

TWO CASES OF ANATOMICAL ANOMALY OF THE LARGE INTESTINE.*

BY SAMUEL ROBINSON, M.D., BOSTON,

Assistant in Anatomy, Harvard Medical School.

A REVIEW of the reported anomalies of the large bowel has convinced me that these two cases are of sufficient rarity to be of interest.

CASE I. Table IV, Female subject. Age, fifty-five years (approximately). A crucial incision with triangular flaps was made, exposing the following conditions: The entire abdominal cavity apparently was filled (Case I, Drawing A) by a large, shining, bluish-colored mass of doughy consistency which proved to be a much distended lower bowel in the region of the sigmoid flexure. Upon delivering this portion from the cavity it was found that the sigmoid flexure might be said to originate at the splenic flexure; that is to say, if we adhere to the definition of the sigmoid, as that portion of the large gut which has retained a free mesentery and is entirely covered by peritoneum. In other words the descending colon had not become adherent posteriorly, thus rendering a differentiation between sigmoid and descending colon impossible. From the splenic flexure to the rectum was this freely movable, much distended and elongated gut with the following dimensions:

Length from splenic flexure to rectum, 5 feet, 6 inches. Diameters of gut, $3\frac{1}{2}$ to 7 inches.

12 inches from splenic flexure, $3\frac{1}{2}$ inches.

2 feet " " " $4\frac{1}{2}$ "

3 " " " " 6 "

4 " " " " 7 "

At beginning of rectum, diameter, 7 inches.

The mesentery of this combined sigmoid and descending colon had not become adherent posteriorly and like the mesentery of the small intestine had a defined line of attachment to the posterior abdominal wall parallel to and about two inches to the left of the attachment of the small gut. The breadths of this descending mesocolon were as follows:

2 inches from splenic flexure, $2\frac{1}{2}$ inches.

6 " " " " 5 "

12 " " " " 7 "

2 feet " " " " 11 "

3 " " " " $7\frac{1}{2}$ "

4 " " " " $7\frac{1}{2}$ "

Although this condition of things in the left abdomen, to which I find nothing similar reported, may be the greater anomaly, a not unlike disturbance of normal relations was found also on the right side. (Case I, Drawing B.)

The last five to six inches of small intestine adjoining the cecum were adherent to the posterior abdominal wall in a line from the right sacro-iliac synchondrosis to the lower border of the right lobe of the liver. (Case I, Drawing B, 6IL.)

The ileum at this portion had lost its posterior peritoneal covering and was consequently subperitoneal. Its position and peritoneal relations then corresponded roughly to those of the normal adult ascending colon.

The cecum was found resting at the upper border of the iliac fossa on the iliac crest. It could be moved upward or inward as far as the adherent last portion of ileum would permit it. The ascending colon which in proportion to its own mobility normally regulates the mobility of the cecum and appendix was, in this case, very movable. The posterior lamella of the ascending mesocolon had not become adherent to the

posterior abdominal wall and the gut was accordingly as movable as the descending colon, which was, as we have seen, also without anchorage. Had it not been for the anchorage of the ileum posteriorly, the cecum, appendix and ascending colon could readily have been swung over to the left of the median line. An adhesion (Drawing B, XYZ) of about 3 inches of the ascending mesocolon to the lower border of the right lobe of the liver supplied a certain amount of anchorage to the first portion of the large intestine, although, as is shown in Drawing B, even this permitted of a marked dislocation of the cecum and appendix from its normal position.

CASE II. Female, probably under ten years. Laboratory specimen at Harvard Medical School from an old dissection. (By permission of Prof. Thomas Dwight.)

I enclose a drawing (C) of this specimen to demonstrate again a case of movable cecum. The small intestine is free as in the normal adult. The posterior surface of the mesentery of the ascending colon, however, has not become adherent to the posterior abdominal wall. The ascending gut has consequently no anchorage, and the cecum and appendix can resultingly be placed artificially in any part of the abdomen.

