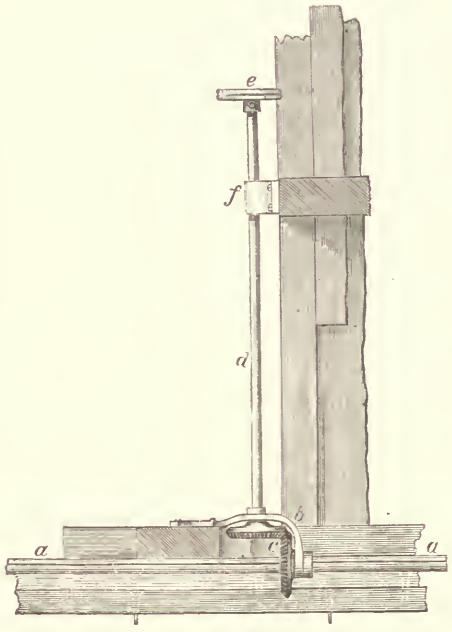


FIG. 3. Longitudinal section of posterior half of car, to show the apparatus for obtaining the focus of the image upon the plate in the plate-holder: *a*, grooved iron shaft running the whole length of the track and passing under the car; *b*, bent brass bearing supporting two bevelled gear wheels; *c*, bevelled gear wheels; *d*, vertical iron rod attached to the upper wheel; *e*, milled head on the upper extremity of the same; *f*, collar to support the iron rod.

is grooved and connected by a silk thread, removable at pleasure, with the fine adjustment wheel of the microscope, which is also grooved. The other, a large wooden wheel, is connected permanently by a flat leathern band with a similar wheel attached to the long iron shaft below.

The steps in the process of photographing by the above described apparatus are as follows: The movable shutter, with the apparatus attached, is buttoned in position, the heliostat set in place on the shelf outside the window and properly adjusted so as to throw the rays reflected from its mirror upon the microscope mirror at the extremity of the rod on the shutter. The window shutters may now be closed and need not again be opened. The microscope is then placed in the proper position upon the shelf inside the window, and the silk thread adjusted which connects the fine adjustment wheel with the wheel on the edge of the shelf. The operator then, sitting on a stool in front of the microscope and inserting an eyepiece, views the object as in the ordinary use of the instrument. This he is enabled to do without discomfort or injury to the eye, since the light transmitted by the solution of the ammonio-sulphate of copper, though *photographically* intense, is *luminously* comparatively feeble, and is also deprived of a large proportion of its heat rays in its passage through that medium. While thus seated at the microscope the operator makes the necessary adjustments of the stage, achromatic condenser, diaphragms, &c., having perfect control of the illumination by means of the steel rods attached to the mirror without the window and projecting into the room through the shutter. While making these adjustments he commands the fine adjustment wheel by the fingers in the usual way, the wheel readily slipping under the thread that connects it with the wheel on the shelf below. These adjustments being made and the best view and proper illumination of the object secured, the eyepiece is removed, and a black velvet hood, attached around the edges of a hinged shelf projecting from the shutter (see plate), is lowered so as to envelope all of the microscope but its body, thus preventing any leakage of light by the side of the objective. The operator now goes to the car, adjusts its position, noting its distance from the microscope by the scale on the floor and side of the base of the car, as already described, and clamps it firmly in place. He then sits down behind it and receives the image upon the surface of a piece of plate glass held in the plate-holder, viewing it with an eyepiece held against the glass plate, whose focus corresponds exactly with the anterior surface of this plate. He next turns the milled head that operates on the apparatus for turning the fine adjustment wheel of the microscope, until the image, viewed as just described, appears in exact focus upon the surface of the plate-glass screen. The aperture in the shutter is then closed by means of the brass plate with handle inside the room, the sensitive plate substituted for the plate-glass screen in the plate-holder, and the exposure made by opening and closing the aperture in the movable shutter by the means already described. The time of the exposure is noted by the beats of a metronome, adjusted to strike at second intervals, the dimness of the yellow light in the room rendering the use of a watch inconvenient. Having obtained the negative, a stage micrometer is substituted for the object photographed, and its divisions, as projected upon a piece of ground glass held in the plate-holder, are carefully traced upon paper. By comparing these with a standard scale, the exact amplification of the object, as represented in the negative, is readily calculated. Other negatives, representing the same magnifying power, can then be taken at any time by using the same objective and placing the car at the same distance from the microscope. The ordinary wet collodion process is the one used in the preparation of the negatives.

I. CONNECTIVE TISSUE SYSTEM.

(SUBDIVISIONS SAME AS IN PART FIRST.)

A. Connective Tissue Proper.

A. From Man.

57. **A. 1.** View of portion of connective tissue layer of intestine, showing connective tissue corpuscles with anastomosing processes, and faintly striated intercellular substance.
Magnified 238 diameters; $\frac{1}{3}$-inch objective (Wales).

For other illustrations, see **VII.** I. c. 2 *and* 3.

C. Pathological.

147. **C. 1.** View of portion of connective tissue layer of small intestine in the vicinity of an ulcerated Peyer's patch, from a case of camp fever, showing active multiplication by division of the connective tissue corpuscles.
Magnified 106 diameters; $\frac{1}{10}$-inch objective (Wales).
Photographed from Specimen **449,** *Part First,* **VII.** H. c. 8.

For other illustrations, see **VII.** H. c. 4.

D. Adipose Tissue.

A. From Man.

See **II.** A. A. 1.

