

oil dripping from the bell when it is removed.

The reader will very much appreciate the following communication received from Professor Robert E. Wilson, Director of the Research Laboratory of Applied Chemistry, Massachusetts Institute of Technology, Cambridge, Mass.

"Replying to your letter of October 18, with regard to the use of our soda lime for Benedict's apparatus, would say that you are quite correct in stating that we do not claim for the soda lime any appreciable water-absorbing power. As pointed out in my article on 'Soda Lime as an Absorbent for Industrial Purposes,'³ high efficiency for CO₂ can only be obtained by having a low alkali content and a high water content, which of necessity gives a high vapor pressure to the air. By increasing the alkali content to 6 per cent., and reducing the water content to 14 per cent., thereby sacrificing distinctly in efficiency of CO₂ absorption, it is possible to make a soda lime which will maintain a somewhat lower vapor pressure, but even this soda lime cannot be considered in any sense as an efficient drying agent. The use of still higher alkali contents inevitably results in caking, channeling, overheating, low efficiency for CO₂ and the other evils attendant upon using high alkali soda lime, such as is now on the market.

"It is our conviction that if it is desired to absorb both CO₂ and moisture, the most efficient method, from a standpoint of both cost and bulk of absorbent required for a given amount of absorption, is to use our regular soda lime for CO₂ and anhydrous calcium chloride for absorbing moisture, since the latter is very efficient in this respect and forms solid hydrates rather than the deliquescent mass produced when the water is absorbed by caustic soda."

Based on observations made for over a year, I find that caustic soda, especially in the form of Natron soda, has, weight for weight, more CO₂ absorbing capacity than any grade of soda lime which I have ever tried. Besides, I have found it to still absorb moisture efficiently after it has become unfit for complete CO₂ absorption. On the other hand, the absorbing power of soda lime for moisture is lost long before it becomes unfit for CO₂ absorption.

I have used, with splendid success, soda lime mixed with caustic soda or "Natron Soda," and likewise Wilson soda lime combined with calcium chloride. The tendency to cake and clog is less marked with the latter combination than when Natron soda or caustic soda is used alone or in combination with soda lime. I have not tried the combination of Natron soda with calcium chloride.

Whatever the material used, it should in any case be examined frequently enough to prevent clogging. It is no trouble at all to occa-

sionally (once or twice a week, or oftener if necessary) empty the contents of the container, remove only the caked portions and return the rest to the can with the addition of some fresh material. In this way the efficiency of the contents of the absorber can is much prolonged.

When as much moisture as 80 per cent. saturation is present in the bulk of the circulating air, the error involved amounts to 1.5 to 3 per cent., according to the temperature during a test. Consequently, the use of a good absorbent for moisture very easily brings the error within negligible limits. On the other hand, if an efficient moisture absorbent is used, whether it be with the impeller or with the valves, an empirical average correction of minus 2 per cent. should be made.

CONCLUSIONS.

In the determination of the metabolic rate by means of the Respiration Apparatus (spirometer type), the absorption of moisture from the circulating air must be insured.

A good absorbent for carbon dioxide may have a low moisture-absorbing power.

A good CO₂ absorbent used with an efficient moisture-absorbent makes an ideal combination.

An average correction of 2 per cent. should be made if the circulating air is maintained at a high degree of moisture content.

This series of papers would not be complete without a free, though brief acknowledgment of my great indebtedness to Dr. Thorne M. Carpenter of the Nutrition Laboratory, Boston, Mass., for his contribution of valuable time in going over this series of papers, and for the helpful criticism which he has very freely offered.

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VAGINAL CESAREAN SECTION, WITH A REPORT OF TWELVE CASES.

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IN order that the deep, irregular cervical tears which are apt to follow a rapid delivery through a rigid, undilated cervix might be avoided, Dührssen, in 1890, recommended that deep incisions be made in the vaginal portion of the cervix. These incisions were made in either the anterior or the posterior halves of the cervix, or both, but the lateral portions

were avoided. It was soon found, however, that the incisions did not reach high enough to overcome the resistance of the internal os, that extensive lacerations which were difficult to suture were apt to follow, and that hemorrhages which were difficult to control sometimes occurred.

