shaped line of union. Then the lower portion of the wound is united by two or three sutures (Figure 8, c.), and a lower fourth suture (Figure 8, d.) is inserted through the two halves of the prolabium.

After thorough cleansing and disinfection of the wound, the sutures should be tied: first, the tension, and then the coaptation sutures (Figure 7).

4. *Dressing of the Wound.*—The wound should be dressed with borated cotton-collodion, or in older patients, with iodoform collodion. The nostrils, especially in older patients, should be loosely packed with borated or iodoform cotton. Over this two straps of adhesive plaster should be applied. In older patients a strip of iodoform gauze should be laid in the mouth along the line of union of the prolabium. In new-born children the nostrils need not be packed with cotton, and no iodoform gauze should be used; but these localities should be frequently dusted with finely powdered boracic acid. The dressing should be changed according to the amount of discharge, never more than once daily.

5. *Removal of Sutures.*—The coaptation sutures of the skin may be removed at the end of the first week; the tension sutures, according to the amount of tension remaining, usually late in the second week; finally, what may remain of the prolabial sutures should be removed still later, when the union is so solid that the upper lip is able to tolerate manipulation.

It is immaterial how narrow the new upper lip may appear to be immediately after the operation. König remarks (in speaking on plastic operations on the lips—keiloplastic operations following the extirpation of labial carcinomas), that the shape of the mouth, however deformed it may appear, on account of unequal size of the lower and upper lip in the first weeks after the operation, that in the course of some months the shape of the oral orifice and lips becomes more normal, surprisingly so when a sufficient time, from three to six months, has elapsed.

The all-important feature of the operation is to make the upper lip long enough in a sagittal direction, and to have exact union of the lower portion of the prolabium.

Apparatus to draw the cheeks together for the sake of immobilization or to diminish tension, I have, up to this time, found superfluous.

CONCLUSIONS.

The two main points in this harelip operation are the incision and the prolabial sutures.

1. The incision, a linear incision, is similar to that made in the operation for laceration of the perineum as proposed by Lawson Tait, and by him termed "flap-splitting." As stated above, this possesses the advantage of not sacrificing any tissue of the parts already more or less de-

fective; on the other hand, repeated denudations made necessary by unsuccessful attempts at union would tend to make the lateral portions of the lip smaller and smaller. Furthermore, the linear incision, by loosening the everted prolabium (which is readily converted into mucous membrane by the simple change of position into the oral cavity), furnishes so much tissue for the posterior surface of the lip that union of the prolabial borders is easy, even before any tension sutures have been applied.

2. The prolabial sutures should be accurately applied. Fine curved needles should be used, the sutures made of fine silk. Interrupted sutures should be employed, in sufficient number and at sufficient intervals to furnish exact union. These sutures close the wound against the mouth and make the wound, so to speak, cutaneous instead of visceral, and thereby prevent infection from the ever-present multitude of microbes in the mouth. I believe that this suture will prove to be a potent factor in securing uniform results by preventing suppuration and non-union of the wound.

3. The cosmetic results have been all I could desire. If a slight indentation at the line of union of the prolabium has existed immediately after the operation, it has generally disappeared after a few months, provided the lip has been made long enough at the time of the operation.

4. I think that this method is applicable in all cases, and should take the place of all the numerous older methods of operating.

SPRAINS OF THE ANKLE.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY W. R. TOWNSEND, A.M., M.D.,
OF NEW YORK.

ASSISTANT SURGEON, HOSPITAL FOR RUPTURED AND CRIPPLED; ORTHOPÆDIC SURGEON, NEW YORK INFANT ASYLUM; LECTURER ON ORTHOPÆDIC SURGERY, NEW YORK POLYCLINIC.

There is a popular impression among many of the laity "that a sprain is worse than a fracture," yet, to judge from the amount of space devoted to the subject in our text-books on surgery, it is evident that their authors do not agree with the statement. We must, however, admit that some grounds exist for the belief, and that, while we seldom hear of an ununited fracture, or of a fracture causing trouble years after the original injury, we are constantly meeting with cases of chronic sprain of the ankle, of flat foot, of various forms of bone and joint disease which we can clearly trace to a sprain. Several reasons exist for this state of affairs, and in many instances, the reason may be clearly shown to be the faulty or neglected treatment of the original injury.

