

Fractures of the lower jaw and their treatment / by P.W. Moriarty.

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Publication/Creation

[Place of publication not identified] : [publisher not identified], [1899?]

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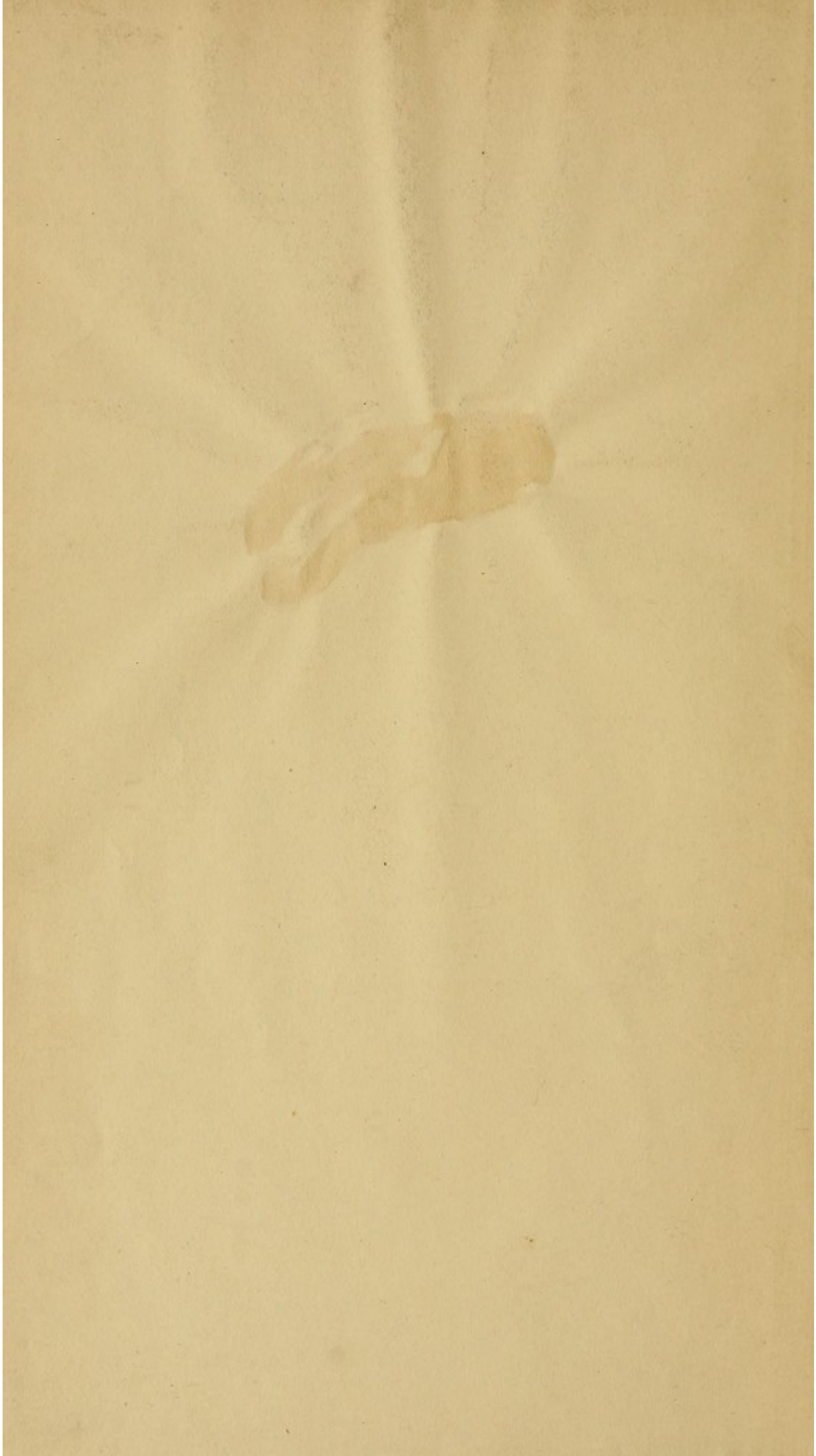
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FRACTURES OF THE LOWER JAW AND THEIR TREATMENT.