The descending colon and sigmoid flexure are correspondingly movable, and the mesentery of the entire intestinal tube is free, except for a common median posterior attachment like that of the primitive mesentery of the young embryo.

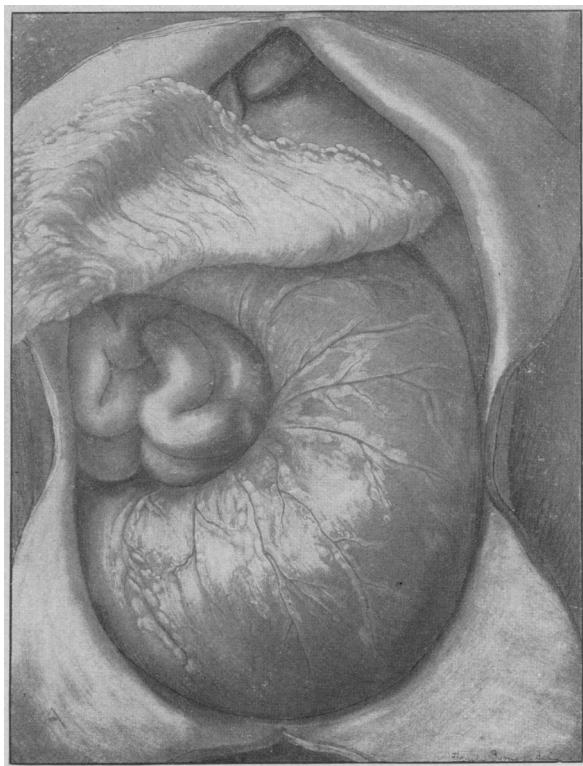
EMBRYOLOGY.

Migration. — In the embryo of about 12 mm. (Minot), there appears, to the left of the median line in the region of the umbilicus, a diverticulum in the digestive tube which is the anlage of the embryonic cecum. The appearance of this outgrowth marks also the ileal end of the large intestine, and from this time on the "caudal" end of the canal increases in diameter and forms the large intestine. The latter lengthens also, but more slowly. At the sixth week the cecal end is lifted as it were (Heisler) over the upper limits and comes to occupy the right hypochondrium; the colon meanwhile passing thence transversely across the abdomen ventral to the duodenum. The colon then appears to grow in a downward direction as a result of which the cecum assumes positions at first under the right lobe of the liver, then in front of the right kidney, and eventually, about the eighth month (Heisler), it passes the crest of the ileum. It is not until about the time of birth that the cecum has completed its migration from its position in the left umbilical region to the right iliac fossa.

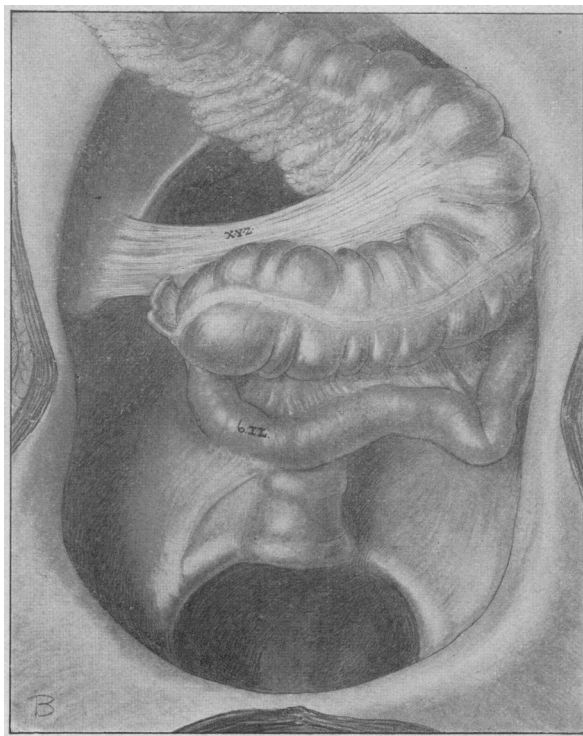
Anchorage. — Either synchronous with or subsequent to the downward growth of the large intestine with the migration of the cecum and the formation of the ascending colon, a process of anchorage goes on, which, though the migration may be complete, is alone responsible for the fixation or mobility of the cecum in its newly attained territory.

