The treatment tends to use up the acid secreted and facilitates the motor function. Starches should be limited, and of carbohydrate foods sugars or predigested starches, dextrinized flours, as Avenacia flour or Horlick's food, used as much as possible, since starch digestion in the stomach is impeded in these cases. For all symptoms of disorder, as distress or eructations, some proteid, as a raw egg, is to be taken. An alkali, bicarbonate of soda in half-teaspoonful doses, or 15 grains of magnesic hydrate, may be taken in addition to food or in place of it for the relief of symptoms. In some cases large amounts of alkali, 3 drachms bicarbonate of soda, must be used in the twenty-four hours. Three pints of water are prescribed to be taken in small amounts at a time throughout the day. In addition, general rules in regard to baths, exercise, the bowels, the work, and general manner of living are laid down in writing. Debility must be treated by tonics. *Nux vomica* is a most useful agent here to improve the tone of the system and thus also perhaps the motor capacity of the stomach. Where anemia is present by blood tests iron should be given. Chlorosis is not infrequently associated with hyperacidity. After an administration of iron with the regular régime for a few weeks these cases as a rule lose all symptoms of hyperacidity even with cessation of treatment. There is little doubt that it is a similar improvement in nutrition which accompanies the increased diet, and good régime and freedom from nerve disturbance which ensure the cure in a majority of all the cases.

The exact details of treatment of course vary with the cases. Many cases of hyperacidity are intermittent or paroxysmal. These cases it is necessary to treat locally only during the period of attack, while a general method of régime should be employed constantly to prevent recurrence. In some cases the acidity is only after one meal, as, for example, dinner. This must be borne in mind in the determining of the diagnosis as well as in the treatment. We must get the contents at the period of symptoms.

This treatment gives excellent results in the great majority of cases. In some, relief is immediate, and with the return of normal tone it is possible after a month or two to drop special treatment. In a majority of these cases the acidity is found in time to be normal, in others the acidity remains as at first, though the symptoms disappear. In a certain proportion of cases the treatment must be followed in a general way permanently. It is impossible to collect accurate statistics of cure from an out-patient clinic. But it is certainly a rare exception to see a case of hyperacidity which does not yield to this treatment when properly applied. In my records I find less than 10% of cases returned as not relieved after trial of this simple treatment of régime, diet and alkalis. In these obstinate cases lavage is often a useful adjunct to treatment. After a few weeks of lavage combined with a very special diet worked out by experience with the case, the patient is raised to the regular régime. In these cases it is often necessary to feed small amounts frequently and to use concentrated food substances, as the Leuke-Rosenthal meat solution, Mosquera beef meal, somatose, which have a high capacity for combination with hydrochloric acid. Such cases are, however, exceptional. As a rule the diet of easily digested or liquid foods is the least useful one that can be chosen. In some obstinate cases I have used

nitrate of silver for internal treatment and for lavage with success.

It is well known that our cases of hyperacidity are of two types: One in which a neurosis or functional hyperactivity appears to be the fundamental element in the case, and one in which a marked increase in the gland tubules and oxyntic cells of the gastric membrane is present as an underlying pathological condition. This latter condition, a form of chronic gastritis, the gastritis acida of Cohnheim, is diagnosed by the presence of fragments of the pathological membrane in the stomach washings. It is said by some observers (Hemmeter) that 50% of the cases of hyperchlorhydria have some such hyperplasia of the tubular structures. Typical cases of this condition are, however, much less common, and such fragments are, in my experience, found in a much less per cent. of cases by ordinary methods of examination. When our condition is obstinate, and does not tolerate the regular treatment, it is well to investigate specially as to whether our case is one of this gastritis acida. For such cases, and indeed for all cases proving obstinate to the proteid treatment, the method of continuous treatment upon low proteid diet should be tried.