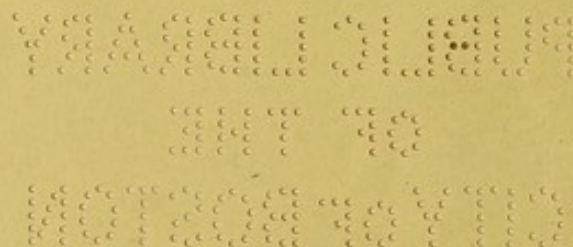
By DR. P. W. MORIARTY,

Instructor in the Mechanical Treatment of Fractured Jaws and Cleft Palates,
Dental School of Harvard University.

THE
DENTAL
SCHOOL

OF
HARVARD
UNIVERSITY

CAMBRIDGE
MASS.
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FRACTURES OF THE LOWER JAW AND THEIR TREATMENT.

BY DR. P. W. MORIARTY.

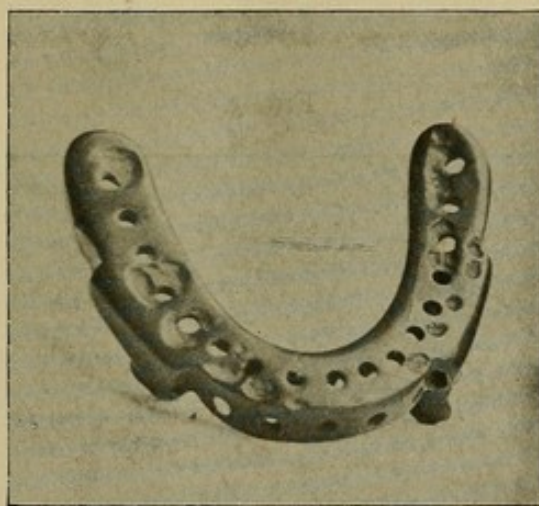
Instructor in the Mechanical Treatment of Fractured Jaws and Cleft Palates, Dental School of
Harvard University.

In the treatment of fractures of the lower jaw it is important that the members of our profession should be thoroughly informed upon the subject. Many of you after leaving the school may never meet with a case, but a dentist, especially in the smaller cities or towns, is liable to be called upon at any time to treat a fracture, either in co-operation with the surgeon or alone.

The surgeon finds that fractures of the lower jaw are the most troublesome to treat; he is not able to apply a splint in the same manner as in fractures of other bones. He finds that the numerous muscles which control the movements of the jaw tend to displace the fragments. The muscles which govern the tongue, larynx, and the neck, when used, also tend to displacement.

The displacement is produced primarily by the force which caused the accident, secondarily by muscular contraction. If the fracture be at the median line, there will be little or no displacement, as the muscles of the one side have no advantage over those of the other side.

FIG. 1.



Simple vulcanite splint, with boxes vulcanized on each side.

The muscles which are most active in causing displacement are the masseter, the internal pterygoid, the mylo-hyoid, the genio-hyoid, and the genio-hypoglossus.

Any decided movement of the head, either rotary or otherwise, will have a tendency to displace the fragments. The simple acts of deglutition and speaking also tend to do the same. In the act of swallowing the larynx is elevated by the contraction of the hyoid muscles, which are attached to the tongue and the styloid process of the lower jaw. Before the contraction can take place the lower jaw must be fixed to the upper by the muscles which fix the mouth, when the act may be accomplished.

FIG. 2.



Fracture at the symphysis, showing splint on the lower teeth. Mouth closed.

