healing slowly with moderate discharge, and he is to-day, August 17th, sitting up and will surely recover perfectly.

CASE III.—Some time since I amputated the thigh at the upper third in the case of a little son (14 years of age) of Mr. M. Wright, for encephaloid cancer of the knee. The foot and ankle were not much swollen, but the knee was almost as large as the patient's head, the skin unbroken, the bones of the joint entirely destroyed, and their place filled with a great mass of encephaloid substance and putrid fluid. The patient was greatly prostrated, and required only about one and a half ounces of the anæsthetic; the artery was compressed at the pubis by an assistant; antero-posterior flap operation; loss of blood about four ounces. He improved rapidly in strength, while the stump slowly but completely healed. Some months afterwards, I learned from his physician, that he died from an attack of pneumonia.

I could give many other cases, but these are sufficient at this time, and are good samples of those usually requiring amputation, and are certainly not such as should be regarded as favourable for Esmarch's method. In the hands of judicious surgeons the elastic roller and cord will without doubt prove a most valuable acquisition, yet their indiscriminate use should be avoided, for it is infinitely better for the patient to lose a few ounces of blood, even if in a prostrated and anæmic condition, than to force from the limb its poisoned blood, septic matter, or unhealthy sanies, or indeed even healthy pus with which the tissues may be saturated, into the general circulation to poison the whole blood mass, or into the structures forming the stump, thence to be absorbed into the system, or to slowly return and ooze from the cut tissues to poison them and retard union. I do believe it is possible for large collections of unhealthy matters to remain pent up in almost any portion of the body for a long time, and the system not be contaminated thereby, but not so when by violence we rupture these cysts and sinuses, together with the capillary vessels, and indeed even larger blood-vessels, and forcing these matters far beyond their original location into the cellular tissue and general circulation. In such cases pyæmia or septicæmia and death follow.

WEST CHESTER, Pennsylvania, Aug. 17, 1874.

ART. XIII.—*Amputations by Ligature and Elastic Cord.* By N. R. SMITH, M.D., Emeritus Professor of Surgery in the University of Maryland. (With a wood-cut.)

THE use of the ligature in aid of the knife, in amputations, dates with me some twenty years anterior to the present. This means of effecting the removal of parts has been strongly suggested by the remarkable case, familiar to my readers, of the penetration of the scalp and even the bones

of the cranium, by a fine gum-elastic band worn for a long time on the head of a young lady, as an article of dress. It was manifest from that case that an elastic cord, by its steady but gentle pressure, may penetrate the most resistant parts without causing such pain as to demand its removal.

The case which I shall first relate is one in which the silk ligature (inelastic) was employed.

I. Amputation of the Tongue by Ligature.—Early in Nov. of 1873, I was consulted in a remarkable case of enlarged tongue in the person of a young lady about thirteen years of age. She was accompanied by her physician Dr. A. S. White, a very intelligent practitioner of Montgomery County, Maryland.

The date of the origin of the disease was not accurately known; but it had been in progress for months. At the time at which it was first

submitted to me, the organ was permanently protruded from the mouth, and could not in any degree be retracted. The protruded portion was some two inches in length and an inch and a half in diameter, presenting the appearance here imperfectly represented. The teeth, above and below, had deeply impressed it, so that, when viewed laterally, it had the appearance of a pear of medium size. The teeth were distorted by long-continued pressure, and some of them lost.

There was but little sensibility in the organ, nor did she suffer much but from its dryness and rigidity. The deglutition of fluids was difficult, and

the mastication of solids impossible. However, she presented the appearance of being well nourished.

The extirpation of the hypertrophied portion of the tongue was, of course, demanded. Its section by the knife was discussed, but the anticipated hemorrhage, when the stump should be retracted into the fauces, and the difficulty of arresting it, forbid that expedient. I suggested the application of a silk ligature, and with the concurrent opinion of Dr. White in favour, proceeded to apply it. I employed a stout thread of saddler's silk and drew it with as much force as I well could. The thread sunk into the furrow caused by the pressure of the teeth. Much to my surprise it caused very little pain, and, while she was with me, she scarcely complained at all.

It was understood that Dr. White should apply a second ligature, and even a third, if necessary, at intervals of two or three days, and then use the scissors to separate any shreds that might remain. She was then taken to her country home.

Dr. White relates the sequel in a letter to me dated a few days after the first operation.

"I am pleased to inform you that I removed the tumour this morning, it being held by nothing but fascia. I separated it with scissors after the application of a fresh ligature, which I thought best, to guard against

hemorrhage in case there should be any bloodvessels not constricted. I am pleased to say that she has not lost more than an ounce of blood since the operation was commenced. The healing process is going on as rapidly and as favourably as we could desire."

In a letter of later date (Nov. 17, 1874), Dr. W. informs me that "the health of our former patient has been uniformly good since the operation. She has a perfectly healthy stump, and articulates well, notwithstanding the loss of several of the incisors, above and below. Deglutition unimpaired."