In the young embryo the digestive tube has a common mesentery which extends along the gut to a median attachment to the posterior abdominal wall along the vertebral column. After the rolling and lifting from left to right of the large intestine neighboring the cecum, that portion of

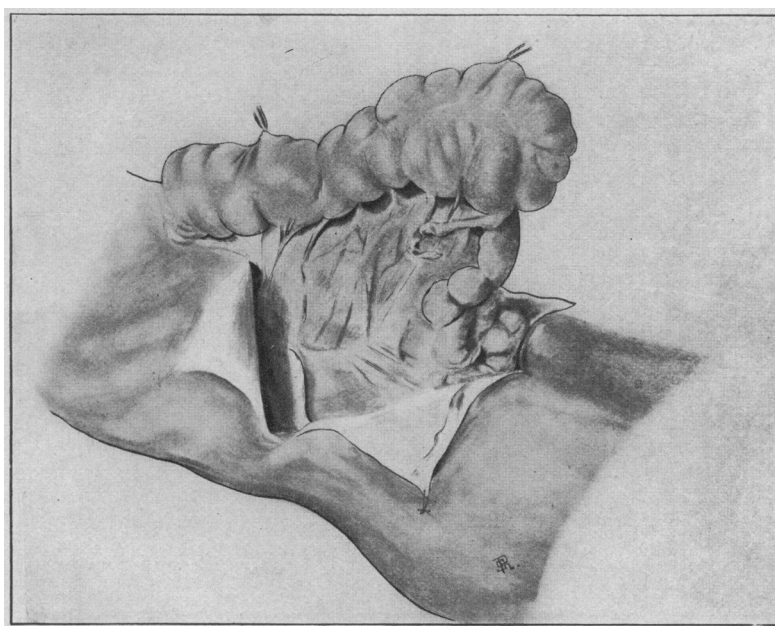
* Publication of the Department of Anatomy of the Harvard Medical School.



CASE 1, A. — Omentum has been reflected upward to expose a much distended descending colon and sigmoid flexure which occupies almost the entire anterior aspect of the abdominal cavity.



CASE 1, B. — Showing extreme mobility of cecum, appendix and ascending colon; mesenteric adhesions to the liver (XYZ); and the attachment of the last six inches of ileum to the posterior abdominal wall, 6II.



CASE II. — Showing free mobility of appendix, cecum, ascending colon and ascending mesocolon. The descending colon may be lifted in a similar manner.

this embryonic mesentery attached to the large bowel is given different names according to the direction of that portion of the gut supplied, viz.: Ascending mesocolon, transverse mesocolon, descending mesocolon, pelvic mesocolon.

In a large proportion of adult cases (Lesshaft, Toldt), we find that the ascending mesocolon has become adherent to the posterior abdominal wall. In other words, the posterior peritoneal covering of the ascending mesocolon has become fused with the parietal peritoneum of the posterior abdominal wall, and what appears to be the peritoneal covering of the posterior wall on the right side is really the anterior peritoneal surface of the ascending mesocolon. And it is also true that in a large proportion of adult cases the colon itself becomes adherent posteriorly in a similar manner, losing its posterior peritoneal covering. The French anatomists designate the embryonic mesentery of the ascending colon which was originally only a part of the continuous mesentery of the digestive tube as the "mesocolon ascendant primitif." In a certain proportion of cases stated below the colon itself does not become adherent posteriorly, at least for its entire extent, and in this case, the mesocolon is usually to a greater or less length also detached and we have what Jonnesco and Charpy call the "mesocolon ascendant secondaire ou definitif."