Mr. Mansell Moullin, of London, in his most thorough and interesting monograph on "Sprains;

their Consequences and Treatment," says in his Introduction: "Few injuries are treated with so little consideration as sprains. It is impossible to overlook wounds, owing to the bleeding and pain which accompany them. Fractures, it is understood, require rest and care; but sprains, in which the tissues are torn to such a degree that the damage is far more serious than in many fractures, merely because they are so common, are considered of little or no consequence. It counts for nothing that the part injured is one of the most complicated structures in the body, and particularly liable to inflammation from the constant use to which it is subjected. Yet a fracture is regarded as very serious, a sprained joint as quite a trivial matter." Other authorities could be quoted to show that sprains in many cases receive little or no treatment; the patient is dismissed with the statement that it is only a sprain; bathe it in hot or cold water, or rub a little arnica or Pond's extract on your ankle. Nothing more is thought of the case, and years afterwards, the original injury having almost been forgotten, the sufferer applies to some specialist for treatment.

This state of affairs is very graphically described by Royal Whitman, M.D., in an article read before the American Orthopædic Association in 1890, on "The Treatment of Persistent Abduction of the Foot, commonly known as Chronic Sprain of the Ankle." He says: "The successful treatment of any chronic affection demands a personal, persistent attention to details on the part of the surgeon. This is particularly true of the treatment of what are known as minor injuries, and therefore neglected. One of this class, commonly known as chronic sprain of the ankle, may entail years of discomfort and disability, with permanent impairment of the functions of the foot. The usual history of such cases is as follows: Long-continued weakness and discomfort, following an injury to the ankle, treated by various physicians with liniments, blisters and bandages, until the discouraged patient is told that nothing more can be done, but that his symptoms 'will wear away in time.' A year or two later he presents himself, usually for the purpose of securing a brace, or for some peculiar shoe which he thinks may be of service to him."

I have quoted thus at length, because it is my firm belief that most of these disagreeable after-effects can be avoided, if the patient and surgeon will simply recognize the fact that every sprain, no matter how trivial, is worthy of treatment.

The prevention of a flat foot is easier and more satisfactory than its treatment, and a large number of the cases have their origin in a simple and neglected sprain of the ankle. The same is true of bone lesions, and if the injury is recognized, and its importance admitted, many cases will

thus be saved from the unpleasant symptoms, so common, as the result of the practice of considering sprains as slight and unimportant injuries.

The definition of a sprain as given by Webster—the weakening of the motive power of a part by sudden and excessive exertion—describes both the manner of production of the injury and the result produced, but a more accurate and better definition is that given by Mr. Edward Cotterell, in his little book on "Some Common Injuries to Limbs." He says: A sprain includes all injuries to a joint and its surrounding structures produced by a sudden twist, but stopping short of dislocation.

Many degrees of severity may exist, and the classification adopted by S. L. McCurdy, M.D., in an article on "Sprains and their Treatment," which appeared in the *Columbus Med. Journal* for January, 1891, is a very good one.

He divides them into three classes. In the first there is simply a contusion of synovial membrane and a stretching of the soft parts; in the second there is a rupture of the ligaments and synovial sac; and in the third "sprain fracture"—the ligament, instead of tearing, pulls off a thin layer or slice of bone. This accident, though infrequent, perhaps might best be considered under the head of fractures.

A better method of studying the cases, seems to me to be that adopted by Mr. Moullin in the monograph previously alluded to, and its perusal will repay those interested in the subject.

He discusses the effect produced on each tissue by such injuries, and the mutual sympathy of all the parts. The ankle-joint is particularly liable to sprains, its normal movements being flexion and extension, in alighting upon uneven surfaces, whether from a height or from some moving body, as a car, wagon, etc., unless the foot is evenly placed, the weight of the body being suddenly thrown on the joint, causes the foot beneath it to twist, and a violent wrench or sprain ensues. Severe pain is felt, in most cases limited to the parts near the ankle, in other cases extending up the limb. In the most severe cases, a condition of shock may even result, and the entire nervous system apparently becomes deranged.

Moullin says: The pain when ligaments are torn is usually described as sickening in character, and those who have once felt it, rarely fail to recognize it a second time. If a muscle is strained, there is generally a peculiar sensitiveness of the skin, most marked over its points of attachment to the bones or tendons. Slight touching of the part may cause exquisite pain, yet firm pressure may be well borne.