II. EXTERNAL TEGUMENTARY SYSTEM.

(SUBDIVISIONS SAME AS IN PART FIRST.)

A. Skin.

A. From Man.

2. A. 1. View from perpendicular section of scalp of negro, giving a bird's-eye view of the positions and relations of the various structures of the scalp, and panniculus adiposus.
Magnified 22 diameters; 1½-inch objective (Zentmayer).
Photographed from Specimen **1206,** *Part First,* **II.** A. A. 1.

3. A. 2. Portion of hair and follicle in section of scalp. The walls of the follicle have shrunk away from the hair.
Magnified 250 diameters; $\frac{1}{16}$-inch objective (Tolles).
Photographed from the same Specimen as **A. 1.**

4. A. 3. View from section of scalp, showing an arrector pili muscle dividing to embrace a sebaceous gland.
Magnified 150 diameters; $\frac{1}{5}$-inch objective (Tolles).
Photographed from the same Specimen as **A. 1.**

5. A. 4. View from section of scalp, showing an arrector pili muscle in its course through the skin.
Magnified 500 diameters; $\frac{1}{10}$-inch objective (Tolles) and eyepiece.
Photographed from the same Specimen as **A. 1.**

16. A. 5. View from perpendicular section of skin from sole of foot, showing the thick epidermis, papillæ, corium, sudoriparous glands and ducts.
Magnified 28 diameters: 1½-inch objective (Zentmayer) and eyepiece.
Photographed from Specimen **1171,** *Part First,* **II.** A. A. 6.

C. Hairs.

A. From Man.

115. A. 1. Human hair from head of white child, showing the overlapping epidermic scales.
Magnified 370 diameters; ⅛-inch objective (Wales).
Photographed from Specimen **114,** *Part First,* **II.** C. A. 2.

116. A. 2. Transverse section of hair from pubes of adult white male, showing the cuticle, cortex, and medullary substance in section.
Magnified 370 diameters; ⅛-inch objective (Wales).
Photographed from Specimen **1288,** *Part First,* **II.** C. A. 9.

For other illustrations, see **II.** A. A. 1 *and* 2.

B. From Animals.

117. B. 1. Two hairs, one large and one small, from polar bear.
Magnified 370 diameters; ⅛-inch objective (Wales).

118. B. 2. White hairs from body of cat.
Magnified 370 diameters; ⅛-inch objective (Wales).
Photographed from Specimen **1296,** *Part First,* **II.** C. B. 3.

119. Hairs from back of bat (*Nyctinomus nasutus*).
B. 3. Magnified 370 diameters; ⅛-inch objective (Wales).
Photographed from Specimen **1366,** *Part First.* **II.** C. B. 5.

For other illustrations, see **XVI.** B. 1.

D. Cutaneous Glands.

A. From Man.

See **II.** A. A. 1, 3 *and* 5.

III. MUSCULAR SYSTEM.

(SUBDIVISIONS SAME AS IN PART FIRST.)

A. Smooth Muscle.

A. From Man.

See **II.** A. A. 3 *and* 4.

B. Striped Muscle.

B. From Animals.

62. Portion of striped muscle of chicken, showing the individual muscular fibres, with their transverse
B. 1. striæ.
Magnified 250 diameters; ⅛-inch objective (Wales) and amplifier (Tolles).
See Part First, **III.** B. B. 12 *and* 13.

63. Single striped muscular fibre of chicken, showing the transverse striæ.
B. 2. Magnified 250 diameters: ⅛-inch objective (Wales) and amplifier (Tolles).
See Part First, **III.** B. B. 12 *and* 13.

102. Striped muscular fibre of mouse, showing the transverse striæ and the nuclei of the sarcolemma.
B. 3. Magnified 337 diameters; ⅛-inch objective (Wales).
Photographed by Assistant Surgeon J. J. Woodward, U. S. Army.
Photographed from Specimen **1104,** *Part First,* **III.** B. B. 11.

125. Same object as **B. 3.** The nuclei of the sarcolemma are better defined, though the striæ are fainter.
B. 4. Magnified 370 diameters; ⅛-inch objective (Wales).

C. Pathological.

See **XV.** A. B. 1 *to* 3.

IV. OSSEOUS SYSTEM.

(SUBDIVISIONS SAME AS IN PART FIRST.)

A. Cartilage and Perichondrium.

B. From Animals.

6. B. 1. View from section of articular cartilage from knee joint of ox, showing multiplication by division of the cartilage cells and nuclei within the capsules.
Magnified 250 diameters; $\frac{1}{10}$-inch objective (Tolles).
Photographed from Specimen **1012**, *Part First*, **IV.** A. B. 3.

7. B. 2. View from section of articular cartilage from knee joint of ox, showing several young cartilage cells still enclosed in one capsule. The outlines of the capsule are not well defined.
Magnified 216 diameters; $\frac{1}{10}$-inch objective (Tolles) and eyepiece.
Photographed from the same Specimen as **B. 1.**

81. B. 3. View from section of rib cartilage of calf, showing single mononucleated cartilage cells in their capsules.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from Specimen **931**, *Part First*, **IV.** A. B. 7.