The descending colon up to the end of the fourth embryonic month (Poirier) also possesses its original primitive mesocolon. This, like the ascending mesocolon, also gradually becomes adherent to the posterior wall up as far as the intestinal border, and then, as is more often the case, the descending colon itself becomes attached posteriorly. If the latter adhesion does not take place we have a mesocolon descendant definitif of greater or less length.

To return to our two cases cited: In the first we found five anomalous conditions. A high position of the cecum under the liver; secondary ascending and descending mesocoli of varying lengths; enteroptosis and distention of the lower bowel; and an adhesion posteriorly of the last six inches of the ileum in a manner corresponding to the usual anchorage of the ascending colon.

The developmental story of the large bowel given above must convince us that a high position of the cecum where it cannot be placed artificially in the iliac fossa without traction must indicate an arrest at some time in the downward migration of the cecum to its normal destination. Mobility of the cecum, on the other hand, when the cecum may lie in the fossa, but can be placed elsewhere, indicates a greater or less deficiency in the complete adhesion of the ascending mesocolon to the posterior abdominal wall, in other words, a greater or less persistency of the free primitive mesentery. In our first case we have a combination of these conditions. The cecum cannot be brought down to the fossa and yet it has a mesocolon which has become attached posteriorly only at its junction with the transverse mesocolon, thus allowing full mobility of the ascending gut which is only limited below by

an adhesion posteriorly of the last six inches of the ileum, together with an equivalent portion of the original primitive mesentery of the last six inches of the small intestine.

Let us consider these conditions in turn. I have stated that high positions of the cecum are due to arrests in its migration. Berry, Faure, Vaillée, Fromont, Hartman, Jonnesco and Charpy, Legueu, Perondi, Tuffier and Jeanne are authorities for this theory. The strongest argument in favor is that a comparison of necropsy reports on children with those on adults shows a marked proportionate increase in the number of high cecal positions in the cases of children.

Vaillée reports 100 autopsies; 14 were three to nine months embryos, 77 were under one year old, 9 were between one and six years.

In one fifth only of these cases was the cecum found in its descended iliac position. One case, over right kidney; one near umbilicus; one to left of median line.

In comparison with these studies should be noted observations by Tuffier and Jeanne on 134 cadavers, of which 9 only were under forty years; nearly all between fifty and eighty. About seven eighths of these (113) were in the normal low position as contrasted to one fifth in those of Vaillée. One case only was found in the region of the umbilicus.

Legueu in 100 autopsies in children of all ages found 31 cases of ceca with positions high in the iliac fossa, under the liver or in front of the kidney.

This frequency in young subjects then would lead us to conclude that high positions signify a delayed or arrested migration downward.

The mobility of the cecum or the persistence of a free ascending mesocolon has also been found more frequently in young subjects, again indicating either an incomplete or arrested adhesive process which in the adult has resulted in the gluing down of the free mesocolon.

Lesshaft and Toldt state that in adults the ascending colon is itself adherent posteriorly in the great majority of cases.

Treves has found an ascending mesocolon in 26% of cases, although this includes cases where there is even half an inch of free mesocolon.

Fromont reports the persistence in 30% of adults.

In children, however, Luschka claims that the ascending colon is completely free and movable and covered by peritoneum in most cases of the new born.

Toldt states that in the new born the ascending colon is usually adherent posteriorly except at its beginning when the mesocolon persists and the cecum is freely movable.

Legueu states that of children between one and fifteen months, 40% have a free colon and a mesocolon of greater or less length, and that 50% have at least free mobility at its lower half, and that only 5% were adherent posteriorly as in the adult.

