the heaviest child was a female weighing twelve pounds. The infants are all weighed carefully, and the actual weight without clothing is obtained. The following table shows the number of heavy children over ten pounds in weight born at the hospital :

	Male.	Female.
10 to 11 lbs.	46	25
11 to 12 lbs.	10	5
12 lbs.	—	1
	56	31 Total 87

The records of the out-patient department were not considered sufficiently reliable to examine for this purpose. The largest baby, however, in which the record could be trusted weighed exactly thirteen pounds. This child was carefully weighed on scales that had been tested.

I am greatly indebted to Dr. F. P. Denny, who did most of the work in compiling these statistics.

Clinical Department.

IMPERFORATE RECTUM :

THE OPERATIVE TREATMENT, WITH REPORT OF A SUCCESSFUL OPERATION BY EXCISION OF THE COCCYX AND PART OF THE SACRUM.¹

BY F. A. HIGGINS, M.D.

IMPERFORATE rectum is the common name by which the various congenital defects of the anus and rectum, which result in obstruction of the bowels, are designated. The defect is rare if we take into consideration the whole number of births yearly, yet it is of sufficiently frequent occurrence to be seen occasionally by the surgeon and obstetrician.

In a joint collection reported of over 73,000 births at the Lying-in Hospitals of Dublin, Vienna, Paris and Havre there were only seven cases of imperforate rectum, or about one case in 10,000 births. This seems, however, to be much below the usual number, as other places give an average of about one case in 5,000 births.

At the Boston Lying-in Hospital the percentage, as reported by Dr. Townsend in 1892, is very much higher, he having found seven cases among 5,500 births in that hospital; or about one to 800.

In several reports of private cases the percentage is even greater than those figures. Dr. Anger met five instances in 2,000 and Dr. Duncalfe five in 3,000 births. These statistics vary somewhat widely, but taken together they give an average of one case to 3,300 births, and are perhaps as valuable in that respect as most statistics.

The malformations of the rectum and anus are generally attributed either to arrested development or to accidents happening during the development of the parts in early fetal life. It has been suggested also that fetal peritonitis and other peritoneal changes are responsible for these defects; and a certain amount of evidence to this effect has been observed.

A knowledge of the manner of development of the intestinal canal shows the method of production of the deformity in its various forms. In the earliest stages of fetal life the whole alimentary canal consists of a simple sac or bag from which the intestines form as a

small tube. The rectum eventually develops from this tube, and gradually separates in the form of a blind pouch. This pouch advances downwards, and in the normal process finally communicates with the anal depression. An invagination of the skin in the perineum forms the anus, which ascending a short distance meets the rectum.

These processes may become arrested at various stages and positions in the development, and result in any one of the several malformations which are usually found. Briefly these are:

(1) A narrowing of the calibre of the rectum without complete occlusion of the lumen. This narrowing may be of moderate amount and extend for a short distance only, or it may be reduced to a small opening through a considerable space, and produce symptoms of acute obstruction. The prognosis in this variety is generally favorable, and treatment may usually be carried out by gradual dilatation, unless the stricture is too narrow and extends through too great a distance, in which case a more radical operation is demanded.

(2) The rectum itself may be perfectly formed, but the anus is partially or completely wanting. In such a case the occlusion of the anus may be by a membranous diaphragm of greater or less thickness and the anus marked by a mere dimpling of the skin, or the skin may even bulge, when straining takes place from distention and presence of meconium above. Fluctuation also can sometimes be made out in such cases.

(3) In this form also the anus is absent, while the rectum terminates in a blind pouch at a point some distance away. This may be low down in the pelvic cavity, or it may end high up in the pelvis. There may be present in such cases a distinct fibrous cord of some size, to indicate the place for the rectum, and extending from its terminus to the skin; on the other hand, there may be nothing to show its proper place, the space being merely filled with cellular tissue.

(4) The anus is normal in appearance, but ends in a short cul-de-sac just inside the external opening, while the rectum also ends in a blind pouch at a point more or less distant above. This class of cases includes as well that form in which the partition between the two is composed of only a thin membranous septum, through which it is sometimes possible to successfully introduce a trocar and safely dilate the opening thus made. Such a case may be deceptive, however, in that the distance between the rectal and anal pouches is greater than appears to the finger, owing to the fact that the distended rectum above overhangs and crowds down upon the smaller part below. In such an instance instead of going directly through, the trocar may penetrate the rectum by way of the peritoneal cavity and result in peritonitis and death.

There are other rare forms of rectal malformation in which the rectum is wholly absent, or in which it discharges through a fistulous opening into the vagina, bladder or urethra; or externally in the perineal or sacral region. The first form is amenable only to colotomy, while the operation described here is believed to be of utility for relief of the latter. Yet whatever operation is done, is usually one of expediency and performed at a later date and under more favorable circumstances than in those cases where there is no exit whatever to the rectum.

¹ Read, by invitation, before the Obstetrical Society of Boston, February 18, 1896.

Several methods of operative procedure are in use for the relief of imperforate rectum. When there is a membranous covering only, at the anus, the treatment is a simple crucial incision and dilatation. Atrophy of the superfluous tissue follows.