It has been urged that the method of treatment of hyperacidity by the utilization of the acid by food simply aims to offset the acidity of the contents, not to control the secretion, and that a more fundamental method of treatment would consist in aiming to lessen this secretion. Also it is claimed by certain observers that the secretion of acid in the stomach is proportionate to the amount of food requiring acid for digestion, that is, the proteid food. And that therefore the proteid diet, while relieving symptoms, tends to increase the disorder, while a low proteid diet will tend to decrease the actual cause of disturbance, and thus give permanent cure. Hemmeter reports some observations upon dogs which tend to support this theory.

In the few cases in which I have tried this latter method I have found it difficult to keep up. It does not give the immediate relief of symptoms obtained by the proteid method and the patients do not keep to the diet as well as in the proteid method.

The proteid treatment, whatever its aim, certainly ends in reducing the secretion of acid in many cases. It controls symptoms at the time in almost all cases. Since it acts so effectually I have used it regularly as a first resort in all cases where it is tolerated. Where it fails the other method should be given a trial.

SUBPERIOSTEAL FRACTURES.¹

BY FREDERICK J. COTTON, M.D., BOSTON.

ABOUT a year ago a somewhat peculiar case of subperiosteal fracture called my attention to this class of cases; the cases here presented are such as have come under my notice since that time. They are presented not with the idea that they show anything actually new, but because subperiosteal fractures are very common in children and a proportion of them seem on closer examination to have little in common with the type known as green-stick fractures, with which they are usually classed.

The usual type of green-stick fractures is of course

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subperiosteal, but beyond this the correspondence between the types is not close. The usual type of green-stick fractures is familiar enough. There is a giving way of the bone on the convex side—a tearing apart, while the concave side shows simply a bending of the cortical layer. There is deformity on account of the difficulty of returning the torn bone surfaces on the convex side back to exact position, while the lack of mobility is ensured by the intact layer of bone on the inner concave side, even apart from a locking of the torn bone surfaces and from the strength of the untorn periosteum.

In the cases to be shown the conditions are different. Here there is no deformity because there are no torn surfaces, but a clean-cut crack or cross fracture, and no bent or half-broken layer of bone to prevent the motion necessary to readjustment of the surfaces. The lack of crepitus and mobility seems to be largely or entirely dependent on the strength of the thick intact periosteal layer.

CASE I. A boy of thirteen, whose right arm had been caught between the knee of another boy and the ground in the course of a football scrimmage. He came to the hospital next day complaining of slight pain and weakness of the arm and hand. There was no swelling or ecchymosis, and the disability was comparatively slight. There was localized tenderness at the middle of the right radius, but no suspicion of deformity or mobility even on the application of considerable force. The arm was put up in splints and examined at intervals, but not until ten days after the accident was there anything to be felt. At this time there was a small callus at the point of injury, and an x-ray was taken which showed a transverse fracture line apparently traversing the full thickness of the bone. There was a callus, seemingly entirely subperiosteal. There was no deformity. Within three weeks from the time of injury repair seemed complete and the arm could be freely used.

CASE II. A fracture running obliquely across the radius just above the lower epiphyseal line, showing no deformity or mobility. The x-ray showed a clean fracture line with practically no displacement. This again is evidently in no strict sense a green-stick fracture, but corresponds to the relatively not infrequent Colles's fracture without displacement seen in adults.²

CASE III. A fracture of the olecranon in a boy of seven, resulting from a fall on the elbow. The fracture line as made out under ether ran somewhat obliquely up and outward. There was a little mobility to be made out by the use of considerable force, but only through the slightest range; there was no separation of fragments, and no deformity, and it seemed evident that the fragment was held in place by the intact periosteum alone. The skiagraph shows the lateral view, in which the fracture line appears only as a crack.

CASE IV. A girl of five years fell and struck her elbow against a plank. Next day she came to the hospital. There was some effusion into the joint, some pain and tenderness. A careful examination, however, showed no sign of fracture, no deformity, mobility or crepitus. The skiagraph, however, showed a distinct crack across the humerus above the epiphyseal line, without displacement. Later there was more swelling, and some ecchymosis came to the surface. The recovery was, as in the previous cases, entirely uneventful.

CASE V. A fracture of the right radius from a fall, showing no signs of fracture at the time of injury. A callus was palpable later, and the x-ray taken after two weeks, though not good, showed the fact and location of the fracture, the presence of the callus, and the absence of displacement.