Other investigators report large numbers of autopsies to show the varying positions of the

cecum and appendix, but from their figures no conclusions can be drawn as to whether many of the ceca found in a low normal iliac position had retained mesenteries and could be dislocated; nor can we determine whether cases of high or left-side position were due to a lack of migration or due to displaced ceca with long secondary mesocoli.

Monks and Blake in 656 autopsies mention an appendix "close to gall bladder," another up to right border of the liver, another between right lobe of liver and right kidney, and still another beyond the median line. These anomalies must have been due to either one or both of the conditions which were present in Case I, incomplete migration or free mesocolon.

In Engel's 100 necropsies, 4 appendices are reported to have an "umbilical position."

Lafforgue in 100 cases found all in iliac or pelvic positions and none above.

Perondi reports his 50 cases of post-mortem examination of the cecum, 3 with umbilical position and 1 in the lumbar fossa.

The anomalous adhesion of the last six inches of ileum with its mesentery is more difficult of explanation. I find three other such cases reported. One by Hartmann, another by Merigot de Treigny, another by T. L. Faure. In two of these cases the cecum, as in the case we present, is high up under the liver. Merigot de Treigny contrasts his case with that of Faure in saying that the ileum was subperitoneal while the cecum was much lower down than usual and in contact with the crural arch. It is more easy to conceive the latter than the former condition. If the posterior adhesive process of the ascending mesocolon should be exaggerated rather than deficient we should expect to find it continued on to the last of the ileum and its mesentery. But when the cecum and ascending colon have retained enough mesentery to allow a subhepatic position we should at least expect the lower end of the ileum to remain free in its mobility.

The position of the cecum and appendix have been of such clinical interest that much has been written on the subject. Anomalies in the descending colon, however, are not only of less frequency, but of less clinical value, and I find much less authority to explain the conditions which we find present in this region of Case I. We recall that a descending mesocolon persists in this specimen of varying length from $2\frac{1}{2}$ to $7\frac{1}{2}$ in. and that the descending colon was entirely covered by peritoneum and not adherent posteriorly; in other words, not extraperitoneal as in the normal adult. Jonnesco claims that 15% of all cases of descending coli retain a free mesocolon of greater or less length but it is evidently very rarely (in fact I find no other case reported) that the whole large gut from spleen to rectum is freely movable. We cannot say that the embryonic condition remains, for the original primitive mesentery has become adherent to the posterior wall for a short distance so that the apparent origin of this secondary descending mesocolon is on a line from the spleen across the left kidney to

the left sacro-iliac synchondrosis parallel to the attachment of the free small intestine mesentery, making a long trough-like sulcus between these two mesenteries with the adherent portion of the original descending mesocolon as the floor of the fossa. Of course we find here the sigmoidal mesocolon continuous with that of the descending colon, and since both the descending and pelvic guts are free no distinction can properly be made between the two.

To explain the great distention of this combined descending and pelvic bowel I cannot supply authoritative reasons. Theorizing, however, we must admit that this freely movable gut with a long free mesentery is like the ascending coli of like mobility, a result of incomplete embryonic anchorage which normally occurs about the fourth month.

Unlike the ascending colon the descending and sigmoid are normally filled with a fecal residue of greater weight and firmer consistency. Granting, as our embryological study and statistics would lead us to do, that this mobility was a congenital condition in the subject described, it is conceivable that constant weight of fecal material must gradually have led to enteroptosis of this freely movable gut, until long retained fecal matter gradually distended the lower gut to the enormous diameters which we have related above.

Clinically, it is of interest to imagine the difficulties which would have been confronted in an operation on this individual for appendicitis. The usual incision would first have revealed a much distended gut. Traction for several inches in any direction would have yielded more of the same large pelvic portion of the descending gut. Further grappling through the opening would have delivered a piece of small intestine which on being followed up distally in the usual way, would have led, not to the cecum, but to an abrupt termination at the bottom of the wound against the posterior abdominal wall, viz., at that point where the last portion of the ileum becomes retroperitoneal. It is a question whether the cecum could have been seized directly and brought into the wound without an enlargement of the usual incision.