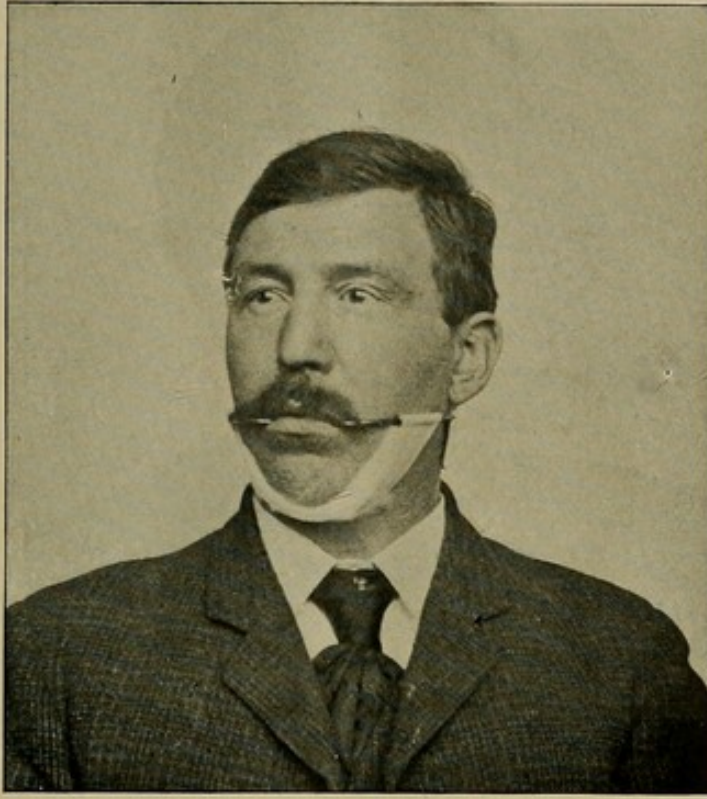
FIG. 3.



Shows mouth open, with the splint on the teeth, allowing patient to masticate food with but little discomfort.

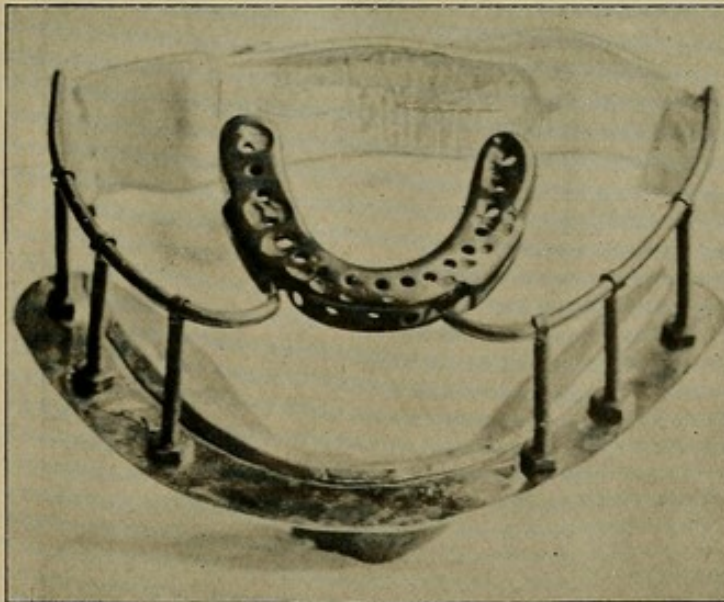
I have not time this morning to go further into the action of the muscles in the various kinds of fractures.

FIG. 4.



Splint, arms and bandage.

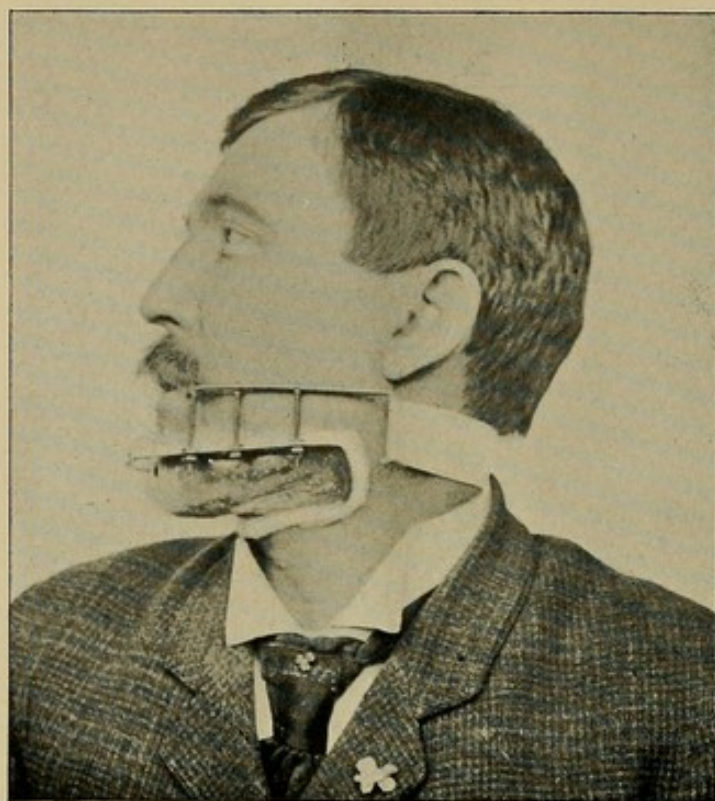
FIG. 5.