85. B. 4. Same subject as **B. 3**, illustrating the first step in cell-multiplication. Near the centre of the field is a cartilage cell containing two young nuclei in close juxtaposition, produced by division of the parent nucleus.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from the same Specimen as **B. 3.**

86. B. 5. Same subject as **B. 3**, illustrating the commencement of the second step in cell-multiplication. As in **B. 4**, there is a single cell with two nuclei, but the nuclei are here widely separated, and the cell itself is ready to divide.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from the same Specimen as **B. 3.**

87. B. 6. Same subject as **B. 3**, illustrating the second step in cell-multiplication. The cell has now divided, and two cells, each with its nucleus, are seen enclosed in a single capsule.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from the same Specimen as **B. 3.**

88. B. 7. Same subject as **B. 3**, illustrating the commencement of the third step in cell-multiplication. Four young cells are seen still enclosed in one capsule, but the latter is commencing to subdivide.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from the same Specimen as **B. 3.**

89. B. 8. Same subject as **B. 3**, illustrating the third and last step in cell-multiplication. The capsule has divided, and young cells, each with nucleus and capsule of its own, are seen in various degrees of separation from each other.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from the same Specimen as **B. 3.**

103. B. 9. View from section of rib cartilage of calf, showing a group of young cartilage cells.
Magnified 337 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed by Assistant Surgeon J. J. Woodward, U. S. Army.
Photographed from Specimen **930**, *Part First*, **IV.** A. B. 7.

B. Bone.

A. From Man.

19. A. 1. View from longitudinal section of shaft of femur, showing the lacunæ and canaliculi of the compact substance.
Magnified 178 diameters; $\frac{1}{6}$-inch objective (Tolles) and eyepiece.
Photographed from Specimen **1063,** *Part First,* **IV.** B. A. 2.

20. A. 2. View from transverse section of shaft of femur, showing the Haversian systems and the lamellar structure of the compact substance.
Magnified 178 diameters; $\frac{1}{6}$-inch objective (Tolles) and eyepiece.
Photographed from Specimen **1080,** *Part First,* **IV.** B. A. 7.

126. A. 3. View from transverse section of shaft of humerus, showing the Haversian systems, lacunæ and canaliculi, in the compact substance.
Magnified 180 diameters; $\frac{4}{10}$-inch objective (Wales).

127. A. 4. View from longitudinal section of shaft of femur, showing lacunæ and canaliculi.
Magnified 180 diameters; $\frac{4}{10}$-inch objective (Wales).
Photographed from Specimen **1063,** *Part First,* **IV.** B. A. 2.

C. Pathological.

26. C. 1. View from transverse section of portion of compact substance of shaft of human femur, from a case of osteomyelitis, showing large cavities produced in the bone by ulceration, apparently starting from the walls of the Haversian canals.
Magnified 38 diameters; 1½-inch objective (Wales).
Photographed from Specimen **1073,** *Part First,* **IV.** B. C. 1.

F. Synovial Membranes.

A. From Man.

59. A. 1. View of synovial fringes from finger joint with transparent carmine injection, showing the capillary loops.
Magnified 105 diameters; $\frac{4}{10}$-inch objective (Wales).
Photographed from Specimen **1059,** *Part First,* **IV.** F. A. 1.

V. VASCULAR SYSTEM.

(SUBDIVISIONS SAME AS IN PART FIRST.)

H. Blood and Lymph.

A. From Man.

64. A. 1. Human blood corpuscles. Water was added to the blood and many of the corpuscles are crenated.
Magnified 457 diameters; $\frac{1}{8}$-inch objective (Wales).

65. A. 2. Human blood corpuscles, dried on a slide. Taken a little out of focus so as to show the corpuscles with a dark centre and light border.
Magnified 750 diameters; $\frac{1}{8}$-inch objective (Wales).

66. A. 3. Human blood corpuscles, dried on a slide. Taken in exact focus.
Magnified 1416 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).

122. A. 4. Human blood corpuscles, dried on a slide. Taken a little out of focus, like **A. 2**, so as to show a dark centre with a light border.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).

See Part First, **V.** II. A. 1.

B. From Animals.

123. B. 1. Blood corpuscles of pigeon, dried on a slide.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from Specimen **387,** *Part First,* **V.** II. B. 1.

124. B. 2. Blood corpuscles of frog, dried on a slide.
Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
See Part First, **V.** II. B. 2.

VI. NERVOUS SYSTEM.

(SUBDIVISIONS SAME AS IN PART FIRST.)

D. Spinal Cord.

B. From Animals.

22. B. 1. Three isolated multipolar nerve cells, with their processes attached, from spinal cord of calf.
Magnified 180 diameters; $\frac{1}{10}$-inch objective (Wales).
Photographed from Specimen **1558,** *Part First,* **VI.** D. B. 11.

VII. DIGESTIVE ORGANS.

(SUBDIVISIONS SAME AS IN PART FIRST.

H. Small Intestine.

B. From Animals.

90. B. 1. Four villi from small intestine of mouse, with transparent carmine injection, showing the capillary loops in the villi.
Magnified 84 diameters; $\frac{4}{10}$-inch objective (Wales).
Photographed (by the electric light) from Specimen **591,** *Part First,* **VII.** H. B. 21.

C. Pathological.

91. C. 1. View from perpendicular section of human ileum, showing enlargement and protrusion of the solitary glands. The section passes a little to one side of the centres of the glands.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **417,** *Part First,* **VII.** H. C. 1.

19. C. 2. Same subject as C. 1, the section passing through the centres of the glands.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **421,** *Part First,* **VII.** H. C. 1.

93. C. 3. View from perpendicular section of human ileum, showing a thickened and protuberant Peyer's patch, which has entirely lost its glandular structure.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **1688,** *Part First,* **VII.** H. C. 5.