II. *Removal of a Tumour of the Rectum by the Elastic Ligature.*—I was recently consulted in the case of a lady of this city suffering from a tumour of the rectum. It was attached to the organ about an inch and a half above the verge of the anus by the cervix three-fourths of an inch in diameter. The tumour was about three inches in length and two inches in diameter. It had no epithelial investment like that of an ordinary hemorrhoidal tumour, but had the appearance of a sponge of loose texture saturated with blood. She could expel it at will, and it generally came down when she evacuated the bowels and had to be returned, which was easily accomplished.

A little blood was lost on those occasions, but there had occurred no copious hemorrhage. She suffered but little pain, but much mental uneasiness. She had used some remedies, such as are employed for hemorrhoids, but without effect. I could not regard the tumour as malignant, it having none of the characteristic pain of cancer; nor was the cancerous diathesis present.

I determined at once to apply the elastic ligature. I used a cord of gum-elastic about the size of a number 2 catheter, wrapping it six times round the neck close to the surface of the bowel, and tied it with a firm knot. I then returned the tumour into the bowel.

On visiting her the next day I found her complaining of very little pain, and the discharge of blood was very slight. On the third day the report was the same, and thus on, every day improving until, on the 21st day, the tumour was discharged without the slightest hemorrhage or any pain.

It is now a week since the discharge of the tumour, and the patient reports herself perfectly well.

In this case I think the wrapping of the cord five or six times round the neck of the tumour was important, as it gave to it much more compass of contraction, and rendered the constriction more uniform and constant. The gum-elastic cord is, moreover, non-absorbent and imbibes no putrescent matters.

I consider the use of a gum-elastic ligature, as illustrated by this case, an improvement of no small importance in surgery.

III. *Removal of the entire Uterus by Ligature and Knife.*—It is some thirty years since I was called to Mrs. Linthicum, living about four miles from Baltimore, suffering from inversion and complete prolapsus of the uterus. It had been caused, many months before, by severe traction on a retained placenta. It had been found impossible to reduce it immediately after, and, when I saw it, had been so long strangulated and hypertrophied that any attempt to effect its replacement was out of the question. Whenever she menstruated, the menstrual secretion would be seen exuding from the mucous lining of the uterus.

The patient had suffered so long from this condition of the organ, especially from the heavy traction of it, as she made efforts to keep about,

and the irritation caused thereby, that her health and strength were greatly impaired. At the time I saw her she was confined to bed, and it was manifest that, unless something could be done for her relief, she must soon sink. But I was apprehensive that, if I at once severed the neck with the knife, fatal hemorrhage would result. I determined therefore to ligate its neck with a flat ligature (tape-like), tying it with sufficient tightness to greatly impede the circulation, and diminish the volume of the neck preparatory to its section by the knife. I continued to increase the constriction daily for three days, the tape deeply impressing the neck; but the irritation became so great that I was compelled to incur the risk of immediate amputation. Accordingly, I made the section of the neck with one stroke of the knife. The stump was immediately retracted within the vagina, and a pretty copious gush of blood resulted. The flow was from an indefinite number of small vessels, which circumstance, together with the retraction, greatly embarrassed my efforts to secure the arteries. I was obliged to rely mainly on styptics and pressure, filling the vagina with a tampon, and supporting it with a T bandage. The patient, however, from irritation and loss of blood, became exceedingly prostrated, and I almost despaired of her recovery. On the fourth day she began to rally, and shortly recovered.

She removed from her country residence, and I never saw her again. She died some five years after the operation, from maladies bearing no direct relation to her uterine trouble.

I learned from the physician who attended her, that she regularly menstruated, though scantily, after the operation. I have the tumour now in my collection.

Had I been then acquainted with the use of the elastic cord, I doubt not that I could have removed the organ without the use of the knife, and with far less pain and peril to the patient.

ART. XIV.—*Syphilitic Intra-cranial Disease.* By C. ELLERY
STEDMAN, M.D., and ROBERT T. EDES, M.D., of Boston.

A. B., aged 32, single, yeoman U. S. Navy, entered Boston City Hospital 24th October, 1871, in the service of Dr. C. E. Stedman. The hospital record made by Dr. C. E. Wing, then house physician, is as follows: Family history rather obscure. He entered the navy thirteen years ago, and soon contracted gonorrhœa, which he has had several times. He does not know that he has had a sore on the penis, but has noticed abrasions at times, and thinks he may have had syphilis; was salivated ten years ago when he had yellow fever, and has taken no mercury since. He thinks he recovered perfectly from the results, but the gums now recede much from the teeth. Is rather bald, but never had any particular falling out of hair, and never noticed any eruption on skin. There are small hard glands in neck and groin, and another small one at the left elbow, none of them tender. Fifteen months ago he had ulcers in the throat, which were "burned with caustic;" these returned a year ago, when he was told he had syphilis, and took iodide of potass. with relief.