The following bibliography includes some references which, though having little bearing on the above anomalies, may be of assistance in further review of the literature of the intestinal tract.

BIBLIOGRAPHY.

- Berry, R. J. A.: The Anatomy of the Cecum. *Anat. Anz.*, Jena, 1894, x, 401-409.
Ibid.: The Anatomy of the Vermiform Appendix. *Anat. Anz.*, Jena, 1895, x, 761-769.
Ibid.: The Cecal Folds and Fossae and Topographical Anatomy of the Vermiform Appendix. (Plates.) London, 1897.
Ibid.: The True Cecal Apex of the Vermiform Appendix, Its Minute and Comparative Anatomy. *J. Anat. & Phys.*, Lond., 1900-1901, xxxv, 83-100, 5 pl. 4 figs.
Brito, T. S.: The Peritoneal Investment of the Human Cecum. *Brit. Med. Jour.*, Lond., 1885, i, 917.
Bryant, J. D.: The Relations of the Gross Anatomy of the Vermiform Appendix, etc. *Ann. Surg.*, Phila., 1893, xvii, 164-180, 4 figs.
Charpy, A.: De la Capacité du Cecum. *Bibliogr. anat.*, 1898, vi, p. 3, 143-150.
Condamin, R.: Appendice Ileo-Cæcal. *Prov. med.*, 1891, v, 89-91.
Debierre, C.: La Valvule de Bauhin considérée comme barrière des apothécaires. *Compt. rend. Soc. de biol.*, Paris, 1885, 291-295.