58. C. 4. View from perpendicular section of human ileum, showing the minute anatomy of the diseased condition exhibited in C. 3. The view embraces the connective tissue layer of the intestine and portion of the altered Peyer's patch, and shows active cell-multiplication of the connective tissue corpuscles and degeneration of the Peyer's patch into a confusedly granular mass.
Magnified 105 diameters; $\frac{4}{10}$-inch objective (Wales).
Photographed from Specimen **416,** *Part First,* **VII.** H. C. 6.

47. C. 5. View from perpendicular section of human ileum, showing commencing ulceration in the glands of a Peyer's patch, and thickening of the submucous connective tissue.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **117,** *Part First,* **VII.** H. C. 8.

48. C. 6. View from perpendicular section of human ileum, showing various stages of ulceration of the glands of a Peyer's patch.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **455,** *Part First,* **VII.** H. C. 8.

23. C. 7. View from same object as C. 6.
Magnified 33 diameters; 1½-inch objective (Zentmayer) and eyepiece.

24. C. 8. View from same object as C. 6.
Magnified 37 diameters; $\frac{8}{10}$-inch objective (Zentmayer).

25. C. 9. View from perpendicular section of human ileum, showing two excavated glands of a Peyer's patch at the point of rupture.
Magnified 35 diameters; $\frac{8}{10}$-inch objective (Zentmayer).
Photographed from Specimen **457,** *Part First,* **VII.** H. C. 9.

27. View from perpendicular section of human ileum, showing several glands of a Peyer's patch softened
C. 10. and disintegrated in their centres.
Magnified 26 diameters; 1½-inch objective (Zentmayer) and eyepiece.
Photographed from Specimen **465**, *Part First*, **VII.** II. c. 10.

46. View from perpendicular section of human ileum, showing a deep smooth ulcer in a Peyer's patch
C. 11. extending down to the muscular coat of the intestine.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **466**, *Part First*, **VII.** II. c. 11.

29. View from perpendicular section of human ileum, embracing the same ulcer as **C. 11**.
C. 12. Magnified 35 diameters; $\frac{8}{10}$-inch objective (Zentmayer).
Photographed from Specimen **467**, *Part First*, **VII.** II. c. 11.

27. View of one lateral half of same object as **C. 12**.
C. 13. Magnified 66 diameters; $\frac{8}{10}$-inch objective (Zentmayer) and eyepiece.

28. Duplicate of **C. 13**.
C. 14.

113. View from perpendicular section of human ileum, close to an excavating ulcer, showing part of the
C. 15. connective tissue layer eroded. Also a solitary gland commencing to soften.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **1715**, *Part First*, **VII.** II. c. 12.

115. View from another section of the same series as **C. 15**, passing through the centre of the excavating
C. 16. ulcer, and showing a point of ulceration in the centre of the solitary gland.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **1717**, *Part First*, **VII.** II. c. 12.

116. View from another section of the same series as **C. 15** and **16**, showing the excavating ulcer as in
C. 17. **C. 16**, and an established ulcer in the solitary gland.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **1750**, *Part First*, **VII.** II. c. 12.

130. View from another section of the same series as **C. 15**, showing the excavating ulcer.
C. 18. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **1756**, *Part First*, **VII.** II. c. 12.

45. View from perpendicular section of human ileum, showing a typhoid ulcer of a Peyer's patch in process
C. 19. of healing.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **171**, *Part First*, **VII.** II. c. 14.

I. Large Intestine and Cloaca.

C. Pathological.

32. View from perpendicular section of human colon, showing slight thickening of the connective tissue layer.
C. 1. Magnified 12 diameters; 1½-inch objective (Zentmayer) with the front lens removed.
Photographed from Specimen **638**, *Part First*, **VII.** I. c. 1.

31. View from same object as **C. 1**, more highly magnified, showing commencing cell-multiplication in the
C. 2. submucous connective tissue.
Magnified 35 diameters; $\frac{8}{10}$-inch objective (Zentmayer).

14. View from same object as **C. 1**, more highly magnified. Similar to **C. 2**.
C. 3. Magnified 56 diameters; $\frac{8}{10}$-inch objective (Zentmayer) and eyepiece.

15. View from same object as **C. 1.** embracing the lower portion of the mucous, and upper portion of the
C. 4. connective tissue layers.
Magnified 260 diameters, $\frac{1}{5}$-inch objective (Tolles) and eyepiece.

34. View from perpendicular section of human colon, showing two enlarged solitary glands.
C. 5. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **650,** *Part First,* **VII.** I. c. 3.

38. View from perpendicular section of human colon, showing two solitary glands, one considerably
C. 6. enlarged.
Magnified 12 diameters: 3-inch objective (Wales).
Photographed from Specimen **656,** *Part First,* **VII.** I. c. 5.

37. View from perpendicular section of human colon, showing commencing ulceration over the summits of
C. 7. several solitary glands.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from a Specimen belonging to the series, **VII.** I. c. 5, *which has since spoiled and is not catalogued.*

39. View from perpendicular section of human colon, showing commencing ulcers. same as in **C. 7.**
C. 8. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **658,** *Part First,* **VII.** I. c. 5.

40. View from perpendicular section of human colon, showing shallow ulceration of the mucous membrane
C. 9. around a solitary gland.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **662,** *Part First,* **VII.** I. c. 6.