Splint, arms and chin-piece. Pressure is obtained by tightening the screw-bolts which run from the arms to the chin-piece.

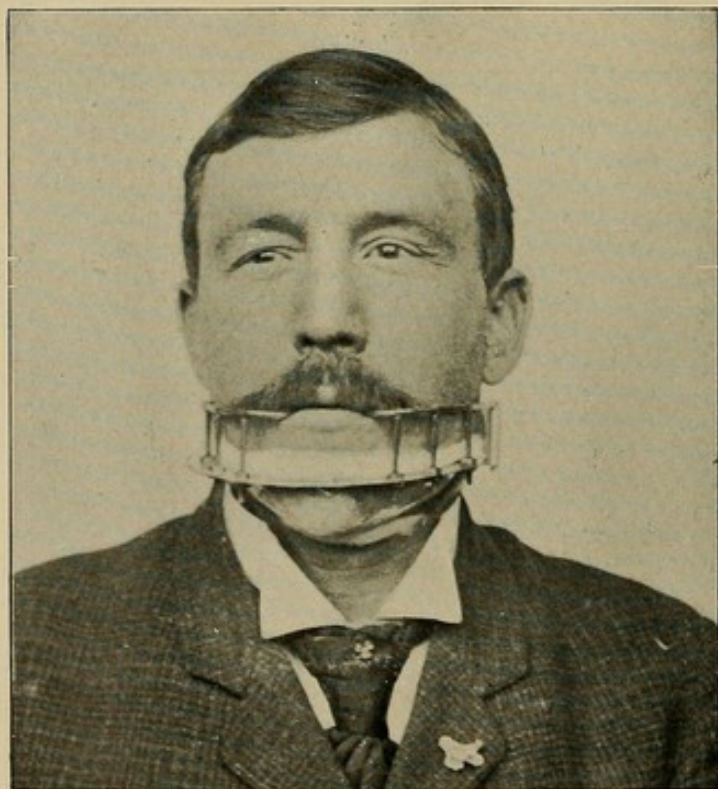
The inferior maxillary, from its exposed position, its shape, and its office, is more subject to fracture than the superior maxillary bone.

FIG. 6.



Side view of splint, arms and chin-piece in position.

FIG. 7.



Front view.

There is a wide difference as to the most frequent location of fractures of the jaw.