Puncture with a trocar or director, and subsequent dilatation by the finger or other means, if one is so fortunate as to find or make a passage, entails a chronic stricture demanding constant dilatation or a subsequent operation of much greater magnitude. Moreover, by the blind introduction of the trocar the rectal pouch may not be reached and other important structures are liable to injury. All authorities now agree in condemning the operation of puncture, pronouncing it an entirely unsurgical and dangerous proceeding. Kelsey says the use of the trocar is unjustifiable even after a careful dissection in the perineum.

The perineal operation is the one considered the most favorable to attempt, as it leaves the patient with an anus in the natural position, and with usually a fair control of the bowels in the event of success. It consists of a median incision from the base of the scrotum to the coccyx, carried to a depth of two inches if necessary. The rectum, if found, is freed and its edges brought down and sutured to the perineal wound. In addition the coccyx may be excised, if its removal is indicated, for room. If the rectum is within reach this operation is likely to prove successful; but it has been found that after the incision has been carried to a depth of two inches and the rectum is then not exposed, the operation should be abandoned and the question of a colotomy considered.

Of the three operations for colotomy—in the left loin, the right groin and the left groin—the latter, known as Littre's operation, is the least objectionable.

The question of the advisability of doing any colotomy operation may be mentioned in this connection. There seems to be an increasing tendency among writers and surgeons to protest against an operation which would subject a child to the life-long odium of an artificial anus in the groin, and many now condemn it altogether, refusing even to operate.

The prognosis in all forms of imperforate rectum in which there is complete occlusion is necessarily very unfavorable.

Results obtained in point of safety and comfort to the patient show that the perineal operation is the one to be preferred to all others.

Cripps in a series of one hundred cases shows a mortality of fifty per cent. with the largest number of recoveries from the perineal incision, of which there were thirty-nine cases with fourteen deaths.

There were also out of the one hundred operations, nineteen colotomies with thirteen deaths, and seventeen cases of puncture with a mortality of fourteen.

Ordinarily, colotomy is a comparatively simple operation and can be done with little shock and a low death-rate, but many of those reported were performed with the patients *in extremis* and after failure to give relief by other methods.

In 1892 Dr. Conant reported the case of a baby three days old on which he performed a laparotomy combined with the perineal incision. In his case there was no anus or even dimple to mark its position.

The perineal incision was made first and carried to a depth of one-and-a-half inches and a trocar inserted a short distance farther without result. A laparotomy was then performed, the bowel was not opened, but

with the finger introduced through the wound into the bottom of the pelvis, acting as a guide, a trocar was inserted into the rectum through the perineal wound.

The opening thus made was subject to frequent dilatation during the life of the baby, which was unfortunately cut short by an attack of enteritis at the end of three months. Dr. Conant's operation was unquestionably an advance over other operations of that nature, as only by aid of the laparotomy was he able to enter the trocar into the rectum.

In a number of cases, however, in which the rectum has been left with an opening of this description, the persistent tendency to obstruction and to fecal accumulation, together with the pain necessary to keep the canal from contracting have invariably caused early death.

The case which I have to show here to-night is one which was operated upon by Dr. H. L. Burrell, who has kindly allowed me to report the case and to bring the patient here.

Robert Norman, aged four days, entered the Children's Hospital, November 24, 1891. His general condition was very good. He had passed nothing from the bowels since birth and there was increasing abdominal tenderness and distention.

The anus admitted tip of little finger to a depth of nearly an inch and a half, but no fluctuation above could be felt.

An incision was made backward in the median line from the outer margin of the sphincter ani, extending up on the dorsum of the sacrum.

The coccyx and the left half of the sacrum up to the second sacral foramen were excised with bone forceps.

An opening of sufficient size was thus obtained with the rectum lying exposed directly in front.

In this instance the rectal and anal portions of the intestines were seen to be continuous and the obstruction found to be due to a membranous diaphragm stretched across about two inches above the anal opening.

The anus was dilated; the diaphragm punctured from below; the opening stretched, and the wound sutured.

The stricture was dilated every three or four days while the child remained in the hospital. The recovery was uneventful, he being discharged from the hospital on the eighteenth day. Now, at the age of four the boy is apparently perfectly well, with perfect control of the sphincter.

I believe this case illustrates the possibilities of the sacral operation as it may be applied to the treatment of all cases of imperforate rectum which are susceptible of relief by any method other than colotomy.

By the removal of a portion of the sacrum a good view of the rectum is obtained for several inches and a clear space to work in, sufficient for the purpose.

It is evident that the bowel can be made available to a point considerably higher than by any other method yet tried; as also a higher exploration of the pelvis; and that when the rectum ends in a blind pouch, it can be more easily found, freed, brought down and sutured to the skin. This leaves the artificial opening in practically the normal position, one of the most important objects aimed at in attempting the operation. While perhaps the operation appears more severe and dangerous than others, inasmuch as

it is necessary to excise the bone, yet our experience does not support this theory. The loss of blood is slight and the bone can be very quickly cut away with forceps.

The left lateral portion of the sacrum has been removed up to the fourth sacral foramen without impaired function. Higher resections are likely to result in permanent damage to the bladder on account of nerve injury.

