developed on this diet showed well-formed feces in the lower colon, and firm but not necessarily impacted feces in the cecum. The gums, extremities and condition of nutrition were, to all appearances, similar to the conditions found in animals autopsied after fatal results on the diet of oats and milk. The feces were dark colored, and the amount of putrefaction was much less than that found in animals which had been on the diet yielding feces of less bulk. The amount of distention was also much less; the appearance of the cecum, colon and ileum was not especially abnormal. The consistence of the stools altered but little during the period of observation. Administration of laxatives after the onset of signs of scurvy benefited these animals also.

It is not evident why, if scurvy in the guinea pig is due primarily to impaction of feces in the delicate cecum, the pigs on a diet of oats and hay should develop the disease, when the degree of impaction is at least much less than that seen in animals on a diet yielding pasty feces, and the character of the feces not especially abnormal. It is obvious that the poorly balanced diet leads to malnutrition, and it may be that absorption of toxins and bacteria from the intestinal tract may be attributed more directly to that factor, which probably involves the intestinal mucosa quite as much as other tissues. However, this note does not purport to be a discussion of the etiology of scurvy.

The presumption that a certain degree of the inspissation of the feces is due to a late or terminal feature of the disease seems to be borne out by the fact that the feces of animals killed before the very last stage of the disease are less abnormal than those found in animals at death. During the last stage of the disease, the animals are unable to move about and to secure water, and it is possible that a certain, though probably a small, degree of the fecal condition is due to this factor.

Blood cultures made on animals dying from or killed during the study were uniformly sterile. The histo-bacteriological studies of the tissues have not been done as yet.

It is of interest to note that a group of rabbits placed on the same diet of oats and hay showed no symptoms, save a loss of flesh, after four and a half months. One side of their pen was the basement wall, which had been white-washed and the rabbits had eaten off the

whitewash as high as they could reach. The rabbits in four other pens similarly arranged, and which were on a general diet, did not do this. Whether the calcium in the whitewash had anything to do with the prevention of scurvy or malnutrition was not determined.

SUMMARY.

Scurvy can be produced in guinea pigs on a diet which yields bulky feces, such as oats and hay. Autopsies on animals dying as a result of the disease which has developed on this diet show the usual findings seen in this disease and, in addition, a condition of the intestinal tract not far removed from normal. This is in contrast to the findings of an empty lower colon, impacted cecum, and pasty, putrefying feces, as seen in scurvy produced by a diet of oats and milk, and which features have recently been emphasized by McCollum and Pitz in their discussion of "The Vitamine Hypothesis and Deficiency Diseases" as the essential causative factor in this disease.

Blood cultures of animals with scurvy yielded uniformly negative results.

REFERENCES.

- ¹ McCollum, E. V., and Pitz, W.: Jour. Biol. Chem., 1917, Vol. XXXI, No. 1, 229-258.

Clinical Department.

INTRAPARTUM RUPTURE OF UTERUS AND BLADDER: RECOVERY. SUBSEQUENT CLOSURE OF VESICAL FISTULA.

BY GEORGE T. TYLER, JR., M.D., GREENVILLE, S. C.

MRS. A. S. B., aged 35; ii-para. The previous history was unimportant except that the labors were difficult—one instrumental. She was seen by her physician for the first time Nov. 18, 1917, while in labor (the third). He had been with her about an hour, had used no pituitrin or other uterine stimulant, when the pains, which were vigorous, suddenly ceased. On examination, the head, previously on the perineum, could not be felt. A diagnosis of ruptured uterus was made, and the patient was sent to the hospital for immediate operation.

Under ether she was catheterized, but only a few drops of blood were obtained. The abdomen was opened, the dead child removed with much blood. The uterus was ruptured throughout the length of the cervix and the lower body, just to the left of the median line. The

bladder was included in the tear. A supra-vaginal hysterectomy was done. After the uterus had been amputated, the patient was given intravenous salt solution as her condition was desperate. The wound was then closed with drainage, and the patient returned to bed. She responded to stimulants, and in a few days was out of danger.