30. View from perpendicular section of human colon, showing a small excavating ulcer and wide shallow
C. 10. ulcers of the mucous coat.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **683,** *Part First,* **VII.** I. c. 12.

43. View from another section of the same series as **C. 10,** passing nearer the centre of the small excavating
C. 11. ulcer.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **681,** *Part First,* **VII.** I. c. 12.

91. Duplicate of **C. 11.**
C. 12.

8. View of the small ulcer represented in **C. 11,** more highly magnified.
C. 13. Magnified 33 diameters: $\frac{8}{10}$-inch objective (Zentmayer).

9. Duplicate of **C. 13.**
C. 14.

10. Same as **C. 13,** more highly magnified.
C. 15. Magnified 75 diameters; $\frac{8}{10}$-inch objective (Zentmayer) and eyepiece.

41. View from perpendicular section of human colon, showing a deep wide ulcer extending down to the
C. 16. muscular coat, a shallow ulcer of the mucous coat, and an excavated ulcer of the connective tissue layer.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **687,** *Part First,* **VII.** I. c. 14.

92. View from perpendicular section of human colon, showing deep ragged ulcers of the mucous and
C. 17. connective tissue layers.
Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **1535,** *Part First,* **VII.** I. c. 16.

36. View from perpendicular section of human colon, showing deep and extensive ulcers.
C. 18. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **694,** *Part First.* **VII.** I. c. 17.

12. View from perpendicular section of human colon, showing deep and extensive ulcers.
C. 19. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **711**, *Part First*, **VII.** I. c. 19.

11. View from perpendicular section of human colon, showing deep and extensive ulcers.
C. 20. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **712**, *Part First*, **VII.** I. c. 19.

79. View from perpendicular section of human colon, showing great thickening and so-called pseudo-membranous exudation.
C. 21. Magnified 12 diameters; 3-inch objective (Wales).
Photographed from Specimen **731**, *Part First*, **VII.** I. c. 22.

148. View of portion of mucous membrane of the same section as **C. 21**, showing the minute anatomy of the pathological changes in that tissue.
C. 22. Magnified 106 diameters; $\frac{1}{10}$-inch objective (Wales).

K. Liver and Gall-Bladder.

B. From Animals.

17. View from section of liver of sheep, injected, showing the capillaries of the lobules.
B. 1. Magnified 24 diameters; 1½-inch objective (Zentmayer) and eyepiece.
Photographed from Specimen **859**, *Part First*, **VII.** K. B. 2.

18. Same object as **B. 1.**
B. 2. Magnified 48 diameters; $\frac{8}{10}$-inch objective (Zentmayer) and eyepiece.

L. Chemical Constituents of Bile.

A. From Man.

See **XIV.** D. A. 1 *and* 2.

VIII. RESPIRATORY ORGANS.

(SUBDIVISIONS SAME AS IN PART FIRST.)

C. Lungs, Gills and Air-Bladder.

B. From Animals.

97. View from preparation of lung of toad, with transparent carmine injection, showing the capillary networks in the walls of the air vesicles.
B. 1. Magnified 30 diameters; 3-inch objective (Wales).
Photographed from Specimen **842**, *Part First*, **VIII.** C. B. 3.

XIV. PATHOLOGICAL GROWTHS.

(SUBDIVISIONS SAME AS IN PART FIRST.)

D. Cholesterine Tumors.

A. From Man.

12. A. 1. View of scrap of a cholesteatoma, showing the tabular plates of cholesterine.
Magnified 190 diameters; ⅓-inch objective (Tolles) and eyepiece.
Photographed from a piece of the same tumor that furnished Specimens **370** *and* **371**, *Part First,* **XIV.** D. A. 1.

13. A. 2. Same subject as **A. 1**, showing cholesterine plates and the hexagonal cells that composed the matrix of the tumor.
Magnified 190 diameters; ⅓-inch objective (Tolles) and eyepiece.

XV. PARASITES.

(SUBDIVISIONS SAME AS IN PART FIRST.)

A. Animal.

A. From Man.

101. A. 1. Human flea (*Pulex irritans*).
Magnified 32 diameters; 1½-inch objective (Zentmayer.)

105. A. 2. Human head louse (*Pediculus capitis*).
Magnified 32 diameters; 1½-inch objective (Zentmayer).

106. A. 3. Itch mite (*Acarus scabiei*).
Magnified 180 diameters; $\frac{4}{10}$-inch objective (Wales).
Photographed from Specimen **1870**, *Part First,* **XV.** A. A. 4.

107. A. 4. Pimple mite (*Demodex folliculorum*).
Magnified 180 diameters; $\frac{4}{10}$-inch objective (Wales).

108. A. 5. Two claws of crab louse (*Phthirius pubis*.)
Magnified 180 diameters; $\frac{4}{10}$-inch objective (Wales).

B. From Animals.

60. B. 1. Encysted *Trichina spiralis* in situ in muscle of mouse.
Magnified 105 diameters; $\frac{4}{10}$-inch objective (Wales).

61. B. 2. *Trichina spiralis* from muscle of mouse.
Magnified 183 diameters; ⅛-inch objective (Wales).

83. B. 3. Encysted *Trichina spiralis* in situ in muscle of mouse.
Magnified 370 diameters; ⅛-inch objective (Wales).
Photographed from Specimen **1116**, *Part First,* **III.** B. C. 5.

XVI. ARTICLES OF FOOD AND CLOTHING, AND MATERIA MEDICA.

(SUBDIVISIONS SAME AS IN PART FIRST.)

