loosened and left in the sigmoidal pouch, and as they were discharged out of the colostomy opening grafting took place at the site of the granulations just as bits of skin might have been grafted to this surface.

Therapeutic grafting of normal epithelial elements to cover raw surfaces is of course a well-known procedure. The Reverdin grafts, the Thiersch and Wolff grafts, represent the common forms. That therapeutic grafting is by no means confined to ontogenous sources is shown by the excellent work of Davis,¹ who has grafted such surfaces by means of cold-storage material obtained from amputated limbs, etc., and used it successfully as long as four weeks after the amputation. We know that epithelial cancer has potential initiative far in advance of normal epithelium, and that what happens under scientific direction for therapeutic purposes may be equaled by pathologic accident.

One reason for the small percentage of permanent cures following operations for cancer of the cervix is the proximity of the ureters to the cancerous process in the cervix. Normally the ureters and cervix are $\frac{3}{4}$ inch apart, but with malignant enlargement of the cervix they may lie in contact. While it is true that the ureters are not often involved primarily, we cannot expect to push them back out of the way during operative manipulations without carrying infection, as the results often demonstrate.

Traumatic dissemination of malignant disease is not uncommon. We have observed several cases of cancer of the breast which have been squeezed and manipulated by ignorant persons until a comparatively curable case has been rendered hopeless because of acute involvement of the skin and fascia.

Embolic vascular dissemination through traumatism is common, especially in cancer of the rectum. The infected thrombi in the derivatives of the portal vein are loosened and carried to the liver.

It is now nearly fifteen years since I abandoned cutting instruments for the cautery knife in performing vaginal hysterectomy for cancer of the cervix. I believed that vaginal hysterectomy done in this way furnished an opportunity for carcinomatous infection of the wound and traumatic dissemination through the lymphatic and vascular systems. It is worthy of note that while I had few cures during the period in which the knife was used, I noted a considerable percentage of cures after adopting the use of the cautery. The unexcelled results achieved by Byrnes in the use of the galvanocautery in high amputations of the cervix for carcinoma were probably due largely to the elimination of these causes of cancer dissemination.

The better results attributed to abdominal hysterectomy for cancer of the cervix as contrasted with vaginal hysterectomy may not be due so much to the removal of the pelvic and iliac lymphatic glands as to the fact that thorough destruction of the carcinomatous cervix is accomplished with the cautery immediately preceding the abdominal incision. When such thorough destruction has been made immediately preceding vaginal hysterectomy, I have observed little if any difference in the ultimate results, other things being equal. There are, however, many cases which are not suitable for the vaginal operation and in which the abdominal route, by furnishing freer access, gives better results.

The removal of pieces of tumor for microscopic examination should be attended by some precautions, and if possible preparation for the immediate extirpation of

the growth should be made if the frozen section shows malignant disease. If the suspicious tumor be localized, as in the breast, it is wise to remove the entire tumor for examination without cutting into it and then, if necessary, do the radical operation at once. If removal of the specimen cannot be followed by immediate extirpation, the wound in the growth should be sealed by the use of the actual cautery or pure phenol (carbolic acid).

We should take into strict consideration the possibility of the dissemination of carcinomatous material during operative procedures. A specialized technic should be inaugurated in which carcinomatous processes would be treated as though they were the focus of virulent infection.

The first and most important principle in operations for malignant growths is wide, local extirpation. More than a quarter of a century ago Heidenhain established the law that in operating for the removal of carcinomatous growths the limiting incision should be made at least 3 cm. from the visible expression of the disease. This limit is now considered by surgeons to be altogether too narrow for safety.

The second principle is the removal of the tributary lymphatics, if possible, by block dissection as advocated by Crile.² In this procedure the lymphatic channels, glands and the primary disease are removed in one mass.

The third principle in the operative technic in these cases is to avoid grafting or traumatic dissemination of malignant cells during the course of operation, and by proper prophylaxis prevent the possibility of grafting following operation.

TEMPORARY EMBOLISM OF THE MESENTERIC ARTERY

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REPORT OF A CASE

The following case ran a peculiarly interesting course and is worthy of note. I use the term "vegetative endocarditis" advisedly, because it was not possible to obtain an autopsy in order to verify the diagnosis of the pathologic condition of the heart.

History.—Oct. 3, 1912. Mrs. E. S., Hungarian, aged 27, married five years, had one child 3 years old. She had had two abortions, one before and one after the birth of this child. She gave an evident history of a former appendiceal inflammation about two years ago. Three weeks ago she consulted several physicians for the relief of some heart ailment. She was unable to recall any definite rheumatic attack. At 5 a. m., Oct. 3, 1912, I was called to see her. She was then in a very critical state; the case was one for emergency measures. Temperature was subnormal, and pulse rapid, weak and irregular. She was reacting from shock when I arrived, and was then suffering intensely from violent intestinal cramps. She appeared very anemic and was nauseated, but did not vomit. The heart was markedly enlarged both to the right of the sternum and to the left as far as the axillary line. There were murmurs over the mitral, aortic and tricuspid valves, but these were too weak to be defined.