- Faure, J. L.: Anomalie la situation du Cecum et de l'Extrémité de l'Ileon. Bull. Soc. anat. de Paris, 1895, lxx, 9-11, 1 fig.
- Fawcett, E.: An Unusually Large Terminal Vermiform Appendix, with Recurved Small Conical Cecum; accompanied by some remarks on the Peritoneal Pouches. J. Anat. & Phys., Lond., 1895, xxix, 498-500, 1 fig.
- Ibid.*: Two Specimens in which the Vermiform Appendix was Absent. Proc. Anat. Soc. of G. Brit. and Ireland in: J. Anat. & Phys., 1899-1900, xxxiv, lii, liii.
- Fiedler, P.: Ueber die Anatomischen Verhältnisse des Processus Vermiformis. Leipzig, 1903.
- Fromont: Thèse de Lille, 1890. (Vallée.)
- Gersser: New York Med. T., 1890, p. 6.
- Goble: Med. Times, June 9, 1883.
- Hartmann, H.: Les Fossettes Ileo-Cœcales et la Hernie de Rieux. Bull. Soc. anat. de Paris, 1888, lxiii, 983-984.
- Ibid.*: Anomalie dans la Situation du Cecum. Bull. Soc. anat. de Par., 1887, lxii, 311-312.
- Hewson, A.: The Anatomy of the Vermiform Appendix. Am. J. Med. Sc., 1893, n.s., cvi, 185-190.
- His: Anat. mensh. Embryoen., iii, 12-25.
- Jonnesco: Anatomie de Poirier. (Vallée.)
- Jonnesco and Juvara: Anatomie du Cecum et de l'Appendice Ileo-Cecal. Bull. Soc. anat. de Par., 1894, lxix, 38.
- Ibid.*: Anatomie des Ligaments de l'Appendice Vermiculaire et de la Fossette Ileo-Appendiculaire. Progr. med., 1894, xix, 273-276; 303-306; 321-325; 353-355; 369-370.
- Keith, A.: Anatomical Evidence as to the Nature of the Cecum and Appendix. J. Anat. & Phys., 1904, xxxvii, 7-20.
- Kölliker: Entwicklungsgeschichte des Menschen und der höheren Thiere. Leipzig, 1861.
- Kraus, O.: Zur Anatomie der Ileocecalklappe. Arch. f. Chir., 1892, xlv, Sep.-Abdr., 11 pp., 1 pl.
- Lafforgue, E.: Recherches anatomiques sur l'Appendice Vermiculaire du caecum. Intern. Monat. f. Anat. u. s. w., 1893, x, 141-167.
- Legueu, F.: La Situation du Caecum chez l'Enfant. Bull. Soc. anat. de Par., 1892, lxvii, 55-69.
- Lockwood, C. B.: Note upon the Lymphatics of the Vermiform Appendix. Proc. Anat. Soc. of G. Brit. and Ireland in: J. Anat. & Phys., 1899-1900, xxxiv, ix-xiii.
- Lockwood and Rolleston: On the Fossæ Round the Cecum, and the Position of the Vermiform Appendix, with Special Reference to Retroperitoneal Hernia. J. Anat. & Phys., 1891, xxvi, 130-148.
- Ibid.*: Notes on the Position and Condition of the Vermiform Appendix in One Hundred Consecutive Cases in which there was no Manifest Morbid Condition of the Abdominal Cavity. Proc. Anat. Soc. of G. Brit. and Ireland in: J. Anat. & Phys., 1891, xxv, xix-xx.
- Manley, T. H.: The Anatomical Position of the Caput Coli; Deviations from the Normal Type. Buffalo Jour., 1891, xxx, 577-582.
- Mariau: Variabilité des Rapports de l'Appendice avec le Caecum. Bibliogr. anatom., 1900, viii, 227-330; 3 figs.
- Matas, R.: The Peritoneal Relations of the Cecum. New Orleans Med. & Surg. Jour., 1887, n. s., xvi, 442-451.
- Monard, P.: Des Variétés Anatomiques de l'Appendice Caecal et de leur Influence sur la Pathologie de l'Appendice. Thèse, Paris, 1902.
- Merigot de Treigny: Études sur les Hernies du gros Intestin. Par., 1887.
- Monks and Blake: The Normal Appendix, Its Length, Its Mesentery and Its Position or Direction as Obtained in 656 Autopsies. Boston M. & S. Jour., 1902, cxlvii, 581-583.
- Moody, B. O.: A Study of the Muscular Tunic of the Large and Small Intestines of Man in the Vicinity of the Caecum. Proc. Assoc. Amer. Anat., 1894, vi, 43-46.
- Muller, P.: Zur Topographie des Processus Vermiformis. Centralbl. f. Chir., 1901, xxviii, 681-683.
- Peronni, G.: Recherches Anatomiques sur le Caecum et son Appendice. Rev. de chir., 1900, xx, 221-225.
- Ransohoff, J.: Considerations on Anatomy, Physiology and Pathology of the Cecum and Appendix. J. Am. Med. Assoc., 1888, xi, 40.
- Ribbert: Beiträge zur Normalen und Pathologischen Anatomie des Wurmfortsatzes. Virchow's Arch., 1893, cxxiii, 66-90.
- Shiefferdecker: Arch. f. Anat., 1886.
- Stoeckart: Les Anomalies de l'Appendice Caecal chez l'Homme. Bull. Soc. d'anthrop. de Brux., 1892-93, xi, 58-74.
- Struthers, J.: On Varieties of the Appendix Vermiformis, Cecum and Ileo-Cecal Valve in Man. Edinb. M. J., 1893, xxxix, 289-306; 438-450. The Appendix Vermiformis Morphologically Considered, pp. 489-494.
- Ibid.*: Specimens of Appendix Vermiformis. Trans. of Med. Chir. Soc. in Edinb., 1893, xii, 38.
- Tixier and Vianny: Note sur les Lymphatiques l'Appendice Ileo-Cecal. Lyon med., 1901, xcvi, 471-479; 2 figs.
- Toldt, C.: Die Formbildung des Mensch. Blinddarmes und die Valvula coli. Sitzungsbd. d. k. Acad. d. Wiss. zu Wien, Math. naturw. Cl., 1894, ciii, Abth. 3, 41-71, 3 pl.
- Trevor, R. S.: A Very Long Vermiform Appendix Enclosed in a Canal behind the Cecum and Ascending Colon. Proc. Anat. Soc. of G. Brit. and Ireland in: J. Anat. & Phys., 1902, xxxvi, xlii-xliv.
- Tuffier: Le Caecum et ses Hernies. Arch. gen. de med., 1887.
- Tuffier and Jeanne: Étude anatomique sur l'Appendice et la Région Ileo-Cecale Basée sur 180 Necropsies. Rev. de gynéc., 1899, 235-278.
- Vallée, P. H.: Situation du Cecum et de l'Appendice chez l'Enfant (étude basée sur cent examens de cadavres). Thèse. 8°. Paris, 1900.
- Zuckerkandl, E.: Ueber die Obliteration des Wurmfortsatzes beim Menschen. Anat. Hefte, 1894, xi, 99-126.