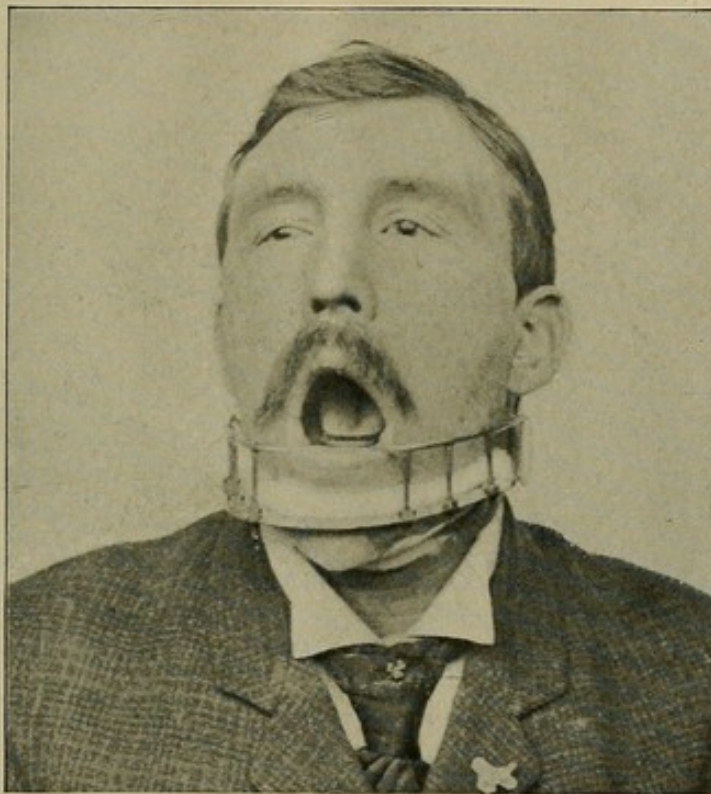
Ehrichsen claims it occurs more frequently at the symphysis than at any other point, while Boyer makes the statement that it never occurs there, but at the weakest part of the bone,—that is, on each side of the symphysis; but as long ago as Hippocrates, fracture at the symphysis was known and recognized.

Garretson says the weakest part is on a line with the roots of the cuspid, with an unbroken dental arch, but where the teeth have been removed the weakest part may be at the point of their removal.

Gibson claims that age has much to do with location, and that in the young it is commonly at the symphysis.

From my experience, I have found that the location of the fracture depends upon the direction of the force necessary to cause a fracture and the position of the teeth remaining in the jaw.

FIG. 8.



Appliance on, showing how the mouth can be opened to enable patient to eat, drink, etc.

Fractures of the ramus are rare. This exemption may be accounted for by the protection given by the muscles and the integument, and the natural strength of the bone; also, the force of the blow is often broken by the joint slipping out of place. Fracture at the ramus is more liable to occur in patients whose upper teeth are all missing, or who wear a poorly-fitting upper plate.

Many cases of fractured neck of the condyle are recorded, and, as a rule, are most serious, as you may get fatal brain complications.

Fractures of the alveoli are common, but are not considered serious unless unusually extensive.

Fractures are simple when the bone only is divided without piercing the integuments.

Fractures are compound when the injury is accompanied by laceration of tissue through which there is a communication between the external air and the fracture. This form is most common, and the laceration exists

upon the lingual side; or, when the integument is lacerated, it is most generally from gunshot wounds.

Fractures are comminuted when the bone is broken or crushed into several pieces at the same point and communicating with each other.

Fractures of the jaw are unmistakable, the prominent symptoms being pain, swelling, drooling, and crepitus, with but little hemorrhage unless the fracture is compound. There is also displacement of the fragments, which the irregularity in the line of the teeth plainly shows. You may also have increased salivation. Of course, the loss of function is apparent when the patient is unable to use the jaw.

If the inferior dental nerves and vessels are injured you may get paralysis, facial spasms, etc. Drs. St. George, Holmes, and Ehrichsen, who have had some experience in such cases, never met with any paralysis connected

FIG. 9.



Fracture of the ascending ramus. Patient without any teeth. Inserted an interdental splint to maintain correct relationship between upper and lower jaws, also bandage and small chin-piece.

with the injury to the soft parts; whilst Boyer, Berard, Heath, and Chelius in their works claim the opposite.

When any doubt exists as to the location of a fracture of the lower jaw, grasp the bone on each side with the forefingers introduced into the mouth and resting upon the teeth; you will then have no difficulty in recognizing the false point of motion or crepitus between the fragments.

Fractures of the lower jaw are of quite frequent occurrence, and are generally the result of direct violence. In men a fall, a kick from a horse, or a blow from a policeman's club or from the fist are the prominent causes. In women a blow from the husband has been the cause in every case we have had at the school.