Realizing that his incisions in the cervix did not enlarge the canal sufficiently for immediate delivery, Dührssen devised the operation which, in 1895, he described under the name of "anterior vaginal hysterotomy," and in 1896 called vaginal cesarean section. The original operation only called for the anterior incision; later, he modified the technic by adding the posterior incision. The result of this was that it enabled him to make a shorter anterior incision, thereby lessening the danger of injury to the bladder during the delivery.

TECHNIC OF OPERATION.

A weighted speculum is introduced in the vagina to expose the cervix, which is brought down by means of double hooks placed on the anterior lip, one on either side of the cervical canal. If the cervix is not readily brought down by this method, as after an amputation, a No. 4 Voorhees bag is introduced in the uterus; it is filled with one per cent. lysol solution, and used as a tractor.

The lower limit of the bladder is found by introducing a male sound in the organ, the concavity of the sound pointing towards the operator; a transverse incision is made in the vagina just below the point of the sound, this incision is carried through the mucosa and fascia of the anterior vaginal wall. Sharp, pointed scissors are introduced under the vaginal wall and separate it from the bladder to within an inch of the urethra. The vaginal wall is then incised to the upper limit of the dissection, the bladder is separated from the vagina, and after cutting the uterovesical ligament from the uterus.

The bladder is now held out of the way by means of a retractor, and the anterior lip of the cervix is incised beyond the internal os. The posterior lip of the cervix is pulled upwards, towards the symphysis, with double hooks or the bag, as the case may be, and a transverse incision is made at the junction of the vagina and the cervix. The cul-de-sac and the rectum are reflected downwards, and the posterior lip is incised as far up as possible, care being taken not to enter the peritoneal cavity.

The instruments are now removed and the hand is introduced in the uterus, an internal podalic version is performed in the usual way, and the placenta is extracted manually. By injecting pituitary extract or ergot, the bleeding is usually controlled so that packing is rarely necessary.

The cervical incisions are closed with No. 2 chromic catgut, interrupted; the vaginal incisions are sutured in the same manner with the same material.

When the fetus is small it is not necessary to incise the cervix posteriorly, as the anterior incision usually gives enough room for its extraction.

CASE 1. Mrs. R. M. Age 27. Para I. Indication—Rigid cervix at term. Confinement expected March 15, 1916. Operation March 29, 1916. Pelvic measurements normal.

On March 27, 1916, the patient was sent to St. Margaret's Hospital. She was having slight uterine contractions, but making no progress in dilatation; the cervix was very rigid.

Ether was administered and a No. 2 Voorhees bag introduced in the cervix at 6 P.M. At 8 P.M., the patient was having contractions, which lasted 30 to 45 seconds, every two minutes. At 8 A.M. the next morning (March 28, 1916), 14 hours after the introduction of the bag, the patient was still having contractions, but the cervix had not dilated and the bag was still in place; it was removed by letting out the fluid. The parturient was given, at this time, morphine sulphate gr. 1/6, and scopolamine hydrobromide gr. 1/200, s.c. At 3 P.M., the contractions had stopped, the temperature was 98.6, the fetal heart 140 and of good quality; at 8 P.M., the contractions were strong and regular; while at 10.30 P.M., despite the regular contractions, there was no progress noted; the fetal heart was still 140.

March 29, 1916, 2 A.M. Examination. The cervix admitted two fingers, but was not taken up and had not thinned out; manual dilatation was attempted but given up as the rigidity could not be overcome. The fetal heart had gone up to 160, and the mother's pulse to 120. After consultation, it was decided to deliver the parturient because of the rise of maternal and fetal pulse rates. The vaginal cesarean section was decided upon because of the roomy pelvis, and also because of the danger of infection due to the long labor with a bag, if the abdominal route were chosen.

March 29, 1916. Vaginal cesarean section. Anterior and posterior incisions. Left episiotomy. Delivery of a male child with forceps. Manual extraction of the placenta. Puerperium. The baby, which was etherized, was readily resuscitated by tubbing. The mother's pulse was weak and 160 at the end of operation. She was given salt solution by hypodermoclysis.

March 30, 1916. The mother is nursing her baby. Her temperature is normal, and her pulse is 108.

April 1, 1916. The baby died. Cause of death, intracranial hemorrhage, from long labor and forceps.

April 3, 1916. The episiotomy stitches were removed. The patient continues to improve.