It may perhaps be said that this case does not show the difficulties usually met with in the disease.

This to a certain extent is perfectly true, but it does nevertheless serve to illustrate the advantages to be gained by this operation and the ease and accuracy with which the bowel may be brought into view.

POSTURAL TREATMENT FOR NOCTURNAL ENURESIS.

BY F. B. STEPHENSON, M.D.,
Surgeon U. S. Navy.

I BEG to offer the following report, as illustrating the application of the postural treatment for nocturnal enuresis proposed by Dr. Stumpf (*Münchener med. Wochenschrift*.) to which reference is made in the JOURNAL's editorial of July 4, 1895.

The history shows that the patient, a female, when five years of age, had scarlatina. Subsequently, nocturnal enuresis had been continuous, until she was in her fifteenth year. She was then an averagely healthy child, but with an organization inclining toward the so-called lymphatic temperament. Various remedies had been tried without apparent benefit. About this time the article referred to was seen by the writer; and the means therein recommended were at once adopted. They were used each night for about two weeks, no nocturnal enuresis taking place. The remedial measures were omitted one night, and the trouble reappeared. The treatment was renewed and kept up for three weeks with success. Nine months have since passed, and the patient states that there has been no recurrence.

An ordinary excelsior-filled pillow, five inches thick, was used under the hips (causing very little discomfort) to maintain the necessary elevation. No disturbance of the usual functions of life was manifest. Menstruation has been normally established.

In the "postural" treatment, enuresis being attributed to irritation, during sleep, of the neck of the bladder by normal urine, the hips should be raised enough to partially invert that organ, allowing the secretion to accumulate in the dependent portion of the viscus, thus obviating the pathologic excitation of the organ.

INDUCED LABOR IN A CASE OF PREVIOUS CÆSAREAN SECTION. — Dr. Schlaepfer reports, in a recent number of the *Centralblatt für Gynäkologie*, the case of a woman who had been delivered of a dead child by Cæsarean section at her first pregnancy, but at the second, a year and a half later, premature labor was induced during the ninth month, and a living child was delivered by version. The case was one of simple flat pelvis of the first degree. After the uterus had contracted, a depression was felt on its surface, which was supposed to be the scar resulting from the previous operation.

Medical Progress.

RECENT PROGRESS IN SURGERY.

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D.

(Continued from No. 19, p. 465.)

THE RESULTS OF OPERATIVE TREATMENT OF INJURY OR DISEASE OF THE CERVICAL VERTEBRÆ.

MR. VICTOR HORSLEY¹ read a paper on this subject. The cases on which the paper was based were seven in number, and in each laminectomy had been done for caries or for fracture. All the patients recovered. Case No. 1 was admitted to the hospital in 1888 with caries of the atlas and axis. There was complete paralysis of all four limbs, and the skin was dusky from interference with respiration. The arches of the atlas and axis were removed. Power began to return on the sixth day. The patient is now well except for some wasting of the interossei. In Case No. 2 there was caries of the fifth and sixth cervical vertebræ, weakness of the intercostal muscles and of the lower limbs. There was no sensory paralysis. Laminectomy of the affected vertebræ was performed, and the patient recovered. In Case No. 3 there was caries of the lower cervical vertebræ, with complete paralysis in the legs and right arm, and a little power in the left arm. The vesico-rectal centre was interfered with, laminectomy of the third to seventh cervical vertebræ was performed. On the third day some return of power was noticed, but this was only ephemeral, and very little further progress was made. Three months afterwards the patient left the hospital, and a month later died. In Case No. 4 there was fracture of the cervical spine, with paralysis of all four limbs, which had lasted eight months. The paralysis began to extend. Analgesia was present, and this always points to an affection of the central gray matter of the cord. The laminae of the fifth and sixth cervical vertebræ were removed, and the thick fibrous tissue was dissected off the dura mater. The patient steadily improved, and only wasting of the interossei remained. In Case No. 5 the patient had fallen from a cart, striking his head and right shoulder. He walked about for a week, but gradually lost power in all his limbs. When admitted to Queen's-square Hospital, fracture of the sixth cervical vertebræ was diagnosed. The left optic disc was swollen. Laminectomy of the fourth, fifth and sixth cervical vertebræ removed a ridge which had been pressing on the spinal cord. Power began to appear on the twelfth day. He has since recovered completely. In Case No. 6 the patient sustained a fracture of the sixth cervical vertebræ; the onset of paralysis was gradual. There was marked contracture and well-marked anesthesia of the post-axial border of the upper limbs. The arches of the sixth and seventh cervical vertebræ were removed, when a projecting ridge was felt, but on extension this disappeared. He is recovering slowly. In Case No. 7 the patient had struck the fore part of his head, and after walking 200 yards rapidly, became completely paralyzed. After partial recovery spastic paraplegia appeared, with post-axial anesthesia of the upper limbs. The laminae of the sixth and seventh cervical vertebræ were removed. Permanent recovery commenced three weeks after the operation. He now can walk a

¹ Lancet, August 17, 1895, vol. II, p. 437.