an innovation of this kind has many difficulties to encounter and overcome is to be expected, as it invades the precincts of the holiest of ecclesiastic ordinances, besides it introduces a new element of expense that the feebler village and rural congregations are illy able to bear.

The solid silver, silver-plated-gold-lined, aluminum or glass cups in sets of forty or sixty, with accompanying tankards for filling, and trays for carrying, would aggregate an expense almost absolutely forbidding their introduction and use into the outlying missions and stations, where usually more than in many other places such solitary or individual cup would be called for.

The perfectly aseptic use and custody of such sets, too, would require a surveillance difficult to procure in many such remote city as well as country districts, should the necessary funds have been secured for their purchase and introduction. But more essential and far more imperative from a sanitary point of view is the demand for the use of an individual cup for the pupils of the public schools and in the mixed migratory army that throngs along our iron highways. To meet the requirements of these numerous and varied conditions, embodying economy and care, it was suggested to my mind some months since that an individual drinking cup could be made from paper, wood-pulp or fiber so cheaply that the passing of the chalice to another or its second use would not be required. Investigation however revealed the fact that knowing ones would not embark in its manufacture unless the protection of a patent restricted its general manufacture by others, but the fact remains that hygienically such cups would meet requirements in many ways, that no public, chained, iron, or polished silver communion cup would fill. Its suggestion here is to bring it before the tribunal of the profession, and probably the trade, for discussion, approval, adoption or rejection.

The very common use of paper-made packages for containing and carrying of nearly every article of diet from the grocer's counter to the consumer's table, the free use of the wooden picnic or outing plate, the paper napkin, all used but once and thrown away, the manufactured wooden toothpick that passing through many fingers and processes finally finds its way into the teeth interspaces of myriads of mouths daily, all suggest that there could also be constructed from a similar material an individual cup, which should be manufactured under as strict antiseptic precautions and placed on the market as absolutely free from contamination as are our surgical gauzes and cottons, and like them, used but once and discarded. Thus the poorest church communicant in the remotest districts, every traveler and every scholar in public schools or private academy might be the privileged owner and user of an individual drinking cup, though not born with the traditional "silver spoon in his mouth." Such a cup could be spun from pulp or stamped from paper, of varying plain or fancy designs; it could even be made to collapse laterally, to be carried in the vest pocket of the railway or cycle tourist. Probably the size and shape most practicable and familiar would be that of one similar to our one ounce medicine glasses. These could be packed in a limited area, closely "nested" for shipment by mail or express at slight additional expense, wrapped in waxed paper, from whence they should be removed only when to be used. For communion service they could be arrayed in cancelled or perforated trays made of light wood or wire, and

if the cups were made of white paper and filled with the crimson sacramental fluid would make an esthetic as well as sanitary array, at once inviting commendation, the cups, when used, gathered up and consigned to the fire. The cost would scarcely exceed, or equal, the paper plate or napkin and would prove the easy entering wedge to a much-needed, well-recognized and desirable sanitary reform, soon leading on and up, where possible, to more costly and elaborate outfits. To the public school pupil and the traveler they would soon find their way and win their own commendation.

MECHANICAL FEATURES IN OBLIQUE FRACTURES.

Presented at the Fourth Annual Meeting of the American Academy of Railway Surgeons, at Chicago, Ill., Oct. 6-8, 1897.

BY JOHN E. OWENS, M.D.

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The mechanical features of fractures in general and oblique fractures in particular are apparent from almost every standpoint. The derivation of the word implies the mechanical nature of the injury.

The oblique fracture is always the result of some local strain or injury, varying from a slight to a strong muscular effort or of severe external violence. Whether the local cause be from external violence or muscular action, it is mechanical in nature and that, too, whether the bone gives away at the part struck by direct violence or at its weakest part by compression between two opposing forces, as in fracture by indirect violence. Oblique fractures are prone to cause laceration of the skin by their sharp extremities, rendering the fracture compound. This occurs much more frequently than in the case of transverse fractures. A variety of complications may result mechanically from the sharp ends of the broken bones in oblique fractures, such as an injury to some internal viscus, as in case of oblique fracture of the rib or pelvis; a laceration or contusion of blood vessels or nerves, causing hemorrhage, aneurysm or thrombus of the former and paralysis or irritation of the latter. The mechanical effect of more or less violent contact of the ends of the bones in oblique fractures on nerve tissue is to cause bruising with usually temporary loss of power or permanent loss of power in cases of complete division, unless the divided ends be united or engrafted into the continuity of a contiguous nerve. Some neighboring joint may likewise be perforated by the sharp extremities of the broken bone.

The variety of fracture in question is most common in the extremities. They vary in obliquity, and are often only a degree removed from the transverse. The oblique fracture is dangerous, and the greater the obliquity the greater the probability of laceration of the soft parts, including the skin, owing to the more or less pointed shape of the broken ends. There is also greater difficulty in maintaining such fractured surfaces in apposition and in decidedly oblique fractures, in the prevention of shortening.