April 11, 1916. An infection was noted in the episiotomy wound. The lower end of the incision was opened and drainage was established.

April 18, 1916. Daily dressings to the incision, which is healing fast.

April 29, 1916. The episiotomy wound was cleanly healed and the patient was discharged from the hospital.

April 29, 1916. Discharge Examination: The episiotomy wound is healed, as well as the cervical and vaginal incisions; the uterus, which is in first degree retroversion, has well involuted. There are no masses or areas of tenderness in the pelvis.

CASE 2. Mrs. E. M. Age 28. Para III. Indication—Toxemia of pregnancy, convulsive type. Seventh month of pregnancy. On January 23, 1918, the patient was admitted to St. Elizabeth's Hospital, after having had two convulsions. She was markedly toxic and irrational. The urine showed a large amount of albumin, while in the sediment a large number of casts were seen, the systolic blood-pressure was 170, and the edema was marked. The fetal heart, which was 140 in rate, was heard in the right lower quadrant. The cervix was long and rigid and the patient had had no labor. The family and past histories were irrelevant, while the previous obstetrical history revealed the fact that she had miscarried twice, in the third month of pregnancy.

January 23, 1918. *Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a seven-months female child. Manual extraction of the placenta. Puerperium.*

January 24, 1918. The patient made a good ether recovery; she has had no further convulsions, her systolic blood-pressure is 140, and her edema is rapidly decreasing. The baby is doing well.

January 25, 1918. The patient is voiding normally and her blood-pressure is 134. The baby is being fed with a dropper.

January 28, 1918. Both mother and baby continue to improve.

February 2, 1918. The puerperium has been afebrile, the edema has disappeared, and there are no bladder symptoms. The baby is doing well.

February 4, 1918. Discharge Note: The vaginal incisions and the cervix are well healed, the uterus has involuted in good position. There are no masses or areas of tenderness in the pelvis.

This patient was readmitted to St. Elizabeth's Hospital on May 8, 1920. The examination showed a pregnancy at term, with a vertex presenting in L. O. A. At the onset of labor, the cervix was soft, and the scars in the

anterior and posterior lips could not be felt. It was decided to give the patient the test of labor. She dilated readily and without the least difficulty, and was delivered normally of a male child. There was a slight second degree laceration of the perineum, which was repaired at the end of the third stage.

Examination at the time of discharge revealed a small laceration of the cervix antero-posteriorly. The uterus was well involuted and in good position, and the adnexa were normal. The perineum was healed and gave good support.

CASE 3. Mrs. C. O. Age 24. Para I. Indications—Rigid cervix. Attempted delivery through an undilated cervix. Prematurity, six months. Dead fetus.

May 17, 1918. The patient, who was six months pregnant, had been in labor twenty-four hours when admitted to St. Elizabeth's Hospital. She had been etherized twice and attempts at delivery had been made outside. On admission, one leg was protruding through the vulva. Her family physician stated he had attempted to deliver her because of uterine bleeding.

The parturient was prepared for a vaginal delivery and etherized for the third time. The protruding leg showed dislocation of the knee and ankle joints, the cervix had contracted on the leg, and the uterus was tonic; it was impossible to introduce a finger in the cervix since it had so firmly shut down on the leg. No sign of bleeding was noticed.

March 17, 1918. *Vaginal cesarean section. Anterior incision. Breech extraction of a still-born male fetus. Manual extraction of the placenta, which was not detached nor implanted in the lower uterine segment. Puerperium.*

May 20, 1918. The highest temperature has been 100 and the highest pulse 120; the temperature is now normal and the pulse 80. The patient has voided normally since the operation and the bowels have functioned normally. The convalescence has been satisfactory.

May 24, 1918. The temperature and pulse are normal. The patient has no discomforts.

May 30, 1918. Discharge Note: The cervix and anterior vaginal wall are well healed, the uterus has involuted in good position; the adnexa are normal, and there is no pelvic tenderness.

CASE 4. Mrs. D. O. Age 18. Para II. Indications—Pyelitis. Kinked right ureter. Seventh month of pregnancy.