Incontinence of urine, of course, resulted. Cystoscopy eight days after operation revealed a transverse tear behind the inter-ureteral ridge, about 5 x 2 cm. The urine escaped through the torn cervix, the anterior lips of which were widely separated. It was planned to close the fistula on the tenth day, but the patient developed an adynamic ileus, which delayed operation for a week.

Through a suprapubic incision the bladder was opened. The fistula was closed without tension on the right; but as the left side was approached it was found necessary to divide the bladder down to the tear, for the relief of tension. The wound was closed with drainage to the bladder, and a retention catheter placed in the urethra. There was no leakage until the seventh day, when urine again escaped through the vagina. Examination two days later showed that the sutures on the left side near the ureter had broken down. Silk stitches, used in ligating the uterine arteries at the former operation, could be seen through the opening in the bladder. The patient could prevent continuous leaking by lying on her abdomen and having a bed pan placed under her when she turned on her back.

It was thought best for the patient to go home for Christmas, and return later for closure of the fistula. In January, 1918, she returned, but there was so little leaking that she preferred to wait longer. In March, 1918, the opening in the bladder had contracted to 1 cm. in diameter. At this time the silk stitches previously noted were removed. They could be pulled down into the vagina through the cervix, and were divided with scissors.

In April, 1918, five months after the bladder was ruptured, a second attempt was made to close the fistula. I tried this by the perineal route, using Schuchardt's para-rectal incision, so graphically described by Dr. George Gray Ward, Jr., in *Surgery, Gynecology and Obstetrics*, August, 1917. Without this procedure it would have been impossible to operate from below, as the opening in the bladder communicated with the cervix just below the peritoneal covering. The anterior vaginal wall was incised longitudinally, the incision beginning 5 or 6 cm. anterior to the cervix, and extending back to it. The bladder was dissected as wide as necessary to prevent tension on the sutures. A female metal catheter in the bladder served as a guide to expose the fistula. The cervix was circumscribed and dissected as far as possible, especial effort being made to remove the

mucosa. Lambert sutures of chromic catgut closed the bladder. A second row, including whatever remained of cervical tissue, reinforced the first. These last sutures did not approximate the tissues completely, for fear that too much tension might be put on the bladder. The vaginal mucosa was then closed, and a retention catheter inserted into the bladder. It was very little trouble to close the para-rectal incision. A small drain was left in this wound. The patient made a good recovery. The catheter was removed on the 7th day, and the patient left the hospital on the 14th day. There has been no leakage up to the present time—one month after operation.

Aside from the recovery of the patient, the interesting feature of this case is the successful closure of the vesico-cervical fistula by the para-rectal incision of Schuchardt. The incision is simple, injures no important structures, and provides an excellent exposure.

A CASE OF FRACTURED PELVIS WITH RUPTURE OF THE BLADDER IN AN INFANT UNDER TWO YEARS, WITH RECOVERY.

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A FEMALE baby, 23 months of age, was recently admitted to the accident room of the Rochester General Hospital, suffering from injuries received in an automobile accident. According to the history, a rear wheel of a five-passenger automobile passed over the child's pelvis and lower abdomen.

The baby presented but few symptoms of shock, but was restless. Pain apparently was not great. Few physical signs were present. There were several superficial abrasions marking the line of passage of the wheel across the pelvis. The abdomen was slightly more tense than normal. There was no spasm or rigidity of abdominal muscles. No fluid wave could be made out, but flatness in the lower flank could be noted when the child was placed on either side.

An x-ray, taken immediately, indicated an oblique fracture of the left ramus of the pubis within 3-4 inch of the symphysis. Catheterization gave an ounce of fluid, containing a large proportion of fresh blood. An hour after the accident, a small catheter was passed and six ounces of sterile salt solution were injected into the bladder. Subsequent catheterization within five minutes yielded only two and one-half ounces of fluid, containing blood.

Under ether anesthesia, a mid-line incision one and one-half inches long was made just