When the muscle is torn across, either partially or wholly, there is a sharp pain, like that of a blow with a whip or a cricket ball, so that the patient may turn around to see who has struck him before he is aware anything has given way;

and then, as the swelling begins, this is followed by a feeling of stiffness and soreness, severe even when the limb is at rest, but so much worse when an attempt is made to use it, that the patient can often hardly be induced to try. Similar pain occurs when a muscle is dislocated, and after the restoration there remains a sensation of soreness, with a tender spot corresponding to the slip displaced. These tender spots may remain for a long time in the ankle, if a lateral ligament has been torn away from the bone—but allowance must be made for those that are normally present when a joint is hurt. What they are caused by is not always certain, but as a rule they correspond to points where the capsule is thin and flexible and not far removed from the surface, so that pressure falls directly on it. At the ankle there is generally one on the front of the joint, rather to the outer side of the middle line.

Swelling more or less severe follows. The joint may become distended with synovial fluid, or blood may become extravasated into it. The appearance of the swelling may be very rapid, in many cases extreme, and followed by inflammatory symptoms—increased local temperature and redness, later on perhaps followed by an increase of the body temperature, if the inflammation be very severe. Motion of the affected joint may be slightly diminished, or even entirely lost, spasm of the muscles in proximity to it occur, and motion is thus limited, or the patient may voluntarily contract the muscles, from fear of being hurt, and thus produce spasm. Staining occurs at or near the site of injury, due to the extravasated blood, the color varying according to amount extravasated and the time it is seen after the infliction of the traumatism. If the bursa is injured, a teno synovitis or bursitis may follow, characterized by the presence of fluid in the bursal sac, and in some cases, later on, by adhesions. The close resemblance of these sprains to many dislocations is clear when we recognize, as was done by Vidal de Cassis, that they are really the same thing, only that reduction has taken place spontaneously.

Having thus briefly considered the pathology and symptoms, the question of treatment should not be a difficult one.

If we recall the anatomy of the ankle, we find that it is superficial, not covered with much fatty or muscular tissue, surrounded by ligaments and tendons, and that the latter have reflections of the synovial-like membranes from their sheaths, forming bursæ. The indications are to give the injured parts support and rest, restore the joint functions and prevent inflammation.

It is of course understood that a careful differential diagnosis must be made. The sooner the case is examined after the injury the better. Fractures and partial dislocations, bone or joint disease, must be carefully excluded.

If any doubt exist, give the patient the benefit of that doubt. Do not hesitate to give an anæsthetic if, for any reason, careful and satisfactory examination cannot be made without it. This is of great importance from a medical as well as a legal standpoint, as a case of Pott's fracture or fracture of tibia, fibula or tarsal bones, if treated as a sprained ankle, might cause serious trouble. These mistakes should and can be avoided. When the lesion has become chronic, the diagnosis is often difficult, and bone disease is easily mistaken for chronic sprain of the ankle, but we are supposed to be dealing with the acute or recent cases. How best to fulfil the indications of treatment depends somewhat on the individual case and the facilities at hand. Rest of the part with preservation of its function, seems to me best accomplished by means of a dressing of adhesive plaster which I call the Cotterell dressing, as Mr. Cotterell was the first to use it in sprains of the ankle, although the idea was suggested to him by Mr. Wharton Hood (*Lancet*, Vol. ii, 1884, p. 728), for the treatment of what is known as lawn tennis leg. The limb is elevated, to assist in reducing the swelling, then strips of adhesive plaster, each 1½ inch in width, and of the length adapted to the foot and ankle joint, are applied, somewhat as strapping is applied in the treatment of chronic ulcers of the leg. It is not advisable to use strips narrower than one inch, as they may cut the parts by a curling up of edge of the plaster. Over this a firm roller bandage is applied, and the patient is directed to get up and walk. The adhesive plaster causes a firm and even compression of the parts, acts as a light splint, prevents exudation and permits motion, which in the mild cases is desirable. The patient may come into the office limping and heavily leaning on a cane, and yet after the application of this dressing, if he is once persuaded that motion will not injure his joint, he is enabled to dispense with the cane, and in a short time walk with comfort. In one case a policeman weighing 280 lbs., although he had not stepped on his foot for three days after a severe sprain of the ankle, was enabled to return to duty within six hours after its application. This treatment is recommended where the injury simply consists in a wrenching of tissue and a contusion of synovial membrane.

In the more severe injuries, when ligaments are torn across, muscles ruptured, synovitis or bursitis present, the parts should be strapped, and then foot and ankle encased in a plaster of Paris or silicate of soda splint. Care should be taken that the foot be put up at a right angle with the leg, and in a position of varus, not of valgus. The strapping in all cases should be renewed in a few days, as, when the swelling subsides, it becomes loose. The plaster of Paris must not be left on too long, as when acute symptoms subside motion is desirable, to prevent adhesions

and stiffness of the joint. If extreme swelling or inflammation have occurred before case is seen, then heat, cold, the various antiphlogistics, may be used, and after these massage and electricity. Support is needed as long as there is swelling or marked tenderness.