The patient was admitted to St. Elizabeth's Hospital on June 7, 1918. She had had a normal delivery at term nineteen months previously. She was pregnant for the second time at the middle of the seventh month. For a week she had been confined to bed with excruciating pain over her right kidney. On ad-

mission to the hospital, her temperature was 104, pulse 140, and respirations 20.

The examination made at 4 P.M. showed the right kidney to be exquisitely tender, and the catheterized specimen of urine showed a large amount of pus and an occasional red blood corpuscle. At midnight, eight hours later, the patient's condition was worse and after consultation, it was decided to induce labor to relieve the pressure on the right ureter. With this end in view, the patient was etherized and a No. 4 Voorhees bag introduced in the cervix.

June 8, 1918. The bag had been in the cervix eight hours, the patient had had strong labor, but this had had no effect as far as dilatation was concerned.

June 8, 1918. Vaginal cesarean section. Anterior and posterior incisions over Voorhees bag. Internal podalic version and breech extraction of a male child, which lived twenty-four hours. Manual extraction of the placenta. Puerperium.

June 9, 1918. The patient is markedly irrational. She has made a good ether recovery.

June 10, 1918. The mental condition has improved. The urine shows a large amount of pus. Hexamethylenamine and acid sodium phosphate $\bar{a}\bar{a}$ Gr. x, were prescribed.

June 13, 1918. The urine is still filled with pus, the pain over the right kidney has disappeared, the temperature and pulse are normal and the patient is rational.

June 16, 1918. The patient is allowed out of bed.

June 17, 1918. The improvement is continuous. There is no rise of temperature or pulse, and the urine is clearing up.

June 22, 1918. Discharge Note: The incisions in the vagina, as well as in the cervix, are well healed. The uterus is involuted in good position. There are no masses or areas of tenderness in the pelvis. The urine is clear and there is no tenderness in the region of the right kidney.

(March, 1920. The patient was delivered at term, in her home, by her family physician. The delivery was normal and there were no complications.)

CASE 5. Mrs. A. McK. Age 31. Para I. Indications—Macerated fetus at four months. Previous nephrectomy. Last catamenia, December 17, 1917. Confinement expected September 23, 1918. Past History—Twelve years previously, dilatation and curettage for dysmenorrhea at the New England Hospital for Women. Twelve years previously, appendectomy at the Homeopathic Hospital. Ten years previously, laparotomy for the removal of a left ovarian cyst at the Boston City Hospital. Five years previously, nephrectomy (right kidney) for pyonephrosis, at Albany, N. Y.

April 11, 1918. Examination showed the uterus to be the size of a four-months pregnancy. There was no fetal heart heard.

July 18, 1918. Amenorrhea still exists. There is no change in the size of the uterus, and no fetal heart sounds are heard. The patient is to report in a month.

August 13, 1918. The uterus has not changed in size. There has been no change in mensuration since April.

The patient was admitted to St. Elizabeth's Hospital. On August 22, 1918, she was etherized; the cervix was dilated so that it admitted one finger; the organ was very rigid and could not be dilated any further. The finger was introduced in the uterus and a soft, macerated fetus was felt. Since the patient had but one kidney, and in order to save her from a second etherization, it was decided to deliver her by vaginal cesarean section.

August 22, 1918. Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a four-months macerated fetus. Manual extraction of the placenta. Puerperium.

August 23, 1918. The patient made a good ether recovery.

August 26, 1918. The patient is doing well. She is having house diet; she is voiding normally, and her bowels have resumed their normal function. The temperature is 99 and the pulse 100.

September 2, 1918. The temperature and pulse are normal and the patient makes no complaint.

September 7, 1918. The patient is discharged from the hospital.

October 9, 1918. Examination, at the office, showed the following results. The cervix is healed and there are no raw areas. The anterior and posterior incisions are healed, the uterus is in good position and movable. There are no masses or areas of tenderness in the pelvis.

On December 8, 1920, the patient had urinary suppression from a kink in her left and only ureter. The kidney was suspended and she has been free from symptoms since.

CASE 6. Mrs. E. S. Age 35. Para I. Indication—Toxemia of pregnancy, convulsive type. Seven and a half months of pregnancy.

The patient was seen at St. Elizabeth's Hospital on July 8, 1919. She had severe headaches, marked edema of the face and extremities, and a high blood-pressure. The urine showed a large trace of albumin and casts of all varieties. The vertex was presenting in R. O. P., the fetal heart sounds were heard in the right lower quadrant, and the pelvis was roomy.