Operation.—The patient was hurried to the hospital (Mount Sinai) where, two hours after the onset of the abdominal symptoms, I opened the abdomen and found the following conditions: The peritoneal cavity contained a considerable amount of turbid yellowish fluid; the small bowel and the ascending and transverse colons were intensely anemic and tightly contracted. During the manipulation of the bowel its color sud-

1. Davis: *Ann. Surg.*, 1910, II, 40-51.

2. Crile: *THE JOURNAL A. M. A.*, Dec. 1, 1906, p. 1780.

denly returned and the spasm relaxed. The vermiform appendix was removed. It contained five fecal concretions, each separately encysted. The uterus and its adnexa were normal. The liver was not enlarged, and the gall-bladder was easily emptied of its contents. The patient was returned to bed in fair condition.

Three hours later the patient awakened from the anesthetic and complained of excruciating pain in her left leg radiating from her knee down to her foot, which was cold and cyanotic. The application of heat and elevation of the limb offered no relief, and the injection of morphin, $\frac{1}{4}$ grain, and scopolamin, 1/100 grain hypodermatically, eased her suffering. The pulse had disappeared from the posterior tibial artery where it winds around the internal malleolus, and it could not be felt in the popliteal space. Dry gangrene was the inevitable result and the line of demarcation became defined above the ankle-joint soon after.

Meanwhile the patient's general condition had vastly improved, and she was able to take and assimilate general hospital diet. The bowel movements had become regular and normal in appearance, and no blood was to be found. Urine contained hyaline and granular casts and albumin, but no sugar. She had no pains in the legs and nothing pointed to attacks of Raynaud's disease.

October 18, with the patient deeply under morphin and scopolamin and a very slight quantity of chloroform anesthesia, I amputated the left leg at the knee. The next day she developed acute dilatation of the stomach, which subsided after repeated lavage and several hypodermatic injections of physostigmin sulphate. A few days later while she was talking to her husband, she fell suddenly backward and expired after a few convulsive movements of the left side of her body. Autopsy was refused.

The question arises, were the tetanic intestinal spasms and the intense intestinal anemia due to an embolus, temporarily lodged in the superior mesenteric artery, or was there some other obscure cause which might account for these symptoms? Experiments on dogs have proved that temporary occlusion of the mesenteric artery produces violent tetanic spasm of the bowel with the accompanying anemia; if the occlusion is removed early enough, the bowel will return to its normal state, but if the occlusion is continued long enough, hemorrhagic infarction and sloughing ensue.

In this case I believe that the whole train of symptoms followed the erratic course of an embolus which had broken off from an endocardial vegetation and its lodgment.

This embolus was probably lodged at first in the superior mesenteric artery, from which place it was dislodged by the manipulation of the bowel and its mesentery when the abdominal section, which was apparently timely (two hours after the onset of the abdominal symptoms), was performed. The manipulation of the bowel and the mesentery probably forced the embolus back into the aorta, whence it was carried forward into the iliac and femoral artery of the left side, and finally lodged in the popliteal artery where it played further havoc—spasms and pains in the left leg—distal to the femoral artery. It made its presence known as soon as the patient awakened from the anesthetic. Collateral circulation was insufficient to compensate for the loss of the popliteal supply.

The sudden death and the terminal convulsions were no doubt due to the sudden lodgment of an embolus in the brain.

Dissection of the amputated limb showed complete thrombosis of the anterior and the posterior tibial arteries.

733 Central Avenue.

AN UNUSUAL TYPE OF HYDROCELE

CHARLES A. PARKER, M.D., CHICAGO

The following case of hydrocele appears worthy of record on account of its unusual pathology. The patient was a well-developed boy, 11 years old. He had fallen on the sidewalk a week previously and the next day had observed a swelling of the scrotum, which had increased in size up to the time of his application for admission to the Children's Memorial Hospital. On examination there was found a characteristic painless pear-shaped, fluctuating swelling in the left side of the scrotum measuring about $2\frac{1}{2}$ by $1\frac{1}{4}$ inches in diameter. A diagnosis of hydrocele was made and an operation advised. The cyst could not be diminished on pressure. There was no history of a hernia and no evidence of one obtained.

At the operation, Nov. 10, 1912, about 2 ounces of a clear amber fluid were evacuated and the cyst was opened. From the upper wall there projected into the cavity a lobulated reddish mass about one-half inch long broadened below and nar-

rowed to a small pedicle above. (See illustration). This proved to be omentum. The pathologic condition immediately became clear. This portion of omentum from an unrecognized hernia had become adherent to the circumference of the very narrow opening in the upper part of the tunica vaginalis, effectually blocking it, while its own circulation had been interfered with just enough

Adherent omental protrusion causing hydrocele.

to stimulate secretion but not to cause gangrene or any subjective symptoms of strangulation. The omentum was loosened and after the hydrocele was disposed of a radical operation for hernia was performed. A much-needed circumcision was also done. Prompt recovery followed.

Fluid in hernial sacs following circulatory disturbances of the hernial contents is the rule, but in most cases the hernial symptoms predominate and no true hydrocele is formed. In the present case the hydrocele was the main feature while the hernia remained obscurely in the background.

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A NEW SUPRAPUBIC DRAINAGE APPARATUS

ERNEST G. MARK, M.D., KANSAS CITY, MO.

It has been my experience that the various devices for permanent suprapubic drainage heretofore presented to the profession have been inefficient, cumbersome and uncomfortable.