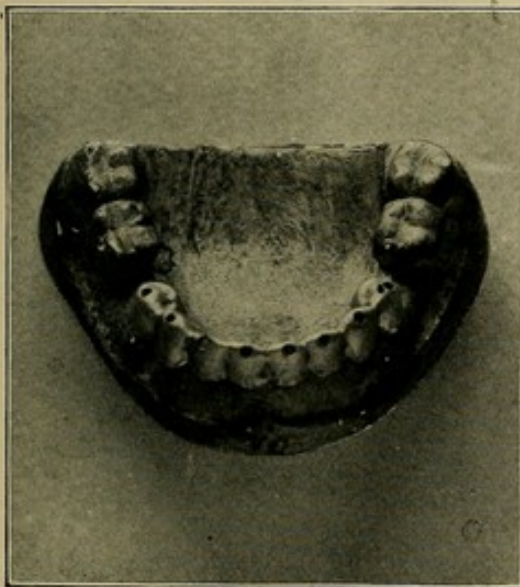
In my opinion, the dentist, and not the physician or surgeon, is the proper person to treat all fractures of the jaw. Dentists should emphasize

this fact, and impress it upon the public and the physicians. That the hospitals are recognizing this fact is proven by the number of cases we have had here during the past few years.

In the early days various methods of treatment were resorted to. The teeth were not considered as essential to the health, comfort, and good looks of the patient as now. It did not matter if the contour of the face was marred by the displacement of the fragments. If the parts grew together fairly well it was of little consequence if the articulation was good, bad, or indifferent. If one or more teeth were prominent and made the displacement noticeable, the forceps in the hands of the surgeon soon remedied that, and the patient was thankful to get through alive.

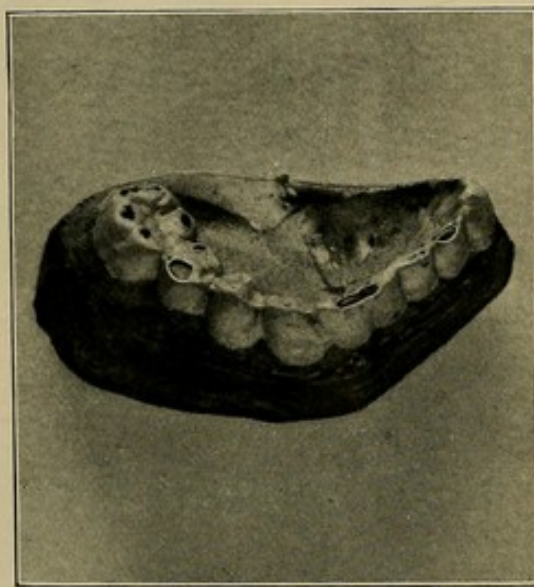
The physician treats a case of fracture of the jaw by applying a four-tailed bandage, or by wiring the parts together. The dentist treats one by means of a dental splint nicely constructed and properly applied, which is far superior to bandaging or wiring. Physicians seem to be unaware

FIG. 10.



For simple fracture. A continuous capping of gold, aluminum, or other metal cemented onto the teeth.

FIG. 11.



Fracture between cuspid and lateral. An aluminum splint.

that the comfort and interests of their patients would be better served by calling in the services of a dentist.

The application of a correctly made splint does not interfere with the functions of the jaw, and in a great many cases the patient can masticate with comfort, being able to open and close the mouth. This he cannot do when bandages are used.

The best treatment requires the readjustment of the fractured parts, and fixation, and that the fixation of the bone shall not interfere with its functions, nor with the required dressing of an associated wound.

When a patient with a fractured jaw comes to us we thoroughly wash the mouth with an antiseptic solution, any very loose teeth are removed, and the teeth cleansed from tartar.

An impression of the upper jaw is taken in modelling composition, and one of the lower or fractured jaw in modelling composition or plaster. No attempt is made to put the fragments in proper position.

Plaster casts are made, on which the lines of fracture are clearly indicated. With a fine saw the cast is cut on these lines, and the lower teeth are articulated with the plaster cast of the upper jaw. Plaster is run around to hold the severed portion in position, and then both upper and lower casts are put upon an articulator.