* Cases I and II were seen at the City Hospital while the writer was acting out-patient surgeon; the others seen at the Children's Hospital and reported by permission of Drs. Lovett and Brackett.

CASE VI. A fracture of the right arm three days old, in a child of five years. The middle third of the right radius showed beginning callus. The deformity in this case was trifling, but a very slight bowing could be made out; no attempt was made to reduce it. This case may have been a green-stick fracture in the stricter sense. No x-ray was taken.

CASE VII. A fracture of the right clavicle in a girl of five years, untreated for five days. Disability very little. No mobility, little pain. The only tangible sign of fracture was the beginning callus, which continued to increase in size later. The case differed from the more familiar green-stick fracture of the clavicle in that there was literally and absolutely no deformity, not even the least bowing.

CASE VIII. An almost exactly similar case of fracture of the clavicle just outside the middle in a small boy of four. Like the other case, it had gone untreated for a week, owing to the slowness of the symptoms.

CASE IX. A girl of four fell and injured her leg. There was no crepitus to be made out in an examination without ether, but a slight abnormal mobility in the lower third of the tibia. The x-ray showed a complete fracture of the tibia. The limitation of the mobility was evidently due to the periosteum. There was a slight displacement in the way of shortening—a small fraction of an inch only.

CASE X. A boy of three and one-half years was brought in on account of lameness, persisting six days after a fall on some steps. On examination there was localized tenderness at the middle of the right tibia, and a distinct callus surrounding the bone on all sides so far as could be palpated. The leg was put up in plaster, and after three weeks more was apparently well, but the callus still present, though smaller. No x-ray was taken in this case.

During this same period I have of course had opportunity to observe various typical green-stick fractures of the arm, clavicle, etc. These are not here recorded.

The cases presented do not show a fixed type in direction or character of the fracture lines, but they do show that fractures of various sorts may, even in the child, show an apparent immobility, due not to intact bone so much as to intact periosteum, and that the long bones even in children may be broken in clean lines without any resulting displacement.

Some experiments were carried out on the cadavers of new-born, presumably normal, infants to see how readily clean fractures could be produced and how much the periosteum hindered displacement at the time of breaking and on subsequent manipulation. Fractures were produced first by slow forcible bending in the hands. There resulted: (1) in a femur; green-stick fracture, periosteum intact; (2) tibia; green-stick fracture with a Y-shaped fracture line, periosteum intact; (3) tibia; exactly the same result, typical green-stick fracture; (4) clavicle; the bone could be bent double and back again, with some breaking of bony substance, but no definite fracture line. In none of these experiments was there any difficulty in forcibly reducing the fracture and bringing the bone back to the straight line, nor any necessity of completing the fracture to get good position—a much-mentioned measure which has seemed to me unnecessary clinically, as it proved to be experimentally.

Next the effect of direct blows on the shaft of the bones was tried, both with dissected and undissected limbs. (1) A right tibia so struck showed square transverse fracture; (2) femur; slightly oblique but clean-cut fracture, not extending through the full thickness of the bone, but mobile with a hinge motion, perfect reduction possible.

A humerus was stood on end, and struck on the upper end; it buckled and broke in the middle; there was some displacement of the ends and free hinge motion, but the periosteum remained unbroken.

Obviously, these experiments are too few to warrant any sweeping conclusions, but it would seem that blows are less likely than a slower acting strain to produce typical green-stick fractures, and it is at least obvious that even the soft bones of the new-born may be broken or cracked in clean-cut approximately transverse fracture lines by forces moderate enough to leave the periosteum intact.

In conclusion, it seems that fractures in children showing no deformity and no appreciable mobility are not uncommon; that they might readily be overlooked; that they often need no reduction, having no deformity; that they repair with callus and quickly.

IRRITABLE BREASTS, OR CHRONIC LOBULAR MASTITIS.¹

BY R. C. CABOT, M.D., BOSTON.

I HAVE no paper. I bring up this subject because I want to find out something more about it, and because it seems to me from talking with my friends that other physicians in the community are almost as ignorant as I.