The patient was treated expectantly by being kept in bed and on a strict milk diet. On August 2, 1919, at 3.30 P.M., the systolic blood-

pressure was 250; there was marked twitching of the muscles and an increase in the amount of albumin and renal elements. After consultation, it was decided to induce labor. At 4 P. M., the same day, the patient was given ether, and a No. 4 Voorhees bag was introduced in the cervix. At midnight, eight hours later, the bag had had no effect in starting labor. The parturient was again taken to the operating room and etherized.

August 3, 1919. Vaginal cesarean section. Anterior and posterior incisions over Voorhees bag. Internal podalic version and breech extraction of a seven and a half months stillborn female fetus. Manual extraction of the placenta. Puerperium.

August 3, 1919. The parturient had a convulsion at 6 A.M., and no other. Her pulse was 108 to 110, her temperature was normal, and there was still considerable edema of her extremities. She voided eighteen ounces of smoky urine, and catheterization was not necessary during any part of her convalescence. Magnesium sulphate, morphia, and heaters were prescribed.

August 14, 1919. The convalescence has been satisfactory. There has been no undue elevation of pulse or temperature. The patient has been allowed out of bed.

August 17, 1919. The urine still shows albumin and casts, although the blood-pressure is gradually coming down. The patient is advised to report to her family physician for further treatment.

January 23, 1920. Examination at the office shows the cervical and vaginal incisions well healed, the uterus normal in size and position, freely movable, and the adnexa normal. There are no masses or areas of tenderness in the pelvis. The blood-pressure is 160/100, and the patient is still on a non-protein diet.

CASE 7. Mrs. B. E. M. Age 30. Para I. Indications—Advanced pulmonary tuberculosis. Macerated fetus six and a half months.

The patient had been treated by her family physician, who had had several consultations. A diagnosis of advanced pulmonary tuberculosis had been made. She was seen at the Charlesgate Hospital, where she had been admitted on February 23, 1920.

The examination showed a six and a half months pregnancy and a long, rigid cervix. The fetal heart tones were not heard, and the patient had not felt life for some days. The consultants felt that because of her pulmonary condition she should be delivered at once. She was in a very poor physical condition. Her temperature was 102, and her pulse 140.

February 23, 1920. Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a male, macerated fetus. Manual extraction of the placenta. Puerperium.

The patient had left the table with a pulse of 150. Surgically, the convalescence was uneventful. She ran an evening temperature, ranging from 101 to 100; the pulse gradually came down to 120, then to 100. The parturient voided normally throughout the puerperium, and the bowels were taken care of with enemata.

March 6, 1920. Discharge Note: The cervical and vaginal incisions are well healed, the uterus is involuted in good position, the adnexa are normal. There are no masses or areas of tenderness in the pelvis.

March 7, 1920. The patient was discharged to her family physician for further treatment of her pulmonary condition.

CASE 8. Mrs. A. C. Age 23. Para I. Indication—Toxemia of pregnancy, convulsive type. Seventh month of pregnancy.

The patient was admitted to St. Elizabeth's Hospital on June 7, 1920. She had then had seven convulsions. The examination revealed a seven-months pregnancy. The fetal heart was indistinct. There was marked edema of the face and extremities, and the systolic blood-pressure was 210. The urine, which was smoky, contained a very large trace of albumin, and the sediment showed fresh blood, as well as hyaline and granular casts. The patient was delivered at once because of the severe toxemia and the frequency of the convulsions.

June 7, 1920. Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a female child which lived six hours. Manual extraction of the placenta. Puerperium.

June 8, 1920. The patient made a good ether recovery. She voided normally, and had a normal pulse and temperature.

June 10, 1920. The breasts are filling up. A tight breast binder and magnesium sulphate were ordered.

June 12, 1920. The convalescence has been satisfactory. There has been no elevation of pulse and temperature, and the systolic blood-pressure is 180.

June 19, 1920. The patient is doing well. She is allowed out of bed.

June 22, 1920. Discharge Note: The cervical and vaginal incisions are well healed. The uterus is involuted in good position. The adnexa are normal. There are no masses or areas of tenderness in the pelvis. The systolic blood-pressure is 120, and the urine contains a v.s.t. of albumin, but no casts are seen.