It is not intended in this paper to discuss the subject exhaustively, but rather to call attention to the fact that sprains of the ankle, even of slight degree, are worthy of careful treatment, and that, in my opinion, the Cotterell dressing is the best form of treatment in the mild cases, and the Cotterell dressing and plaster of Paris in the more severe.

THE RELATION OF CALCULI TO MALIGNANT DISEASE OF THE LIVER AND KIDNEYS.

Read in the Section of Surgery and Anatomy, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May 5-8, 1891.

BY I. S. STONE, M.D.,

SURGEON TO COLUMBIA HOSPITAL, ETC. WASHINGTON, D. C.

Since it has become the established surgical method to explore the abdomen in case of doubtful diagnosis, we have definite scientific knowledge, which can often be used for the well-being and safety of the patient while alive, instead of merely adding to our stock of post mortem information. Among other beneficent results to which we have fallen heir is the improved surgery of the liver and kidneys. In the performance of these operations, many surgeons have noted the frequency of the correlation of biliary and renal concretions with malignant disease. The following case will illustrate the subject to which I desire to direct attention in the present paper.

Mrs. —, age 65, had from time to time for six months before my attention was called to the case, attacks of biliary colic. Her physician had given the usual treatment, such as olive oil, etc., with the alleged result of causing the evacuation of several "rather soft" gall-stones. (I have never had any reason to think olive oil any better drug than any other substance capable of being saponified, or otherwise causing fatty or soapy masses to pass per anum resembling gall-stones).

At last, after much delay, and the advent of grave symptoms of collapse, the patient was referred to me for operation. There was slight jaundice, the urine highly colored with bile, and the usual stools seen where there is absence or deficiency.

There was some enlargement of the liver just over the gall-bladder, and some emaciation of the patient. Diagnosis, gall-stones, with probable malignant disease. The operation was a very simple one. As soon as the peritoneum was opened, and before a sponge could be securely placed in position, an abscess opened and poured

out two or three ounces of offensive pus. The malignancy was beyond doubt, and quite a number of gall-stones were quickly removed, although no time was lost in searching for them. The peritoneum was stitched to the abscess wall, thus securing the peritoneal cavity from infection for the time, and a drainage tube and dressing completed the operation. The patient was quite comfortable after the operation, not even requiring morphia, as she had done previously. She lived very comfortably for three weeks, and died of uncontrollable hæmorrhage from a vessel deeply seated in the liver. This case, and several autopsies where a similar condition was found, have led the writer to a study of these phenomena, and the points at issue are these:

Are calculi a cause of malignant disease, or are they a result?

Is their presence merely a coincidence?

Or are calculi very often present without giving rise to symptoms, or disease, and only found post-mortem?

It is quite possible that vague and indefinable symptoms, very often reflex in their manifestations, leave us in doubt as to their significance.

That there is an element of truth in all these statements is beyond question. It has been shown by several authorities that the kidney is not so frequently invaded by malignancy as a result of calculous disease as is the liver. For instance, Ralfe gives "renal calculi" a cause of cancer, as we often find renal concretions in cancerous kidney, though it is certainly not such a frequent clinical sequel as is the case in biliary disease.

A clinical instance is given by Dr. Norman Moore (*London Path. Soc. Rept.*, 1882); also an instance by Mr. Pollard in same *Trans.* for 1885 (*Ralfe, Dis. of Kidney*).

In St. Bartholomew Repts. we find, Vol. XXI, a case reported of nephrolithotomy for calculous pyelitis, and after death not only an abscess, but epithelioma, was found, which was produced by the irritation of the calculus (*Newman, Surg. Dis. Kidney*).

The writer has notes of one case of chronic Bright's disease in which, at the autopsy, several calculi were found in one kidney. No positive symptoms of stone were recognized during the patient's life.

Dr. Bright early recognized the coexistence of renal calculus and cancerous disease. One report shows the finding of a lactic acid formation in one kidney, and an oxalic stone in the other.

Another case mentioned by Brodeur (*p. 170, Newman's Dis. Kidney*): A female, æt. 36. R. Kidney tumor removed by abdominal method. "Patient died in two days. Weight of tumor, 1 lb. Pelvis and calicis contained calculi, although the microscopist said the disease began in the epithelial lining of the renal tubules."