I will begin by giving a short account of two cases that first brought the subject to my interest. About eight months ago I saw for the first time two young women between twenty and twenty-five, unmarried, both of them strikingly neurotic in temperament, of thin build and pale, but not anemic by blood test, both of whom came to me to know the nature of a lump in the breast. That lump in both cases was in the outer upper quadrant; it was distinctly tender to the touch, and it was for the pain as well as for the presence of the lump that the patients came. The lump was in one case about the size of a large horse chestnut, in the other a little larger. It was flattened from before backwards and it was notable when you pressed the breast against the thorax it was much more difficult to feel the lump than when you took it in the fingers from side to side. In one case there was no enlargement of the axillary glands, in the other they were slightly enlarged and somewhat tender. There was no retraction of the nipple, and the tumor was freely movable beneath the skin, not accurately circumscribed in either case, but faded out into the tissues of the breast, so that it was difficult to say exactly how large it was in either case. In each case under observation the tumor originally seen diminished in size and another appeared in the other breast.

These cases have been under observation now seven or eight months and have improved a good deal under general treatment. One was a girl obviously lacking in occupation, and when an occupation was secured the lump nearly disappeared, and the symptoms entirely disappeared. Neither had any symptoms except the symptoms of general debility.

This description corresponds fairly accurately with the description of "irritable breast," that given in the old textbooks on surgery, for example, in Ashhurst's "Surgery" and in one of the newer books, Shields

¹ Read before the Boston Society for Medical Improvement, October 29, 1900.

on "Tumors of the Breast," and it seemed to me the diagnosis was justified. But when I came to read over the literature I found many points indefinitely touched upon, and many which I should like to know more about. It is a subject which seems to be on the border line between surgery and medicine (since most writers recommend the treatment should be expectant and not operative) and hence of special interest.

First, as to the pathology of these tumors. The majority of writers describe them as *inflammatory*, that is, as chronic lobular mastitis, and the microscopic changes as an increase of fibrous tissue with the formation of very small cysts, the changes fading out at the periphery of the lobule and being in no sense sharply circumscribed. But, on the other hand, every writer I have seen on the subject states that these tumors frequently disappear. Herbert Snow speaks of them as the "dispersible" tumors of adolescence, as the familiar "adenoid of adolescence," but it seems curious that these thickenings should entirely disappear if their pathology is that of a fibrous hyperplasia. If the breast were very fat, it would be easy to see how a fibrous nodule might escape notice. In my cases, however, the breasts were flabby and thin, so that a small accumulation or thickening of this kind would be felt, if present. I have asked myself the question whether there is any possibility that in some of these cases the accumulation may be a galactocoele. Several cases of galactocoele are on record in unmarried women, — an accumulation either of milk or cheesy substance in the breast. That is a question I want to bring up and have answered, if possible.

I also want to ask the question whether it is possible or likely that these lumps are physiological, that a considerable number of women have them and do not find them out. It struck me very much that all the writers emphasize the neurotic constitution of the patient, describing the type of patient who would easily get stirred up about such things, feel of the breasts a great deal, handle them and be led to lay great stress on the symptoms, whereas the same might exist in less neurotic patients and not be noticed at all. One of my patients was a nurse and the other the sister of a medical student. I want to bring up the question whether it is possible that a considerable number of these tumors exist and are not discovered, and if so, whether it is fair to call them *mastitis*.

Then, as to the *prognosis* of these tumors, the question as to whether they do or do not become cancerous. In the literature the majority of writers seem to think they do not, but a respectable minority believe that out of these tumors a cancerous process may develop. The bearing of this question upon treatment is obvious.

As to the *treatment*, should these cases be operated upon? The great majority of writers say no, and recommend the treatment of iodide of potash internally, acetate of lead ointment externally, and attention to the general condition of the patient. I should like to know if it is the opinion of those competent to speak whether these measures have any effect on the process itself or act entirely as placebos.

I think I will take no more of the time of the meeting. What I want is to find out as far as possible what is the pathology of these tumors, what is their course, and what is the proper treatment.