A prominent element in the displacement of an oblique fracture is muscular contraction arising from the mechanical damage done to the muscles by means of the sharp ends of the broken bones, and these very emphatically claim our attention in reduction. In cases where the oblique fracture causes an injury of an internal viscus by mechanically piercing or rupturing it, the danger depends more upon the injury to

the internal organ than to the fracture itself, as in fractures of the ischium, pubes or ribs. If the main artery of the limb is extensively torn, a diffused traumatic aneurysm must be the result, and gangrene of the limb will in all probability ensue, and amputation will be the only recourse. In other cases the artery may be only partially torn across, or it may be punctured by a spicule of bone. Traumatic aneurysm, diffused or circumscribed, may form. The internal jugular vein has been injured by the ends of the broken bone in oblique fractures of the clavicle.

For mechanical reasons, in oblique fracture the deformity growing out of the displacement and separation of the fragments is more pronounced. Not only should rough or injudicious handling be avoided, owing to the danger such handling may cause to the soft parts, but great circumspection is required to prevent mechanical damage to the tissues by the sharp ends of the broken bone during the transportation of the patient, during the administration of anesthetics, and also from the violent efforts of the patient himself during delirium.

Finally, in oblique fractures the mechanical effect of the broken bones upon the muscles in the production of spasm, is greater than in cases of transverse fractures.

DISCUSSION.

Dr. W. J. GALBRAITH of Omaha.—The Doctor did not give as full consideration as many of our cases demand in regard to the muscular tissue, that in many instances become entangled or interposed between the ends of the bones in all varieties of fractures, preventing perfect apposition and resulting in serious complications in the way of prolonged irritation, non-union and possibly other more serious conditions. As regards the treatment, each case has to be treated according to the conditions.

THE PATHOLOGY AND DIAGNOSIS OF OBLIQUE FRACTURES.

Presented in the Fourth Annual Meeting of the American Academy of Railway Surgeons at Chicago, Ill., Oct. 6-8, 1897.

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Frank Hamilton on "Fractures and Dislocations" has been an authority for many years. A monument to his memory, a tribute to the genius of American surgery by a master mind! That it should have stood for more than a decade for all that was known about fractures and that at a time when operative surgery was making its marvelous advance, fractures seemed to have been the one subject upon which the last word had been said, was due to several causes: The older surgeons were anatomists and clinicians, their surgery that of traumatists and tumors. These things they knew well and could tell well; for instance that most readable and instructive little book of Cheever ("Lectures on Surgery"), published several years since, the chapters on fractures being absolutely brilliant. The surgery of the last ten years has been that of expediency, rather than necessity and in this rapid advance traumatic surgery has been to a certain extent neglected. The contributions of Allis and Roberts of Philadelphia and McBurney and Stimson of New York, the latter being the author of a special treatise which rivals that of Hamilton, have been most noteworthy exceptions to this general statement.

Aseptic and antiseptic methods have done much for compound, but, until recently, very little for closed fractures.

At this time we are in the midst of a most splendid

advance in the diagnosis of fractures, due to the impetus given by the X-ray, and to the wider scope of the diagnostic incision which modern wound treatment has made possible.

The obliquity of a fracture is often the most important feature and its diagnosis and management may prove to be the turning point as to the ultimate usefulness of the limb. As railroad surgeons, we are vitally interested in this aspect of fractures, as the oblique fracture is characteristic of adult middle life and constitutes the bulk of such injuries both in the traveling public and employees, for obvious reasons. The frequency of deformity after this variety of fracture, interfering with the utility of the member at a time of greatest usefulness, is a source of great pecuniary loss to the company, and in private practice, too frequently, of a malpractice suit against the surgeon. The green stick and transverse fracture of childhood and the senile or pipestem fracture of age are far easier of adjustment.

Mudd concisely says that "an oblique fracture is one in which the line of fracture is at an angle of not less than 10 nor more than 70 degrees to the axis of the bone; it is an intermediate between a transverse and a longitudinal fracture. The surfaces are at such an angle that even if well adjusted there is a disposition to overlapping, and any force tending to shorten the bone, whether it be pressure or muscular contraction, produces displacement with consequent shortening. The fractured surfaces are disposed to slip, one upon the other until there is overlapping." This form of injury is most often due to indirect force and the resulting shortening depends upon obliquity and displacement. Such shortening constitutes the greatest disaster in the femur, three-quarters of an inch or more causes a limp, pelvic droop and compensatory spinal curves. In the upper extremity there is less liability of functional or cosmetic after-results, provided a joint be not involved.

There are some points in the pathology which are of the greatest importance. The formation of callus is not only from the bone and periosteum but also from the soft parts; the lower maxilla, clavicle and ribs having but a small amount of tissue in close proximity have less callus, and the callus formed is most abundant upon the side of the bone where the soft coverings are most plentiful. Macewen in his work upon bone growth shows that true bone originates from any or all parts of the bone, medullary canal and periosteum. Defective or too abundant callus may, of itself, cause displacement and consequent union with deformity, or from excessive damage to any one element of bone formation the same conditions may exist.

In paralytics and those suffering from certain constitutional maladies such errors in repair are most apt to appear. In rheumatic individuals the disturbances in the soft parts and neighboring joints may be the starting point of a chronic rheumatoid-arthritis, especially at the hip, and Tillman calls attention to the peculiarities of the resulting deformity for which the surgeon is wholly blameless. The influence of chronic inflammation of bone, especially near the epiphyseal line, upon bone growth is noted by Senn. I have seen the tibia elongated an inch by a central abscess in the growing bone. Professor Humphries and Corydon L. Ford have made extensive investigations as to asymmetry of bone length in otherwise normal individuals and the frequency of such abnormalities