It is reported that Dr. Osler, who is now in this country, will spend a month in Baltimore, the first of the year, and will hold certain exercises at the Johns Hopkins Hospital.

Clinical Department.

ON THE USE OF AUTOMOBILE SPARK COILS AND DRY CELLS FOR EXCITING VACUUM TUBES FOR TREATING SKIN DISEASES.

BY WILLIAM ROLLINS, M.D., BOSTON.

In previous papers it was shown vacuum tubes for the treatment of skin diseases could be efficiently excited by apparatus costing but a small fraction of the expense of that in use, provided certain principles, which were stated, were employed in the design and use of the vacuum tubes.

In the present note attention is called to a still less expensive apparatus made for a patient who lived where no commercial electric circuit was available. It consisted of the spark-coil of a motor car, costing eight dollars, and of two cells of dry battery, costing forty cents. This apparatus makes the home treatment of some skin diseases by radiations, under the direction of a physician, both practical and inexpensive; while usually such treatment is very expensive on account of the large number of visits the patient must make to a radiation specialist and the time required for each application.

REPORT OF A CASE OF PARATYPHOID FEVER.

BY ARTHUR D. DRAPER, M.D., BOSTON.

THROUGH the courtesy of Dr. J. W. Bartol, to whose service at the Boston City Hospital this patient was admitted, I am glad to report the following case of paratyphoid fever which presents some interesting features:

E. G., twenty-two years old; married; born in Sweden; polisher in piano-factory. Former history and present history unimportant; no history of previous attack of typhoid or rheumatism. Present illness: For two weeks previous to entrance to hospital had complained of heavy feeling in head and backache. One attack of epistaxis started by picking nose. Has had no nausea, vomiting, chill or fever. Three days before admission, the left ankle became swollen and painful; pain increased on active motion. The right ankle is similarly affected, but to a less degree. Appetite poor; bowels costive. Denies venereal and alcohol. Complains now only of pain in ankles. Was admitted July 27, 1905.

Physical examination. — Well developed and nourished. Very slight prostration. No apathy. General condition good. Temperature 104°, pulse 74.

Eyes. — Pupils, motions and reactions normal.

Tongue. — Thin white coat.

Throat. — Normal.

Neck. — Not rigid or retracted.

Heart. — Area of dullness 4 cm. to right, 10 cm. to left of median line, action tumultuous, slight galloping rhythm. Rough systolic murmur confined to apex. Impulse visible and palpable in fifth interspace. Pulmonic second sound slightly louder than aortic.

Pulses. — Equal, regular, rapid, good volume and tension.

Lungs. — Show no modification of resonance or respiratory sounds.

Abdomen. — Not tender; normal tympany. Liver not enlarged. Spleen not felt.

Extremities. — Knee jerks normal. No edema.