A. Articles of Food.

121. Starch grains of arrow-root.
A. 1. Magnified 370 diameters; $\frac{1}{5}$-inch objective (Wales).
Photographed from Specimen **1461,** *Part First,* **XVI.** A. 25.

120. View from section of roasted coffee berry.
A. 2. Magnified 370 diameters: $\frac{1}{5}$-inch objective (Wales).
Photographed from Specimen **1471,** *Part First,* **XVI.** A. 28.

B. Articles of Clothing.

110. White woolen hair.
B. 1. Magnified 370 diameters; $\frac{1}{5}$-inch objective (Wales).
Photographed from Specimen **1877,** *Part First,* **XVI.** B. 1.

111. Tangle of cotton fibres.
B. 2. Magnified 370 diameters; $\frac{1}{5}$-inch objective (Wales).
Photographed from Specimen **1882,** *Part First,* **XVI.** B. 2.

112. Tangle of fibres of flax.
B. 3. Magnified 370 diametres; $\frac{1}{5}$-inch objective (Wales).
Photographed from Specimen **1889,** *Part First,* **XVI.** B. 3.

113. Fibre of silk.
B. 4. Magnified 370 diameters; $\frac{1}{5}$-inch objective (Wales).
Photographed from Specimen **1892,** *Part First,* **XVI.** B. 4.

XVII. DIATOMS AND OTHER TEST OBJECTS.

(SUBDIVISIONS SAME AS IN PART FIRST.)

B. Selected Diatoms.

D. Striatellæ.

133. *Grammatophora*, showing the transverse striæ.
D. 1. Magnified 522 diameters; $\frac{1}{15}$-inch objective (Wales).
Photographed from Specimen **1585,** *Part First,* **XVII.** B. D. 4.

134. Same object as **D. 1**, more highly magnified.
D. 2. Magnified 1291 diameters; $\frac{1}{15}$-inch objective and amplifier (Wales).

F. Coscinodisceæ.

82. *Coscinodiscus omphalanthus.*
F. 1. Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from Specimen **1937,** *Part First,* **XVII.** B. F. 9.

78. *Heliopelta Leeuwenhœkii.*
F. 2. Magnified 235 diameters: $\frac{4}{10}$-inch objective (Wales).
Photographed from Specimen **1937,** *Part First,* **XVII.** B. F. 9.

81. *Heliopelta Leeuwenhœkii.*
F. 3. Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from Specimen **1600,** *Part First,* **XVII.** B. F. 8.

80. *Arachnoidiscus Ehrenbergii.*
F. 4. Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from Specimen **1591,** *Part First,* **XVII.** B. F. 12.

128. Same object as **F. 4**.
F. 5. Magnified 522 diameters: $\frac{1}{15}$-inch objective (Wales).

O. Naviculeæ.

119. *Navicula rhomboides*, with the markings resolved into squares.
O. 1. Magnified 850 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales)
Photographed from Specimen **1942,** *Part First,* **XVII.** B. O. 4.

131. *Navicula serians*, with the markings resolved.
O. 2. Magnified 522 diameters: $\frac{1}{15}$-inch objective (Wales).
Photographed from Specimen **1608,** *Part First,* **XVII.** B. O. 3.

132. *Navicula (Pinnularia) viridis.*
O. 3. Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed from Specimen **1608,** *Part First,* **XVII.** B. O. 3.

129. *Stauroneis*, with the circular bead-like markings perfectly resolved.
O. 4. Magnified 522 diameters; $\frac{1}{15}$-inch objective (Wales).
Photographed from Specimen **1605,** *Part First,* **XVII.** B. O. 10.

99. *Pleurosigma formosum*, with the markings resolved.
O. 5. Magnified 337 diameters; $\frac{1}{8}$-inch objective (Wales).
Photographed by Assistant Surgeon J. J. Woodward, U. S. Army.
Photographed from Specimen **1586,** *Part First,* **XVII.** B. O. 13.

100. Portion of same frustule as **O. 5**, more highly magnified.
O. 6. Magnified 2540 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).
Photographed by Assistant Surgeon J. J. Woodward, U. S. Army.

95. View of slide of *Pleurosigma angulatum*, to show the minute size of the frustules.
O. 7. Magnified 12 diameters; 3-inch objective (Wales).

96. Same object as **O. 7**, more highly magnified.
O. 8. Magnified 118 diameters; $\frac{4}{10}$-inch objective (Wales).

138. *Pleurosigma angulatum*, with the markings resolved into dots on viewing the negative with a lens.
O. 9. Magnified 170 diameters; $\frac{4}{10}$-inch objective (Wales).

139. *Pleurosigma angulatum*, (same frustule as in **O. 9**), with the markings resolved into dots.
O. 10. Magnified 250 diameters; $\frac{1}{5}$-inch objective (Wales).

110. *Pleurosigma angulatum*, (same frustule as in **O. 9**), with the markings resolved into dots.
O. 11. Magnified 370 diameters; $\frac{1}{8}$-inch objective (Wales).

111. *Pleurosigma angulatum*, (same frustule as in **O. 9**), with the markings resolved into dots.
O. 12. Magnified 522 diameters; $\frac{1}{15}$-inch objective (Wales).

137. Portion of valve of *Pleurosigma angulatum*, (same frustule as in **O. 9**), with the markings resolved into
O. 13. perfectly defined circular spots.
Magnified 2540 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).