CASE 9. Mrs. E. B. Age 25. Para I. Indications—Toxemia of pregnancy, non-convulsive type. Abruptio placentae. Uterine hemorrhage. Seventh month of pregnancy.

On July 27, 1920, the patient, who was admitted to St. Elizabeth's Hospital, showed

marked edema of the face and extremities. There had been marked bleeding from the uterus for several hours. The pulse was 120, and the systolic blood-pressure 170. The urine showed a large trace of albumin, granular and hyaline casts, small round cells, and red blood corpuscles. The abdominal examination showed the uterus to be the size of a seven-months pregnancy, while the vaginal examination showed a long, primiparous cervix.

The patient was prepared for delivery at once, because of the premature separation of the placenta and the hemorrhage.

July 27, 1920. Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a seven-months male, macerated fetus. Manual extraction of the placenta. Puerperium.

July 28, 1920. The patient made a good ether recovery and had a good night. She voided normally.

July 30, 1920. There is no bladder discomfort. The patient voids normally. The breasts are engorged; they are treated by the application of a tight binder and the administration of magnesium sulphate. The temperature and pulse are normal.

August 1, 1920. The improvement is gradual. There is no discomfort, except for the breasts, which are still moderately engorged.

August 8, 1920. The patient is allowed out of bed. She is very comfortable.

August 11, 1920. Discharge Note: The vaginal and cervical incisions are well healed. The uterus has involuted in good position. There are no masses or areas of tenderness in the pelvis.

CASE 10. Mrs. B. A. Age 37. Para I. Indication—Toxemia of pregnancy, non-convulsive type. Seventh month of pregnancy.

The patient was seen for her family physician at the office. She complained of headaches, swelling of her ankles and twitching of her muscles. The headaches had existed since the onset of pregnancy. At the time of consultation, her restlessness was marked.

The examination of the abdomen showed the uterus to be the size of a seven-months pregnancy. A vaginal examination was not made at this time. The blood-pressure was 230/150. The patient was sent from the office to the Carney Hospital, where she arrived at 6 P.M., August 16, 1920. She was put to bed, given hot packs, magnesium sulphate and morphine sulphate, to the physiological limit.

August 17, 1920. The patient had spent a poor night. She had slept but very little. Her blood-pressure was 250/160. The urine showed a large trace of albumin, hyaline and granular casts, and fresh blood. Because of the rise in blood-pressure, despite the fact that she was on active treatment, it was decided to deliver her immediately, and vaginal cesarean

section was elected as the operation of choice.

August 17, 1920. Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a female child, who never took the initial breath, although the heart was beating at birth. Manual extraction of the placenta. Puerperium.

The patient made a good ether recovery. The blood-pressure remained high the first few days and then began to subside.

August 22, 1920. The patient has done well since operation. She has voided normally, and the bowels have functioned readily with the aid of magnesium sulphate. The urine shows less albumin and the renal elements are gradually disappearing from the sediment.

August 26, 1920. The patient has continued to improve. A head-rest was ordered.

August 28, 1920. The patient was ordered out of bed. Examination of the urine showed a rare hyaline cast; otherwise, it was negative.

September 1, 1920. Discharge Note: The cervical and vaginal incisions are well healed. The uterus has involuted in good position. There are no masses or areas of tenderness in the pelvis.

The patient was discharged to her family physician for further observation.

CASE 11. Mrs. M. M. Age 41. Para II. Indication—Toxemia of pregnancy, non-convulsive type. Seventh month of pregnancy. The past history was negative, except for the fact that the patient had had a miscarriage at three months, in 1919.

On January 31, 1921, the patient was seen at the office. She complained of severe headaches and swelling of her ankles. She was then seven months pregnant. Examination revealed marked edema of the hands and ankles, chemosis of the eyeball, and a blood-pressure of 190/100. She was sent to the Carney Hospital, where she was admitted in the late afternoon. At 11 o'clock the same evening, she was again seen. The blood-pressure was then 198/108, and the patient had become totally blind shortly after her admission to the hospital. Because of the severe toxemia and the long, rigid cervix, it was decided to deliver her by vaginal cesarean section.