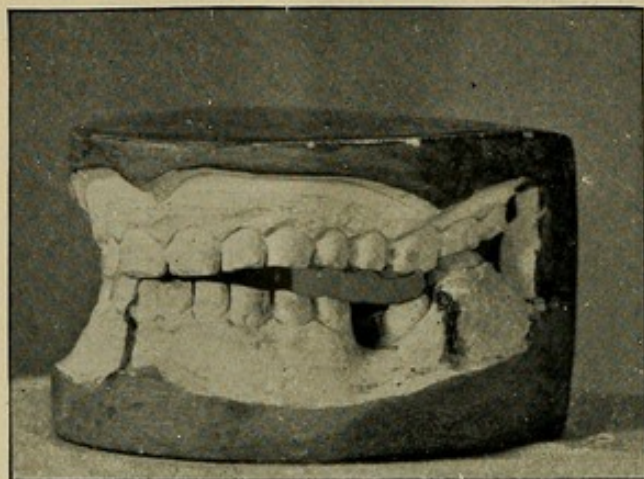
The process of waxing up and making a vulcanite splint is similar to that of making a vulcanite plate, and is familiar to you all.

I find that for fractures at the symphysis the simple dental splint is sufficient. (Figs. 1, 2, and 3.)

I always vulcanize on the sides of the splint, boxes into which wire arms can be inserted. These wire arms are bent at the corners of the mouth and extend back toward the ears; a bandage from each arm and under the chin gives the pressure required to hold the parts in position. (Fig. 4.)

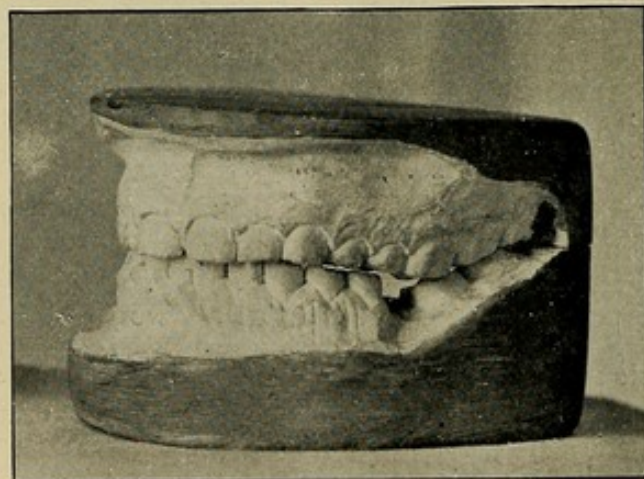
If the jaw is fractured in the region of the molars, considerable pressure

FIG. 12a.



Plaster model, showing articulation of a fractured jaw before treatment.

FIG. 12b.



Plaster model of same jaw, showing articulation after treatment.

is required to get the parts in position. This I obtain by the addition of a mental splint or chin-piece. (Fig. 5.)

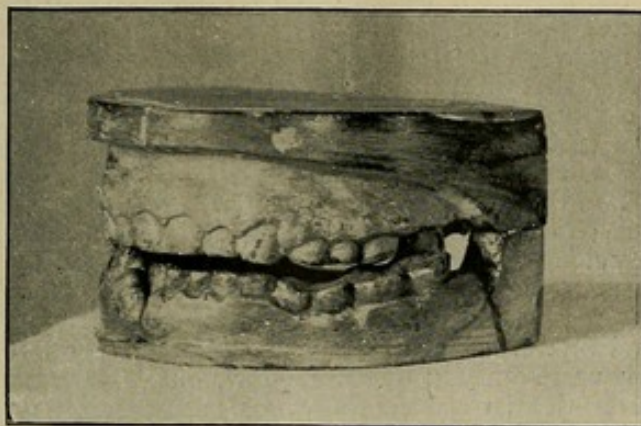
This is well padded and by a number of screw-bolts attached to the wire arms, and the pressure is gradually increased until the fragments are in the correct position. (Figs. 6, 7, 8.)

In one case that I had during the past year the patient, who wore an upper and lower set of artificial teeth, had the lower jaw fractured on the right side at the cuspid region and on the left at the first molar. Using the lower plate for a splint, boxes were vulcanized on the side, the arms and chin-piece attached, and a good result was obtained.