98. Portion of valve of *Pleurosigma angulatum*, similar to **O. 13**.
O. 14. Magnified 2540 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).
Photographed by Assistant Surgeon J. J. Woodward, U. S. Army.

67. Portion of valve of *Pleurosigma angulatum*, similar to **O. 13**.
O. 15. Magnified 2540 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).

73. Portion of valve of *Pleurosigma angulatum*, (same frustule as in **O. 15**), similar to **O. 15**.
O. 16. Magnified 2344 diameters; $\frac{1}{50}$-inch objective (Powell and Lealand).

75. Portion of valve of *Pleurosigma angulatum*, showing the circular markings four-tenths of an inch in
O. 17. diameter.
Magnified 19050 diameters; enlarged from negative 67 (**O. 15**).

76. Portion of valve of *Pleurosigma angulatum*, similar to **O. 17**.
O. 18. Magnified 19050 diameters; enlarged from negative 73 (**O. 16**).
See Part First, **XVII.** B. o. 15 *to* 17.

101. *Pleurosigma attenuatum*, with the markings resolved.
O. 19. Magnified 337 diameters; $\frac{1}{5}$-inch objective (Wales).
Photographed by Assistant Surgeon J. J. Woodward, U. S. Army.
Photographed from Specimen **1951**, *Part First*, **XVII.** B. o. 20.

C. Other Test Objects.

135. Scales of *Podura*, showing the spikes.
C. 1. Magnified 522 diameters; $\frac{1}{15}$-inch objective (Wales).
Photographed from Specimen **1515**, *Part First*, **XVII.** C. 2.

136. Portion of one of the same scales of *Podura* as in **C. 1**, showing the spikes.
C. 2. Magnified 1650 diameters; $\frac{1}{50}$-inch objective (Powell and Lealand).

112. Scale of *Podura* (same scale as in **C. 2**), showing the spikes.
C. 3. Magnified 1650 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).

146. Scale of *Podura*, showing the spikes perfectly resolved into a dark contour and bright centre.
C. 4. Magnified 1100 diameters; $\frac{1}{8}$-inch objective and amplifier (Wales).

XVIII. MISCELLANEOUS.

1. Crystals of sulphate of lime.
Magnified 17 diameters; 1½-inch objective (Zentmayer).
Photographed from Specimen **2052**, *Part First*, **XVIII.**

109. Portion of eye of fly.
Magnified 180 diameters; $\frac{1}{10}$-inch objective (Wales).

111. Threads of spider's web.
Magnified 370 diameters: $\frac{1}{5}$-inch objective (Wales).

Part Third.

PHOTOMICROGRAPHS PRESENTED TO THE MUSEUM.

1. A volume of thirty-one photomicrographs from negatives taken by Dr. R. L. Maddox, of Southampton, England, representing the following objects—magnifying powers not stated:

Pleurosigma angulatum.
Pleurosigma formosum.
Pleurosigma decorum.
Actinosphœnia splendens.
Actinosphœnia splendens (more highly magnified).
Heliopelta Leeuwenhœkii.
Disc from Barbadoes earth.
Eupodiscus Ralfsii.
Pinnularia.
Navicula didyma.
Transverse section of spine of *Echinus.*
Auliscus ovalis.
Licmophora flabellata.
Male flea of mole.
Female flea of mole.
Male flea of pigeon.
Parasite of martin.
Male parasite of sparrow.
Female parasite of sparrow.
Sycamore leaf insect.
Tongue of drone fly.
Eye of drone fly.
Tongue of blow fly.
Foot of fly.
Spiracle of *Dytiscus.*
Head of female gnat.
Section of tooth of *Myliobatis.*
Seed of *Eccremocarpus.*
Pupa case of gnat.
Larva of gnat.
Blood discs of newt.

Presented by Dr. Maddox.

2. Two stereoscopic photomicrographs from negatives taken by Dr. R. L. Maddox, of Southampton, England, representing the following objects—magnifying powers not stated:

Coscinodiscus radiatus; Biddulphia Rhombus.

Presented by Dr. Maddox.

3. A volume of sixteen photomicrographs from negatives taken by Professor Joseph Gerlach, of Erlangen, Bavaria, representing the following objects:

Blood corpuscles of frog; magnified 250 diameters.
Passage of muscular fibre into tendon; magnified 250 diameters.
Human ovum in situ in Graafian follicle; magnified 50 diameters.
Epithelial scales from cavity of mouth of man; magnified 320 diameters.
Striped muscular fibre of man; magnified 250 diameters.
Axisfibres from white substance of spinal cord of calf, stained with carmine; magnified 250 diameters; printed in carmine.
Human choroid, injected; magnified 25 diameters; printed in carmine.
Section of human cerebellum, stained with carmine; magnified 15 diameters; printed in carmine.
Villi of intestine of cat, injected; magnified 50 diameters; printed in carmine.
Membrana choriocapillaris from human eye, injected; magnified 25 diameters; printed in carmine.
Bile-ducts in human liver, injected with Berlin blue; magnified 120 diameters; printed in aniline blue.
Venous loops in papilla of human kidney, injected with Berlin blue; magnified 50 diameters; printed in aniline blue.

Lymphatic vessels of connective tissue of calf, injected with Berlin blue; magnified 15 diameters; printed in aniline blue.
Transverse section of human bone; magnified 250 diameters.
Smooth muscular fibre of man; magnified 300 diameters.
Human blood corpuscles; magnified 500 diameters; printed in the coloring matter of pig's blood.
Presented by Professor Gerlach.