February 1, 1921. Vaginal cesarean section. Anterior and posterior incisions. Internal podalic version and breech extraction of a seven-months, stillborn, female child. Manual extraction of the placenta. Right episiotomy. Puerperium.

February 2, 1921. The patient made a good ether recovery. She still complains of severe headaches, and is still blind.

February 4, 1921. The patient's convalescence is surgically satisfactory. The headaches are still troublesome, although the vision is improving. She is now able to discern large objects. The blood-pressure still remains high.

February 7, 1921. There is a marked general improvement. The headaches have disappeared and she has completely recovered from the blindness.

February 11, 1921. The patient feels well. She is sitting up in bed, enjoys a protein-free diet, and makes no complaints.

February 13, 1921. The patient is allowed to sit in a chair. She has apparently completely recovered.

February 17, 1921. Discharge Note: The episiotomy wound is healed. The cervical and vaginal incisions are healed. The uterus has involuted in good position. There are no masses or areas of tenderness in the pelvis. The urine still shows a trace of albumin, but no casts are found.

The urine examination was negative one month after her discharge from the hospital.

CASE 12. Mrs. Z. B. Age 42. Para IV. Indications—Previous amputation of the cervix. Toxemia of pregnancy, non-convulsive type. Inevitable miscarriage at 5½ months. Past History—The patient had had two previous operations, the first consisting of a dilatation and curettage, with an abdominal suspension, and the second, of an amputation of the cervix, an anterior colporrhaphy and a colpoperineorrhaphy. The previous obstetric history was irrelevant.

The patient was admitted, in labor, to the Carney Hospital on March 22, 1921. She was then 5½ months pregnant. She had been bleeding for 48 hours. The cervix was dilated to admit one finger. The membranes were ruptured, and the fetal heart sounds were not heard. The blood-pressure, on entrance, was 200/95, and the urine examination showed the following: sp.g. 1015, sugar absent, albumin s.p.t., sediment, considerable pus, few red blood corpuscles, a number of very granular renal cells, and a rare, fine granular cast.

The contractions persisted regularly, but because she made no progress with them, she was etherized, and a No. 4 Voorhees bag inserted. This was allowed to remain in position twelve hours, at which time there was no further dilatation. It was then decided to deliver the patient by vaginal cesarean section.

March 23, 1921. Vaginal cesarean section. Anterior incision. Internal podalic version and breech extraction of a 5½-months, macerated fetus. Manual extraction of the placenta. Puerperium.

The patient made an uneventful recovery. The temperature and pulse remained within normal limits. She had no bladder symptoms, and was comfortable during the entire convalescence.

April 8, 1921. Discharge Note: The cervix and the anterior wall are well healed. There is no bulging of the walls. The uterus is well involuted and in excellent position. It is freely

movable. There are no masses or areas of tenderness in the pelvis. The blood-pressure is 135/80, and the urine is negative, except for a rare hyaline cast.

CONCLUSIONS.

1. Vaginal cesarean section is an ideal operation when an indication for immediate delivery arises in a patient with a long, rigid, undilated cervix, up to the eighth month of pregnancy.

2. The operation may be done at term, as shown by Case No. 1 of this series; but here the difficulties are greater, and there is danger of the incisions tearing in the peritoneal cavity because of the large size of the child.

3. There are remarkably few bladder symptoms, considering the fact that this organ has to be separated from the anterior vaginal wall as well as from the uterus.

4. Since the operation is extraperitoneal, post-operative distention is a negligible factor.

5. The puerperium, as a whole, resembles that of any operative pelvic delivery.

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Medical Progress.

PROGRESS IN PEDIATRICS.

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A SUMMARY OF THE LITERATURE OF THE LAST FEW YEARS ON RICKETS.

UP to a few years ago little more was known about the etiology of rickets than was known when it was first described many years ago. Advance began to be made about five years ago, and during the last two years much has been learned about it, although the matter is not by any means as yet settled. Much of this advance has been due to better chemical methods, and more to the attention called by Howland and Park¹ to the fact that a definite correlation exists between the Roentgen ray signs and the actual pathological conditions in the bones.

Findlay², in a report of the Medical Research Committee of the English National Health Insurance Council in 1918, after giving a fairly complete historical review of the subject, came to certain conclusions, of which the following seem the most important: rickets generally develops in late