In another case in which the patient did not have any teeth (Fig. 9), the fracture was at the ramus. As can be readily imagined, this case necessitated a bandage; but in order to maintain the correct relationship between the upper and lower jaws an interdental splint, with an opening for the reception of food, was inserted, and the patient bandaged. Fourteen days later the splint was replaced by an upper and lower set of teeth, and ten days later the patient was dismissed, the union being complete.

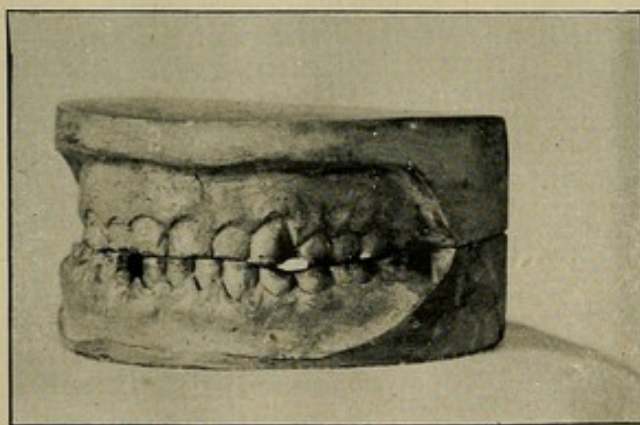
That the best-constructed splint may be a failure was forcibly brought to my attention in the case of one patient who came to the infirmary with a fracture between the left lower cuspid and bicuspid, and at the angle of the

FIG. 13a.



Plaster model of jaw, showing displacement before treatment.

FIG. 13b.



Plaster model, showing articulation after treatment.

jaw on the right side. Considerable pus exuded from a sinus on the left side. A vulcanite splint with metal chin-piece was applied, and at the end of a week the flow of pus had apparently ceased.

On the ninth day the splint was not in position, the mouth was foul, and pus freely flowing again. Believing that the patient did not properly cleanse his mouth, and being unable to explain the failure of the splint, I removed it and applied a four-tailed bandage.

Annoyed and perplexed, I made inquiries, and was informed by an acquaintance of the patient that he with a pair of pliers had loosened the appliance after leaving the infirmary and tightened it again before coming to see us.

The patient at first stoutly denied doing this, but finally admitted that he did, as he could not see why it was necessary to keep such pressure on his jaw.

The great disadvantage that we as dentists labor under in the treatment of some of these cases is that we have no place where patients who are in need of nourishment can be attended. For instance, a homeless patient, or one who boards out in a café, cannot very well sit down to table with this appliance on his jaw. Or the patient may be feverish and need constant attention; this he cannot get except in some place where he will be looked after.

I have in the cases of some private patients used a modification of the Angle system, but prefer wider bands. I do not approve of banding the lower to the upper teeth except in a few cases, the objections being that in order to feed the patient it would often be necessary to extract a tooth, and that you do not give the patient any use of the lower jaw.

There are many ways of treating a fracture of the jaw other than bandaging, which is the natural device of the sufferer. Barton's, Gibson's, Hunter's, and the four-tailed bandage have done excellent service.

In several cases where the fracture was at the symphysis, with but little displacement, I have used a continuous cap of gold or aluminum cemented onto the teeth. The cap is struck up by die and counter-die from a reconstructed plaster cast of the fractured jaw. This is very neat, is not noticeable, and gives excellent results. (Figs. 10, 11.)

Wiring the parts together has been tried frequently, and often successfully. Wiring the teeth has often been a dismal failure.

Metal plates and ligatures have been used with more or less success.

I have not perhaps given you anything new, but I want to impress upon you the fact that the dentist can do this work better than any surgeon.

We utilize the work of our predecessors, and perhaps simplify it.

I believe that the time is coming when the treatment of fractures of the jaw will be so systematized and simplified that any dentist will be able to handle the most difficult cases.

During my eight years' service at the school I have found that the average student, under proper instruction, quickly grasps the methods to be pursued in the treatment of any deformity, many of which are more complicated than the treatment of a fracture of the jaw.

I have here models of twenty-eight cases showing condition before and after treatment, which I invite you to inspect.

To conclude, I am firmly convinced that the best treatment of a fractured jaw requires the services of a dentist who can make a splint or appliance adapted for each case. (Figs. 12, 13.)