4. Six photomicrographs of shells of *Foraminifera*, from negatives taken by Count L. F. Pourtales, of Washington, D. C., representing specimens of the following genera—magnifying powers not stated:
Globigerina; Polystomella; Marginulina; Nodosaria; Dentalina.
Presented by Count Pourtales.

5. Seven photomicrographs from negatives taken by Assistant Surgeons William Thomson and W. F. Norris, U. S. Army, representing the following objects—magnifying powers not stated:
Perpendicular section of skin from sole of foot.
Idem, from a different specimen.
Section of human kidney.
Idem, more highly magnified.
Perpendicular section of upper eyelid of negro.
Longitudinal section of shaft of human femur.
Transverse section of the same.
Presented by Assistant Surgeons Thomson and Norris, U. S. Army.

6. Fourteen photomicrographs from negatives taken by Dr. C. F. Crehore, of Boston, Mass., representing the following objects—magnifying powers not stated:
Cornea of rabbit, injected; 3-inch objective (Wales). Photographed by the magnesium light. (Two prints.)
Section of kidney of rabbit, injected; 3-inch objective (Wales). Photographed by the magnesium light.
Tongue of rabbit, injected; 1-inch objective (Tolles). Photographed by the magnesium light.
Same as above; $\frac{1}{10}$-inch objective (Wales). Photographed by the magnesium light.
Transverse section of bone; $\frac{1}{5}$-inch objective (Wales). Photographed by sunlight.
Section of tooth of *Myliobatis;* $\frac{1}{5}$-inch objective (Wales). Photographed by sunlight.
Coscinodiscus; $\frac{1}{5}$-inch objective (Wales). Photographed by the magnesium light uncondensed.
Same as above. Photographed by sunlight.
Tooth of saw-fish; 3-inch objective (Wales). Photographed by the magnesium light.
Branchial foot of *Nereis;* 3-inch objective (Wales). Photographed by the magnesium light.
Coscinodiscus; $\frac{1}{5}$-inch objective (Wales). Photographed by sunlight.
Print from an enlarged transparent positive, copied from the negative of the above by a 3-inch objective (Wales) and the magnesium light.
Origin of the auditory and facial nerves; 3-inch objective (Wales). Photographed by the magnesium light.
Presented by Dr. Crehore.

7. Two photomicrographs from negatives taken by Surgeon H. Culbertson, U. S. Vols., representing the plume of a gnat's wing, and a young spider's claw. Taken with a 1-inch objective—magnifying power not stated.
Presented by Surgeon Culbertson, U. S. Vols.

8. Photomicrograph, from a negative taken by Professor O. N. Rood, of New York, representing a portion of valve of *Pleurosigma angulatum*; magnified 7000 diameters.
Presented by Professor Rood.

9. Photomicrograph from a negative taken by Mr. L. M. Rutherfurd, of New York, representing a scale of *Podura*—magnifying power not stated.
Presented by Mr. Rutherfurd.

10. Six photomicrographs from negatives taken by Mr. J. H. Woodworth, of Dublin, Ireland, representing the following objects:
Isthmia nervosa; magnified 200 diameters.
Triceratium Favus; magnifying power not stated.
Skin of *Synapta;* magnified 40 diameters.
Foot of *Dytiscus;* magnified 20 diameters.
Small sucker from same; magnifying power not stated.
Acarus scabiei; magnifying power not stated.
Presented by Mr. Woodworth.

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OF

PREPARERS OF SPECIMENS

IN THE

MICROSCOPICAL SECTION.

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27	23	**78**	71	**129**	78	**180**	58	**231**	56	**282**	72	**333**	43	**384**	42
28	36	**79**	71	**130**	78	**181**	50	**232**	51	**283**	72	**334**	41	**385**	42
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33	15	**84**	71	**135**	79	**186**	51	**237**	56	**288**	36	**339**	16	**390**	48
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35	17	**86**	72	**137**	79	**188**	54	**239**	56	**290**	64	**341**	87	**392**	48
36	17	**87**	72	**138**	79	**189**	54	**240**	56	**291**	88	**342**	88	**393**	48
37	17	**88**	72	**139**	79	**190**	54	**241**	56	**292**	64	**343**	88	**394**	48
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39	16	**90**	75	**141**	79	**192**	55	**243**	51	**294**	93	**345**	87	**396**	49
40	16	**91**	75	**142**	79	**193**	55	**244**	51	**295**	93	**346**	81	**397**	49
41	16	**92**	80	**143**	79	**194**	59	**245**	59	**296**	92	**347**	88	**398**	49
42	16	**93**	75	**144**	79	**195**	25	**246**	51	**297**	91	**348**	80	**399**	49
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46	59	**97**	75	**148**	79	**199**	49	**250**	51	**301**	91	**352**	36	**403**	15
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48	19	**99**	77	**150**	79	**201**	55	**252**	62	**303**	92	**354**	32	**405**	48
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417	56	495	25	573	52	651	60	729	61	807	62	885	16	963	53
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472	58	550	48	628	59	706	61	784	54	862	63	940	N. C.	1018	82
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474	24	552	48	630	59	708	61	786	54	864	16	942	48	1020	82
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485	25	563	48	641	60	719	61	797	59	875	16	953	48	1031	82
486	25	564	48	642	60	720	61	798	59	876	16	954	53	1032	82

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